2022/23
年報 Annual Report

機電工程署
Electrical and Mechanical Services Department

傳承創新　同心惠民
Serving the Community with Heart and Innovation

機電工程署
EMSD

75th 周年紀念 ANNIVERSARY

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機電工程署
ELECTRICAL AND MECHANICAL SERVICES DEPARTMENT

機電工程署(機電署)是中華人民共和國香港特別行政區政府專責提供機電工程服務的部門。該署下設兩個功能機構，分別為規管服務和營運服務，後者又稱為機電工程營運基金(營運機金)。機電署透過為政府部門和公營機構提供專業、全面和具成本效益的機電工程服務，執法規管機電設施的安全運作和推行公眾教育，致力在社會促進安全及有質量的生活。

規管服務肩負着保護機電安全和提升能源效益的責任。服務團隊由多個部別組成，透過其規管工作及推行公眾教育，確保機電、氣體和鐵路安全。團隊亦負責監察電力公司的技術表現和發展計劃，確保其依照《管制計劃協議》運作。此外，規管服務團隊亦會就各種安全和環境倡議向政府提供專業建議和技術指導。

營運基金向約80個政府部門和公營機構提供專業、全面而優質的機電工程服務。我們為不同客戶部門的場地及設施，包括但不限於醫院、學校、紀律部隊設施、運輸設施、公路、港口和海港、機場、政府合署和法院大樓，以及公眾文娛康樂設施提供服務。我們提供全面的機電、屋宇裝備、電子系統和設備工程服務，包括機電設施的操作、維修保養、工程策劃及顧問服務。我們透過提供優質服務，努力提升市民的生活質素。

The Electrical and Mechanical Services Department (EMSD) is a department of the Government of the Hong Kong Special Administrative Region of the People's Republic of China that provides electrical and mechanical (E&M) services. It consists of two functional units, namely Regulatory Services (RS) and Trading Services (TS), and the latter is also known as the Electrical and Mechanical Services Trading Fund (EMSTF). Through providing professional, comprehensive, and cost-effective E&M engineering services, enforcing relevant laws and regulations to ensure safe operations and conducting public education, the EMSD strives to enhance the safety and quality of life for the community.

The RS team serves to ensure E&M safety and enhance energy efficiency in Hong Kong. Comprising a number of specialised divisions, the RS team safeguards the safety of E&M, gas and railway through its regulatory functions and public education. The team also monitors the technical performance and development plans of power companies under the purview of the Scheme of Control Agreements. In addition, the RS team provides professional advice and technical expertise to the Government on various safety and environmental initiatives.

The TS team, also known as the EMSTF, serves to deliver professional, comprehensive, and quality E&M engineering services to approximately 80 government departments and public bodies. We serve a wide range of client departments' venues and facilities, including but not limited to hospitals, schools, disciplined services facilities, transport facilities, highways, ports and harbours, airport, government offices and law court buildings, as well as public recreational and leisure facilities. We provide comprehensive services on E&M, building services, electronic systems and equipment, including operation, maintenance, project management and consultancy of E&M facilities. Through delivering quality service, we endeavour to improve the quality of life for the public.

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彭耀雄太平紳士
Mr Pang Yiu-hung, JP

機電工程署署長
機電工程營運基金總經理
Director of Electrical and Mechanical Services
General Manager, Electrical and Mechanical Services Trading Fund

署長的話
MESSAGE FROM THE DIRECTOR

2022/23年度，機電工程署(機電署)的規管和營運兩大職能單位持續提供卓越服務，表現優秀。儘管面對眾多外圍挑戰，尤其在過去三年先經歷2019冠狀病毒病疫情的峻境，現正面對疫後新常態和全面復常的考驗，機電事故數目仍然維持在低水平，機電工程營運基金(營運基金)的同事更秉持精益求精的精神，提供超越己任的高水準機電工程服務，績效卓著。

我們欣然報告，年內營運基金總收入達89.11億港元，升幅為2.2%；收入回報率則微跌至2.6%，蓋因我們採取向客戶部門提供額外增值服務，而非注重財務回報的營運策略。在2022年客戶意見調查中，客戶滿意指數和整體服務競爭力指數的得分均創歷史新高，可見營運基金的努力獲得客戶肯定。

機電署一直恪守高水平的機電安全和服務標準，並把該等標準綜合於2022年9月發布的八份優良操作和維修作業手冊及指引。其內容涵蓋電氣裝置、消防裝置及設備、暖通空調裝置、升降機及自動梯裝置、氣體設施、太陽能發電系統、太陽能熱水系統和石油氣車輛燃料系統等八大範疇，各界可透過機電署網站、E&M Connect手機應用程式、電子手冊和個案研究影片等不同渠道輕易取閱。我深信這些指引有助促進業界採用優良作業準則和創新科技，持續提升機電資產管理的效能。

The Electrical and Mechanical Services Department (EMSD), comprising the Regulatory Services and Trading Services, continued to deliver top-notch services and outstanding performance in 2022/23. Electrical and mechanical (E&M) incident rates were kept to a minimum despite numerous external challenges, while colleagues of the Electrical and Mechanical Services Trading Fund (EMSTF), upholding the spirit of striving for excellence, provided high-standard E&M services above and beyond the call of duty, especially as Hong Kong worked towards returning to full normality after enduring the ordeal of the Coronavirus Disease 2019 (COVID-19) epidemic in the past three years.

We are pleased to report that the total revenue of the EMSTF reached HK$8,911 million during the year, representing an increase of 2.2%, while the return on revenue slightly decreased to 2.6% mainly owing to our operation strategy of delivering additional value-added services to our client departments instead of emphasising financial return. The Customer Satisfaction Index and Overall Service Competitiveness Index both hit record highs in the Customer Opinion Survey 2022, showing that the EMSTF's efforts were recognised by our clients.

The high E&M safety and services standards to which the EMSD always adheres have been encapsulated in the eight Operation and Maintenance Best Practices Booklets and Handbooks released in September 2022. Their contents, covering eight major areas, namely electrical installations, fire service installations, HVAC installations, lift and escalator installations, gas utilisation facilities, solar photovoltaic systems, solar water heating systems and fuel system of liquefied petroleum gas vehicles, can be easily accessed through different channels like the EMSD website, E&M Connect Mobile App, e-handbooks and case study videos. I am confident that these publications will help promote the trade's adoption of best practices and innovative technologies for continually improving the efficiency of E&M asset management.

署長的話
MESSAGE FROM THE DIRECTOR

在四大範疇領導業界

作為政府的技術顧問、機電安全和能源效益的把關者，以及客戶部門的機電服務供應商，機電署年內繼續站在最前線，全面支援政府緩解2019冠狀病毒病疫情所帶來的影響，為香港全面復常做好準備；積極應用創新科技(創科)精簡工作流程和提升機電服務；加快香港邁向碳中和的進程；以及拓展與內地及國際的合作，以提升機電和能源效益標準。

致力抗疫工作與復常準備

機電署繼續全力以赴支援抗疫工作，尤其在我們的技術專業範疇盡展所長，確保設施通風良好便是一例。我們的團隊按照相關要求為700多間安老及殘疾人士院舍和65間官立學校進行通風評估，更因應需要提供改善建議，為學校進行通風改善工程。

引領創科發展

機電署在倡導創科新猷方面擔當核心角色，為內部運作、客戶部門、受規管者和機電行業帶來莫大裨益，以不同方式惠及普羅市民。舉例而言，我們於2022年11月引入升降機及自動梯數碼工作日誌系統(數碼工作日誌)，簡化規管服務、升降機/自動梯承辦商和負責人三方，在升降機/自動梯使用年期內監控每部裝置的「健康紀錄」。營運基金已為其維修保養的所有升降機及自動梯全面採用數碼工作日誌，讓我們日後為客戶部門提供升降機/自動梯服務時更具競爭優勢。另外，截至2023年9月，在全港近80 000部升降機及自動梯中，已有20 000部由使用紙本工作日誌轉為採用數碼工作日誌，可見這項創新方案深受持份者歡迎。我們的另一項新猷，是在本署總部停車場試行的物聯網可用泊車位檢視系統。該系統利用大數據分析停車場的動態使用率，讓我們可因應使用情況發放更多泊車證，而不會令停車場超出負荷。在本署場地試行成功後，我們為香港警務處和康樂及文化事務署等客戶部門引進該系統。

規管服務亦帶頭創新，以鼓勵受規管者採用署方的創科方案，或自行開發適用的方案。在提升鐵路安全方面，成效尤為顯著；其中多個獲獎的創科方案有助受規管者加強預防措施，提升鐵路安全。舉例而言，「鐵路基建設施車載巡查系統」利用三維點雲地圖構建技術和人工智能技術，搭載於正常運行的列車，偵測隧道內基礎設施的異常狀況；「預防電車脫軌及碰撞系統」則偵測電車路軌槽是否有異物。這些方案亦促使受規管者主動尋求更具成本效益的解決方案。我們樂見與香港鐵路有限公司(港鐵公司)共同開發的「鐵路基建設施車載巡查系統」、乘客安全提示系統和鐵路軌道障礙物偵測系統，在第48屆日內瓦國際發明展分別奪得一項銀獎和兩項銅獎。

我們的創科項目在國際和本地屢獲表彰。除了在第48屆日內瓦國際發明展中贏得23個獎項，在2022年公務員優質服務獎勵計劃中亦榮獲13個獎項，包括「創新及科技獎(持份者協作)」金獎，以及「創新及科技獎(科技應用)」銀獎。此外，我們推動並利用創新和知識管理，為持份者創造巨大價值，把企業知識轉化為優越服務和方案。我們因此獲頒2022年香港最具創新力知識型機構大獎和2022年全球最具創新力知識型機構大獎，有關獎項是對我們這方面成就的肯定。更令人鼓舞的是，新加坡對我們得獎的創新方案「司機隨身寶」深感興趣。這個方案目前在香港國際機場旅客捷運系統使用，分析並監察人手操控列車時前方軌道和司機的狀況。

此等佳績激勵我們精益求精，使創新的工作更上層樓。機電署與政府部門、業界、學術界和研究機構的持份者攜手合作，成立機電人工智能實驗室，推動在機電設施應用大數據和人工智能方面的研究和發展。在我們採用或向業界和客戶部門推廣的大部分創科方案中，人工智能均成效超卓。明顯的例子包括用於搜查本地電商平台有否出售不安全或不合規電氣產品的人工智能系統、智能架空纜車監測系統、人工智能優化火化流程系統(亦稱「智能火化」)、預測製冷機組製冷負荷的人工智能模型，以及為民航處總部製冷機組系統實施的人工智能能源優化方案。

誠如機電署75周年的主題「傳承創新　同心惠民」所言，我們致力向部門同事和業界傳授知識和經驗，秉持卓越的機電服務水平。全體同事積極參與署內署外的活動，包括第三屆「Inno@E&M創新科技挑戰賽」、「國際建築機電人工智能大挑戰」，以及由工程及科技學會香港分會青年會員部主辦的青年科技專才展覽及比賽2022，正是致力實踐這個目標。

SHOWING LEADERSHIP IN FOUR AREAS

As the Government's technical advisor, gate-keeper of E&M safety and energy efficiency as well as the E&M service provider of client departments, the EMSD remained at the forefront of supporting the Government's ongoing efforts in mitigating the impact of the COVID-19 epidemic and preparing the city for resumption of full normality during the year, while proactively adopting innovation and technology (I&T) to streamline workflow and improve E&M services, expediting Hong Kong's progress towards carbon neutrality, and expanding the Mainland and international collaborations to elevate E&M and energy efficiency standards.

Undertaking Anti-epidemic Efforts and Preparations for Resumption of Normality

The EMSD continued to devote commendable efforts to supporting anti-epidemic works, especially in areas where our technical expertise was most useful, such as ensuring good ventilation. Our teams conducted ventilation assessment for more than 700 residential care homes for the elderly and persons with disabilities and 65 government schools to ensure compliance with relevant requirements. We also made recommendations for improvement and even carried out ventilation enhancement works for schools where necessary.

Pioneering I&T Development

The EMSD plays a central role in spearheading I&T initiatives that bring significant benefits to our internal operations, client departments, regulatees and the E&M trade, and ultimately benefit the general public in various ways. For example, we introduced the Digital Log-books System for Lifts and Escalators (Digital Log-books) in November 2022 to streamline the tripartite monitoring of the "health record" of each individual lift/escalator throughout its service life by our Regulatory Services, the lift/escalator contractors and responsible persons. The EMSTF has fully adopted the Digital Log-books for all the lifts and escalators it maintains, earning a competitive edge when providing lift/escalator services to client departments. As at September 2023, among nearly 80 000 lifts and escalators across the territory, 20 000 have switched from paper-bound log-books to the Digital Log-books, reflecting that the innovative solution is well received by stakeholders. Another new initiative we undertook was the Internet of Thing-based Car Park Availability System trialled at our headquarters car park. It used big data to analyse the dynamic occupancy rate of the car park, allowing us to issue more parking permits according to the usage condition without overloading the car park. Upon successful trials at our premises, the system was subsequently introduced to client departments, such as the Hong Kong Police Force and the Leisure and Cultural Services Department.

The Regulatory Services has been taking the lead in developing I&T in order to encourage regulatees to adopt our I&T solutions or develop suitable solutions on their own. Results were particularly notable in improving railway safety. A number of award-winning I&T solutions such as the Train-borne Railway Infrastructure Inspection System that uses 3D point cloud mapping and artificial intelligence (AI) technologies to track anomalies in tunnel infrastructure by normal operating trains, and the Tramway Derailment and Collision Prevention System that detects foreign objects in the rail groove, help our regulatees strengthen preventative measures to enhance railway safety. They also prompted our regulatees to proactively seek more cost-effective solutions. We are very pleased to see that our collaborated projects with the MTR Corporation Limited (MTRCL), namely the Train-borne Railway Infrastructure Inspection System, Passenger Misbehaviour Detection System and Rail Track Collision Object Detection System won one silver and two bronze awards at the 48th International Exhibition of Inventions of Geneva.

Our I&T projects have garnered numerous international and local commendations. We bagged 23 awards at the 48th International Exhibition of Inventions of Geneva and won 13 awards in the Civil Service Outstanding Service Award Scheme 2022, including the Gold Prize in Innovation and Technology Awards (Best Stakeholder Collaboration) and the Silver Prize in Innovation and Technology Awards (Best Use of Technology). Furthermore, we promoted and leveraged innovation and knowledge management to create great value for stakeholders, transforming enterprise knowledge into superior services and solutions. We were therefore awarded the Hong Kong Most Innovative Knowledge Enterprise Award 2022 and the Global Most Innovative Knowledge Enterprise Award 2022, which recognised our achievements in this area. More encouragingly, Singapore has showed interest in our award-winning innovation, the Smart Driver Assistant, currently being used at the Automated People Mover of the Hong Kong International Airport to analyse and monitor the condition of the track ahead and the drivers manually driving a train.

These achievements have motivated us to strive for excellence and take innovation to the next level. The EMSD has established the E&M AI Lab in collaboration with stakeholders from government departments, the trade, academia and research institutes to foster research and development in the application of big data and AI for E&M facilities. AI has proved very effective in most of the I&T solutions we have adopted or promoted to the trade and client departments. Notable examples include the AI system for searching e-commerce sites in Hong Kong for unsafe or non-compliant electrical products, the Artificial Intelligent Monitoring System for Aerial Ropeways, the AI based Image Analytic and Control System for Cremation Process (also known as "i-Cremation"), the AI models for predicting the required cooling load of chiller plants, and the AI Energy Optimisation Solution for the chiller plant system of the Civil Aviation Department Headquarters.

Echoing the theme of our 75th anniversary, "Serving the Community with Heart and Innovation", we are dedicated to passing on our knowledge and experience to colleagues and the trade to uphold E&M excellence. Our active department-wide participation in internal and external events, including the 3rd Inno@E&M Challenge, the Global AI Challenge for Building E&M Facilities and the Young Professionals Exhibition and Competition 2022 organised by the Younger Members Section of the Institution of Engineering and Technology Hong Kong, demonstrated our commitment to achieving this goal.

署長的話
MESSAGE FROM THE DIRECTOR

推動碳中和

《香港氣候行動藍圖2050》確立了減碳的具體範疇，包括淨零發電、節能綠建、綠色運輸和全民減廢。機電署一直在這四個範疇作出積極貢獻。

在淨零發電方面，我們就兩家電力公司合作發展的本港首座海上液化天然氣接收站(海上接收站)，加快審批站內各項氣體裝置，以便海上接收站如期於2023年年中投入運作，使本港的能源供應更多元化、更可靠、更潔淨。同時，我們持續開發創新方案，例如得獎的「可再生能源探索者」。該項目可計算在物業安裝太陽能發電系統的最佳投資回報，從而鼓勵公私營機構安裝有關系統。

在節能綠建方面，《建築物能源效益條例》自2012年實施至今已經十個年頭，我們已開展修訂該條例的準備工作，以期提高能源效益標準，並擴大條例的適用範圍至更廣泛類別的建築物。規管工作往往困難重重，但是我們會堅持不懈，回應公眾對環保措施的期望和支持。鑑於社會已建立較高的環保意識，我深信《建築物能源效益條例》的修訂工作將會獲得立法支持。此外，我們致力運用人工智能優化空調系統和重新校驗建築物，以提高能源效益。未來，我們會在能源管理和預測性維修方面，擴展人工智能和大數據分析的應用。

另外，隨着「強制性能源效益標籤計劃」(強制性標籤計劃)第四階段刊憲，並將於2024年12月全面實施，我們預計家用器具的節能效益會顯著提升。強制性標籤計劃四個階段訂明指定家用器具的能源效益標準，所涵蓋的家用器具共佔住宅總能源消耗量約八成。儘管強制性標籤計劃的涵蓋範圍日益擴大，我們未有就此停步，並已開展第三次提升強制性標籤計劃下能源效益評級標準的工作，持續提高訂明家用器具的能源效益標準。

在綠色運輸方面，我們支援政府於2023年年底至2024年年初引入氫能重型車輛的計劃。為此，我們加入了跨部門工作小組，就推動氫能運輸在香港的應用協助進行龐大的籌備工作，並在技術方面擔當主導角色。籌備工作正密鑼緊鼓進行。與此同時，機電署參與了跨部門歐洲考察，了解當地相對成熟的氫能技術，以及相關限制、安全考慮、風險及其他因素。海外專家在法例要求和風險管控方面的意見，為我們提供了寶貴的參考。為配合政府有關計劃，我們亦正協助食物環境衞生署採購氫能洗街車，預計在明年年中交付。

在全民減廢方面，我們繼續在氣體安全規管方面支援有機資源回收中心把廚餘轉化為生物氣以作發電之用。另外，為支持減廢，我們持續提倡無紙化工作流程，以及推廣使用「顧客為本電子平台」以便記錄維修事宜和追蹤個案。

拓展與內地及國際間的合作

機電署一直積極推動大灣區內外的跨境合作，特別是我們現正準備全面復常。我很高興看到隨着香港與內地恢復通關，我們與大灣區伙伴的會面交流迅速恢復。2023年，我們舉辦逾50項大灣區活動，即平均每周便有一項活動，而我們與大灣區伙伴的合作在五個範疇尤其穩固。

第一個範疇是能源改革。鑑於內地的氫能技術較為成熟，年內機電署派員先後到北京和廣州考察，並參觀了佛山的氫能示範項目。我們亦正探討與內地合作，運用高端技術，以安全的物流和配送方式從內地輸入零碳燃料，以達到淨零發電的目標。香港缺乏土地資源興建大規模潔淨能源設施，因此，我認為零碳燃料輸港是大灣區的一個重點合作領域。

第二個範疇是建立互相適用和認可的技術標準。2023年4月，廣東省、香港和澳門三地政府簽訂關於共同促進大灣區標準(「灣區標準」)發展的合作備忘錄，並公布「灣區標準」清單。「灣區標準」清單涵蓋110個項目，包括《在用電梯風險評價規範—曳引驅動電梯》。機電署歡迎三地加強有關方面的合作，在大灣區內建立共同標準，促進機電從業員、物流和作業方式的無縫流動和轉移。我個人亦期盼建立一套適用於機電設施營運數據的大灣區標準，以便更容易跨境轉移人工智能技術。

另一個重要範疇是創科合作。我們在年內舉辦了多項活動和會議。舉例而言，我們舉辦粵港澳青年科創考察交流活動，為參加者提供平台，就嶄新的材料技術與科技政策交流意見；並在2022年11月舉行「綠色創科日」，匯聚來自創新科技、機電業、大學、公營機構等

Driving Carbon Neutrality

Hong Kong's Climate Action Plan 2050 has identified specific areas regarding decarbonisation, including net-zero electricity generation, energy saving and green buildings, green transport and waste reduction. The EMSD has been actively contributing to all four areas.

In the area of net-zero electricity generation, we accelerated the approval of various gas installations at Hong Kong's first offshore liquefied natural gas (LNG) terminal jointly developed by the two power companies, so that the offshore LNG terminal could be fully commissioned on schedule in mid-2023, ensuring a more diversified, more reliable and cleaner energy supply for Hong Kong. Meanwhile, we continued to develop innovative solutions, such as the award-winning Integrated Self-sustained renewable-Energy Explorer, which motivates public and private organisations to install solar energy generation systems at their premises by calculating the optimal return on investment for the installation.

Regarding energy saving and green buildings, as it has been ten years since the Buildings Energy Efficiency Ordinance (BEEO) was enacted in 2012, we have commenced the preparatory work for its legislative amendments, with a view to raising the energy efficiency standards and extending the scope of application of the BEEO to a wider range of buildings. Regulation work often entails difficulties; nevertheless, we will persevere in responding to public expectations and support for green initiatives. Building on the community consensus that environmental protection is a matter of great urgency, I am confident that the amendments to the BEEO will win legislative support. Moreover, we have been putting efforts in optimising air-conditioning systems and retro-commissioning (RCx) buildings by using AI to achieve higher energy efficiency. In the future, we will expand the application of AI and big data analysis for energy management and predictive maintenance.

In addition, with the fourth phase of the Mandatory Energy Efficiency Labelling Scheme (MEELS) being gazetted for full implementation by December 2024, we anticipated that a significant energy saving from household appliances will be achieved. The four phases of MEELS set out the energy efficiency standards for prescribed household appliances, which together account for about 80% of total residential energy consumption. Not complacent about the expanding coverage of the MEELS, we have also launched the third upgrading exercise for the energy efficiency grading standards under the MEELS to continuously uplift the energy efficiency standards of prescribed household appliances.

On green transport, we support the Government's plan of introducing hydrogen-powered heavy vehicles in Hong Kong by late 2023 and early 2024. To this end, we have joined an inter-departmental working group to assist in the extensive preparatory work for promoting the use of hydrogen-fuelled transportation in Hong Kong, performing a leading role in the technical aspect. While the preparatory work was in full swing, the EMSD participated in an inter-departmental visit to Europe to learn about the relatively mature hydrogen technologies there, as well as the associated constraints, safety considerations, risks and other issues. The opinions of overseas experts on legislative requirements and risk control have been a valuable reference for us. To tie in with the Government's plan, we are also assisting the Food and Environmental Hygiene Department in sourcing hydrogen-powered street washing vehicles, which are expected to be delivered in the middle of next year.

In terms of waste management, we continued to assist the Organic Resources Recovery Centres in converting food waste into biogas for electricity generation from the aspect of gas safety regulation. In addition, to support waste reduction, we have been advocating paperless workflow and the use of the Customer-Centric e-Platform to facilitate maintenance recording and case tracing.

Expanding Mainland and International Collaboration

The EMSD has been promoting cross-border collaboration within and beyond the Greater Bay Area (GBA), especially as we prepared for the full resumption of normality. I am delighted to see that in-person exchanges with our GBA counterparts resumed quickly following the resumption of cross-border travel. In 2023, our calendar is filled with more than 50 GBA activities, averaging nearly one activity per week, and our collaboration with our GBA counterparts has been particularly strong in five areas.

The first area is energy transformation. In view of the relatively mature hydrogen energy technologies in the Mainland, during the year, the EMSD dispatched staff to make visits to Beijing and Guangzhou, as well as a hydrogen energy demonstration project in Foshan. We are also looking into collaborating with the Mainland regarding the use of advanced technologies to import zero-carbon fuels from the Mainland by safe logistic and distribution means, with a view to achieving net-zero electricity generation. As Hong Kong lacks the land resources for large-scale development of clean energy facilities, I perceive the import of zero-carbon fuels into Hong Kong as a major area of collaboration within the GBA.

The second area is the formulation of mutually applicable and recognised technical standards. In April 2023, the governments of Guangdong Province, Hong Kong and Macao signed a Memorandum of Understanding on jointly promoting the development of the standards in the GBA (GBA Standards), and announced a list of GBA Standards, which covered a total of 110 items, including the "Specifications for Risk Assessment of Traction Lifts". The EMSD welcomes the three cities strengthening ties in this regard and establishing common standards within the GBA, which would facilitate the seamless flow and transfer of practitioners, logistics and practices in the E&M field. Personally, I am also excited about the prospect of establishing a set of GBA standards for the operating data of E&M facilities, which would enable greater transferability of AI technologies across the border.

Another significant area is I&T collaboration. We have organised various events and conferences during the year. For instance, we organised the Guangdong-Hong Kong-Macao Youth Innovation and Technology Exchange, providing a platform for participants to exchange views on new materials technologies and science and technology policies. We also held the Green I&T Day in November 2022, bringing together experts from various sectors

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界別的專家探討綠色轉型等議題。在引進機電創科應用方案方面，我們的創科合作亦取得成果，例如我們促成香港電燈有限公司使用無人機，偵測連接廣東大鵬液化天然氣接收站和香港的海底天然氣管道的潛在漏氣情況，以及推出用於檢測石油氣缸車氣缸的智能機械人等。

including I&T, the E&M trade, universities and public organisations to explore issues such as green transformation. In terms of introducing I&T solutions for E&M application, our I&T collaborations are also bearing fruit, such as facilitating the use of a drone by the Hongkong Electric Company Limited for detecting potential leakage in the subsea LPG pipeline connecting the Guangdong Dapeng LNG Terminal and Hong Kong, and introducing the intelligent robot for inspecting the tanks of LPG road tankers, just to name a few.

在技術培訓方面，與內地合作令我們獲益良多。我們的見習技術員和資深技術員透過內地技術培訓計劃，獲得寶貴的實務培訓。我們與大灣區的聯合訓練更成果甚豐，本署人員在兩年一度的世界技能大賽上取得驕人成績。該大賽評核參賽者的機電專業技能與知識，獲譽為「技能界奧林匹克」。機電署兩名技術員在大賽中與來自20多個國家及地區的菁英選手競技，其中一名人員獲得總成績第五名，並奪得「空調製冷」項目優異獎章，代表香港參賽的技術員更獲機會參與內地的高階培訓，與內地頂尖選手一同集訓。這些選手都是各自領域的表表者，我們的代表得益匪淺。我們會繼續為技術員和見習技術員提供寶貴的跨境技術培訓機會，例如電動車維修培訓。由於內地培訓機構掌握專有技術及擁有最新型號的電動車作培訓電動車技工之用，因此我們的技術員和見習技術員均能從中深化學習。

Technical training is an area where we have benefitted tremendously from collaboration with the Mainland. Our trainees and experienced technical staff have obtained valuable practical training through the Mainland technical training programmes. Notably, our joint training with the GBA has borne prominent results in the biennial WorldSkills Competition, hailed as the "Skills Olympics", where participants' professional E&M skills and knowledge are evaluated. In the competition, two EMSD technicians competed against a strong field of contestants from more than 20 countries and regions, and one of them achieved the fifth overall and won a Medallion for Excellence in the Refrigeration and Air-conditioning trade. Technicians representing Hong Kong joined and reaped huge benefits from high-level training in the Mainland alongside top-calibre Mainland contestants who were the strongest candidates in their respective fields. We will continue to provide technicians and trainees with valuable technical training opportunities across the border, such as training in the area of electric vehicle (EV) maintenance. They will benefit greatly as mainland training institutes are equipped with necessary technical expertise and the latest EV models to gear up EV mechanics.

第五個與內地及大灣區合作的範疇是機電安全。我們與國家海關總署在今年續簽已生效20年的《機電產品安全及能源效益合作安排》，延續兩地在機電安全和促進碳中和的合作。我們亦準備與內地不同機構簽署合作備忘錄，互相認可兩地的能源效益標籤計劃以及產品安全標準。

The fifth area of our Mainland and GBA collaboration is E&M safety. In the year, we renewed the Cooperation Arrangement on Electrical and Mechanical Products Safety and Energy Efficiency, which had been in place for 20 years, with the General Administration of Customs of the People's Republic of China to continue the collaboration on E&M safety and promotion of carbon neutrality between Hong Kong and the Mainland. We are also preparing to sign memoranda of co-operation with our Mainland counterparts for mutual recognition of the energy efficiency labelling schemes and product safety standards of Hong Kong and the Mainland.

我們同時繼續活躍於國際活動，在亞太區經濟合作組織能源工作組持續擔任領導工作，並正尋求參與更多制訂標準的組織，例如參與有關人工智能的會議，透過知識交流了解最新的人工智能技術發展趨勢。我們決心引領機電行業和業界的發展，利用人工智能應用，促進智能操作、節能、預測性維修和其他關鍵的機電功能。

Our international engagement has also remained active. We continued to take on leadership roles in the Energy Working Group of the Asia-Pacific Economic Cooperation, and are seeking to participate in more standard-setting organisations such as AI-related conventions to stay updated on the latest trends in AI technology through knowledge exchanges. We are determined to lead the industry and the E&M trade in leveraging AI applications to facilitate smart operation, energy saving, predictive maintenance and other critical E&M functions.

人才發展

隨着規管服務和營運服務的範圍不斷拓展，我們深切體會到要為機電行業不斷吸納年輕人才。其中一個有效的方法是從小培養孩子對機電工程的興趣。我們從幼稚園做起，在學校進行推廣工作，務求加深學生的機電安全意識，並培養他們對機電科目的興趣。此外，機電青少年大使計劃卓有成效，讓我們與熱衷於機電課題的青年建立緊密的聯繫網絡。

TALENT DEVELOPMENT

As the jurisdiction of Regulatory Services and the scope of Trading Services continue to expand, we are keenly aware of the ongoing need to attract young talent to the E&M field. One effective way is to nurture children's interest in E&M engineering from a young age. Our promotional work in schools, starting from kindergartens, aims to not only deepen students' E&M safety awareness but also cultivate their interest in E&M subjects. Besides, the E&M Young Ambassador Programme has proved its effectiveness in establishing a tight-knit network with young people who are interested in the E&M field.

我相信展示機電行業的現代化形象，以及強調創科是機電工作不可或缺的元素，對於吸納年輕新血至關重要。再者，標榜從事機電行業晉升前景優越、工作長遠安穩，而且收入穩定，亦可提升行業的吸引力，令更多年輕人考慮入行。我們已邁出了重要一步，把各個機電類別的技術員訓練期縮短一年，而第一批接受較短訓練期的學員將於2023年畢業。事實上，他們已證明其能力水平與過往學員相若。

I believe the key to drawing in young blood is to project a modern image for the E&M trade, with a strong emphasis on I&T being integral to E&M work. Moreover, highlighting the fact that the E&M trade offers progression opportunities and stable employment with assured regular income over the long term will add to its appeal as a career choice. We have taken a vital step by shortening technician training by a year across various E&M streams, and trainees in the first cohort undergoing the shorter apprenticeship are set to graduate in 2023. They have in fact demonstrated their ability to achieve a similar standard as previous cohorts.

我們亦在機電培訓中融入更豐富多元的創科元素，例如虛擬實境、洞穴式自動虛擬環境系統、「建築信息模擬 — 資產管理」系統、數碼系統，以及為世界技能大賽而設的高階培訓元素，讓機電業更能吸引精通科技的新一代。

We have also incorporated richer I&T elements into E&M training, such as virtual reality, the Cave Automatic Virtual Environment system, the Building Information Modelling – Asset Management system, digital systems, and elements of our high-level training for the WorldSkills Competition, to make E&M more appealing to the tech-savvy generation.

2023/24年度發展方向

展望來年，機電署會繼續致力促進碳中和、數碼化、與大灣區及海外的合作，以及就營運基金而言，提升服務競爭力。

DIRECTIONS FOR 2023/24

In the year ahead, the EMSD will continue its commitment to carbon neutrality, digitalisation, GBA and international collaboration and, in the case of the EMSTF, service competitiveness.

我們會繼續在四個減碳重點範疇的工作，通過提供技術指引、裝修和重新校驗指引，以及營運基金同事也參與進行的能源審核等，支持政府於2050年前達到碳中和的目標。營運基金也會為客戶部門安裝創新節能裝置、運用人工智能工具促進節能減碳，以及進行能源審核，以爭取實現有關目標。

We will continue to play a role in the four main areas for decarbonisation to support the Government's goal of achieving carbon neutrality by 2050, by providing technical guidelines, retrofitting and RCx guidelines, as well as energy audits, which are also conducted by the EMSTF staff. The EMSTF will strive for the same goal by implementing energy-efficient and innovative installations, using AI tools for energy saving and carbon emission reduction, and conducting energy audits for client departments.

此外，我們會在行之有效的重新校驗計劃之外，與本地和大灣區的協會合作推行能源改造計劃。對於樓齡較新的建築物，進行重新校驗已然足夠；對於樓齡超過20年的建築物，進行能源改造則節能效果更為理想。《建築物能源效益守則》自2012年實施以來，每三年更新一次，現時已把節能表現提升了逾23%。換句話說，在2012年落成並符合該守則規定的建築物，如經不斷改良能源裝置而達到最新的

Meanwhile, we will work with associations in Hong Kong and the GBA on an energy retrofit scheme, another measure that follows our established, highly effective RCx scheme. While RCx suffices for newer buildings, energy retrofits can bring greater energy saving for buildings aged over 20 years. The Building Energy Code (BEC), updated once every three years, has increased energy saving by more than 23% since its introduction in 2012. This means a BEC-compliant building completed in 2012, which has since had all its energy installations retrofitted and complied with the standards stipulated in the latest 2021 edition of the BEC, can save 23% of energy. In fact, the older

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2021年版守則的標準，可節省能源達23%。事實上，建築物的樓齡越高，其節能空間亦越大。一些上世紀七十和八十年代落成的商用樓宇經過大規模裝修後，甚至可節能達四至五成。我們希望仍在醞釀階段的能源改造計劃，在正式推行後會實現更大幅度的節能效果。

the building, the more energy-saving capacity it presents. Some commercial buildings completed in the 1970s and 1980s could even achieve energy savings of up to 40% to 50% after a major retrofit. We hope the energy retrofit scheme being mooted will bring about further significant energy saving upon its official launch.

機電署會上下一心持續在各工作範疇推進創科應用。「數碼化」是規管服務和營運基金第三個五年策略計劃的共同工作重點，我們的目標是便利客戶、改善員工的專業技能和效率，以及提升內部工作流程的效能。

Collectively, we will continue to drive I&T application in all areas of our work. With digitalisation being the common theme for the work goals of Regulatory Services and our third Five-year Strategic Plan of the EMSTF, we aim to enhance convenience for clients, and improve the skills and efficiency of our staff as well as effectiveness of our internal workflow.

為進一步推動人工智能應用，我們正與廣東省建築科學研究院集團股份有限公司和廣東省建設科技與標準化協會合作，制訂一套機電業的人工智能數據標準，作為不同人工智能項目的「共同語言」。這有助在不同系統和平台間轉移和應用人工智能，為機電業的人工智能應用帶來革命性轉變。

To advance AI application, we are working with the Guangdong Provincial Academy of Building Research Group Company Limited and the Guangdong Province Construction Technology and Standardisation Association to develop a set of data standards for AI in the E&M industry, which will serve as a "common language" for different AI programmes. This will allow greater portability and applicability of AI across systems and platforms, thereby leading to game-changing outcomes for AI applications in the E&M industry.

我們亦會加強與大灣區、區域及國際伙伴的合作，進一步推動數碼化進程。我們的共同目標是利用數碼化和人工智能，為客戶部門、公眾、受規管者、機電業界以及我們的執法工作和內部營運帶來更佳的成果。例如，我們期望利用數碼工作日誌中的數據，提升升降機和自動梯的安全。

We will also strengthen collaboration with our GBA, regional and international counterparts to further drive our digitalisation progress. Our shared goal is to leverage digitalisation and AI to deliver improved outcomes for client departments, the public, the regulatees, the E&M trade, our law enforcement work and our internal operations. For example, we anticipate utilising data from the Digital Log-books to improve lift and escalator safety.

在營運基金的服務競爭力方面，我們會向客戶提供優質高效的服務，以及增值服務，務求進一步提升客戶滿意指數與競爭力指數。在規管服務方面，我們會繼續監督受規管者，以保障機電安全，並盡量減少引起公眾關注和不便的事故。我們也會盡量採用創科解決方案，以加強工作成效。

In terms of service competitiveness of the EMSTF, we will strive for further improvement in satisfaction and competitiveness indicators by delivering quality and efficient services and providing value-added services to our clients. For Regulatory Services, we will continue to monitor regulatees to uphold E&M safety and minimise incidents that cause public concern and inconvenience. Wherever applicable, I&T solutions will be introduced to augment our work.

總的來說，我們絕不止於達標，而會堅持追求優良作業指引所載列的高標準。

Ultimately, not complacent about merely meeting minimum requirements, we hold ourselves to the high standards as laid out in our Best Practices guides.

深摯謝忱

DEEP APPRECIATION AND GRATITUDE

隨着香港走出第五波疫情並邁向全面復常，我們很高興能夠在機電領域，為保障社會福祉盡一分力。我們由衷感謝各決策局和政府部門大力支持我們的規管工作，以及營運基金客戶一直以來投以信任，並與我們保持緊密合作；亦對全體同事悉力提供卓越服務致以誠摯的感謝。

As Hong Kong emerged from the impact of the fifth wave of the epidemic and was returning to full normality, we are pleased to have played a role in protecting the well-being of the community from the E&M perspective. We sincerely thank the policy bureaux and government departments for their support in our regulatory work, and our EMSTF clients for their ongoing trust and strong partnership. Our heartfelt gratitude also goes to all our colleagues for their commitment and excellent service.

對於各商會和業界伙伴、專業團體、學術界、培訓和研究機構、非政府組織，以及內地和海外合作伙伴歷來鼎力支持和襄助，我們謹致謝忱。此外，我們的不斷進步，亦有賴公眾、傳媒、立法會議員和其他意見領袖不吝指正和反饋，在此向各位致以萬分感謝。

We deeply appreciate the unfailing support and collaboration of the trade associations and partners, professional bodies, academics, training and research institutions, non-governmental organisations, as well as our Mainland and overseas partners. Moreover, our continuous progress would not have been possible without the vigilance and feedback from the public, the media, members of the Legislative Council, and other opinion leaders. We owe all of them a big thank you.

機電署會努力把握每一個新機遇。承蒙大家繼續支持，我們有信心來年再創佳績。

The EMSD will work hard to make the most of every new opportunity that lies ahead. With your continued support, we are confident that we will have another fruitful year.

彭耀雄

機電工程署署長
機電工程營運基金總經理

Pang Yiu-hung

Director of Electrical and Mechanical Services
General Manager, Electrical and Mechanical Services Trading Fund

我們的管理層
OUR MANAGEMENT

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彭耀雄太平紳士
Mr Pang Yiu-hung, JP
機電工程署署長
Director of Electrical and Mechanical Services

02 潘國英太平紳士
Mr Poon Kwok-ying, Raymond, JP
副署長 / 規管服務
Deputy Director/Regulatory Services

03 陳志偉太平紳士
Mr Chan Chi-wai, Richard, JP
副署長 / 營運服務
Deputy Director/Trading Services

04 陳秋發太平紳士
Mr Chan Chau-fat, JP
助理署長 / 鐵路
Assistant Director/Railways

05 朱祺明先生
Mr Chu Kei-ming, Barry
助理署長 / 電力及能源效益
Assistant Director/Electricity and Energy Efficiency

06 周厚強先生
Mr Chow Hau-keung, Vincent
助理署長 / 氣體及一般法例
Assistant Director/Gas and General Legislation

07 陳嘉聰先生
Mr Chan Ka-chung
助理署長 /1
Assistant Director/1

08 楊秀權先生
Mr Yeung Sau-kuen, Sammy
助理署長 /2
Assistant Director/2

09 李學賢先生
Mr Lee Hok-yin, Arthur
助理署長 /3
Assistant Director/3

10 李慧儀女士
Ms Lee Wai-yee, Cindy
總庫務會計師 / 財政管理
Chief Treasury Accountant/ Financial Management

11 朱雅琦女士
Ms Chu Nga-ki
高級庫務會計師 / 會計服務
Senior Treasury Accountant/ Financial Services

12 劉志偉先生
Mr Lau Chi-wai, Wilfred
員工關係主任
Staff Relations Officer

13 韋美珠女士
Ms Wai Mei-chu, Jenny
主任秘書
Departmental Secretary

14 王瑩瑩女士
Ms Wong Ying-ying, Regina
高級機電工程師 / 技術服務
Senior Engineer/Technical Services

* 張遠芳太平紳士出任機電工程署副署長 / 營運服務至2022年11月27日
  Mr Cheung Yuen-fong, JP was Deputy Director/Trading Services, EMSD up to 27 November 2022
* 黃偉光先生出任機電工程署助理署長 /2至2022年10月31日
  Mr Wong Wai-kwong was Assistant Director/2, EMSD up to 31 October 2022
* 馮子峯先生出任機電工程署助理署長 /2至2023年4月16日
  Mr Fung Chi-fung was Assistant Director/2, EMSD up to 16 April 2023
* 陳志偉太平紳士出任機電工程署助理署長 /3至2022年11月27日
  Mr Chan Chi-wai, Richard, JP was Assistant Director/3, EMSD up to 27 November 2022
* 朱雲楓先生出任管理委員會秘書至2022年11月27日
  Mr Chu Wan-fung, Ryan was the Secretary of Management Board up to 27 November 2022

規管服務業務概覽
REGULATORY SERVICES ACHIEVEMENTS OVERVIEW

抱負 VISION

促使香港在機電安全及善用能源方面，達到國際首要都會級水平。

To make Hong Kong a top-ranking world city in the electrical and mechanical (E&M) safety and efficient use of energy.

使命 MISSION

充分發揮專業及創新精神，致力確保機電及能源科技以安全、可靠、經濟及環保的方式得以善用，藉此促進社會安全及提升生活質素。

To enhance the safety and quality of life of our community through our professionalism and innovation to ensure that E&M and energy technologies are harnessed in a safe, reliable, economical and environment-friendly manner.

信念 VALUE

專業才能 Expertise

誠信 Integrity

可靠 Reliability

承擔 Commitment

靈活創新 Innovation

先治為本　以防萬變

Enduring Changes by Proactiveness

高層管理人員
SENIOR MANAGEMENT

01 彭耀雄太平紳士
Mr Pang Yiu-hung, JP
機電工程署署長
Director of Electrical and Mechanical Services

02 潘國英太平紳士
Mr Poon Kwok-ying, Raymond, JP
副署長 / 規管服務
Deputy Director/Regulatory Services

03 陳秋發太平紳士
Mr Chan Chau-fat, JP
助理署長 / 鐵路
Assistant Director/Railways

04 朱祺明先生
Mr Chu Kei-ming, Barry
助理署長 / 電力及能源效益
Assistant Director/Electricity and Energy Efficiency

05 周厚強先生
Mr Chow Hau-keung, Vincent
助理署長 / 氣體及一般法例
Assistant Director/Gas and General Legislation

06 朱雅琦女士
Ms Chu Nga-ki
高級庫務會計師 / 會計服務
Senior Treasury Accountant/Financial Services

07 韋美珠女士
Ms Wai Mei-chu, Jenny
主任秘書
Departmental Secretary

服務回顧
OPERATIONS REVIEW

潘國英太平紳士
Mr Poon Kwok-ying, Raymond, JP
副署長/ 規管服務
Deputy Director/ Regulatory Services

規管服務多年來一直秉持傳承創新、同心惠民的精神，以專業和熱誠，致力打造香港成為零事故城市。2022/23年度取得的佳績，不僅反映了我們堅持追求機電安全及能源效益的突破，也展示我們竭誠盡心，力求實現「零意外」的目標。

儘管2019冠狀病毒病疫情肆虐，我們仍然齊心抗疫，服務社羣。為應對疫情及其影響，我們於年內全力支援香港特別行政區政府的抗疫措施，協助政府盡快全面恢復正常服務與運作。透過與多個部門及界別合作，我們在短短三個月內為逾700間安老及殘疾人士院舍完成通風評估。此外，我們更因應政府場所有限度開放，在疫情期間迅速提升電子化服務，為業界和公眾提供方便的非接觸式服務，惠澤社群。

Over the years, the Regulatory Services has been deeply committed to serving the community with heart and innovation, aiming to create an incident-free city with our expertise and passion. The remarkable achievements we made in the year 2022/23 not only prove our persistence in pursuing breakthroughs in electrical and mechanical (E&M) safety and energy efficiency, but also demonstrate our dedication to achieving the goal of "zero accidents".

Despite the raging Coronavirus Disease 2019 (COVID-19) epidemic, we stayed united in serving the community and assisting in the anti-epidemic efforts. During the year, to fight the epidemic and its adverse impacts, we actively supported the anti-epidemic measures implemented by the Hong Kong Special Administrative Region Government, to aid the Government in swiftly resuming normal services and operations. We collaborated with various departments and sectors to complete ventilation assessment for more than 700 residential care homes for the elderly and persons with disabilities within three months. Considering that COVID-19 had restricted access to government premises, we rapidly enhanced our e-services to provide the trade and public with convenient contactless solutions.

以「治未病」力求達致「零意外」

要實現城市「零意外」，必須從預防入手，在公眾未注意的領域潤物細無聲，貫徹「治未病」策略。

為了保障香港的機電安全，我們必須提高警覺，實施預防措施，以減低潛在風險，防止事故發生，以「先天下之憂而憂」的精神落實多項工作。以氣體安全為例，我們已完成氣體立管健康狀況的全面分析，找出影響氣體立管狀況的潛在因素。完成分析後，我們更建立預測模型，按氣體立管的風險水平進行排序，制定全港建築物氣體立管的預防性維修策略。

STRIVING FOR "ZERO ACCIDENTS" BY PREVENTION

Prevention is one of the most effective means of achieving the ultimate goal of fostering an incident-free city. The fact that much of our work goes unnoticed as we implement the strategy of prevention.

In order to safeguard E&M safety in the city, we have to enhance our risk sensitivity and take preventive measures to minimise potential risks and pre-empt any incident. With a strong belief in prevention, we always plan and worry ahead of the people and have implemented a range of initiatives. For instance, to enhance gas safety, we completed a comprehensive health analysis of aboveground gas pipes to identify the underlying factors that might affect their health condition, and developed a predictive model for sorting the gas pipes by risk level and formulating preventive maintenance strategy for gas pipes in buildings territory-wide.

此外，縱使本港未曾在村屋發生涉及石油氣瓶的事故，為了避免村屋住戶儲存過量備用石油氣瓶的潛在風險，我們着手向發展商及村屋石油氣用戶推廣中央石油氣供應系統。另外，我們至今已為超過600家食肆的氣體裝置進行快速檢查，並計劃進一步擴展至更多使用瓶裝石油氣燃料的食肆和洗衣店。

We also promoted centralised LPG supply systems to developers and LPG users living in village houses to eliminate the potential risk arising from excessive storage of reserve cylinders of village house households, despite the absence of any recorded incidents involving LPG cylinders at village houses. Furthermore, based on the positive outcomes of the quick checks conducted for the gas installations of more than 600 restaurants thus far, we extended the service to more restaurants and also to laundry shops that use clothes dryers fuelled by LPG cylinders.

我們積極主動的態度亦體現在多項基礎設施項目中，包括山頂纜車優化工程及東鐵線過海段通車等。山頂纜車不僅是連接中環和太平山的交通工具，更是屹立香江逾百年的歷史古蹟。今次優化工程將纜車系統進行了全面更新，包括更換電力、控制和信號系統、電纜、軌道，以及翻新中環及山頂車站，當中引進不少先進系統，例如大型變頻摩打控制設備、拖纜運作監察系統等。我們在過程中密切監督更換情況，進行各項行車安全法定檢查，確認系統達到所有「安全妥善」的要求。為監測纜索健康狀況，我們亦正進行全球首個應用於山頂纜車的人工智能影像處理及/或磁力檢測纜索的實時監察系統的試點項目。

Our proactive approach is demonstrated through various infrastructure projects, including the upgrading of the Peak Tram and the opening of the Cross-Harbour Extension of the East Rail Line. The Peak Tram is a historical landmark in Hong Kong. This upgrading project is a comprehensive upgrade of the Peak Tram, including the replacement of power system, control and signalling systems, cables, tracks, and the refurbishment of central and peak stations. Some advanced systems such as large-scale variable frequency motor control equipment, haulage operation monitoring system, etc. were also introduced. During the process, we closely monitored the replacement status and conducted various statutory safety inspections, so as to ensure that all "safe-and-sound" requirements were met. To monitor the health condition of cables, we were conducting the world's first pilot trial project at the Peak Tram for real-time monitoring of the hauling ropes by using artificial intelligence Visual-Magnetic Combined inspection technology.

作為香港機電安全的把關者，我們要確保機電行業持份者切實執行所有安全作業的指引，剔除所有潛在風險。我們採取的「治未病」策略成效理想，我們一些優良作業更獲同業用作參考，而本港整體機電事故的數字亦大致持續下降。

As the gatekeeper of E&M safety for the city, we take responsibility for ensuring that all recommendations for safer practices are duly implemented by E&M stakeholders, zeroing in on potential weak links. Our achievements, stemming from our adoption of prevention strategy, are encouraging. Some of our pioneering best practices are now referenced by our counterparts. Overall E&M incident rates in the territory have generally been kept on a downward trend.

我們會繼續堅定不移地向「零意外」的目標進發，並透過員工獎勵計劃鼓勵同事提出各種創新方案，深化「治未病」文化，令「預防勝於治療」的觀念更根深蒂固。

We are unwavering in pursuing our goal of "zero accidents". By rallying the entire department to come up with innovative proposals for extending the culture of prevention through our Staff Motivation Scheme, the concept of "prevention is always better than cure" will be deeply ingrained in the entire EMSD establishment.

創新促成者
BE THE SMART REGULATOR

通過數碼化加強管治和規管

作為創新科技(創科)的先驅，我們力求提升數碼化能力和推動數碼化轉型，鼓勵機電行業採用相關技術，優化服務，突破界限。

我們致力開展電子化服務，更進一步擴大數碼化服務的範圍，為業界提供一站式網上註冊申請服務，從而提升規管服務的效率。系統不但方便註冊電業工程人員在網上持續進修訓練平台上申請註冊續期，2022年5月推出的「VM加分站」，更方便了註冊車輛維修技工完成車輛維修技工自願註冊計劃所要求的持續進修培訓，以達到註冊續期的要求。未來，我們會加強推廣及鼓勵業界充分利用數碼服務之便。

除了註冊和牌照服務外，我們的規管工作也逐步邁向數碼化。2022年11月，我們推出升降機及自動梯數碼工作日誌，方便升降機和自動梯負責人、業界和政府，記錄、閱覽和分析實時數據。截至2023年9月，全港已有超過20 000部升降機和自動梯採用這個應用區塊鏈技術的系統來提升升降機和自動梯的管理表現和安全水平，佔總數四分之一。

針對家用電氣安全，我們推出了一個嶄新的項目，以人工智能系統偵測於本地電商平台出售而不符合香港安全規格的家用電氣及氣體產品。我們在年內首次對本地電商平台進行在線搜查，證明該系統有助更及時和全面地審視有關平台出售的產品。

作為規管者，我們主動多走幾步，帶頭推動創科項目，向受規管者展現創新科技如何改善營運安全，並鼓勵受規管者使用創科工具來提升安全表現，透過以身作則，鼓勵機電業界的企業和製造商研發更多有潛力的創科項目，以提升安全。

STRENGTHENING GOVERNANCE AND REGULATION THROUGH DIGITALISATION

As a pioneer of innovation and technology (I&T), we are keen to go beyond limits by enhancing our digital capabilities and streamlining our services. We have also been spearheading digital transformation and promoting innovation to encourage technological adoption in the E&M trade.

Having made a head-start in electronic services, we have extended digitalisation across the board, such as enabling one-stop online registration application services for all stakeholders of the electrical trade, and connecting the e-services to the online training platform for Continuing Professional Development (CPD) to facilitate registration renewal of registered electrical workers, so as to enhance efficiency and convenience in the regulatory services. The same one-stop services have been introduced to registered vehicle mechanics (RVMs), with the VM Learning Station launched in May 2022 for RVMs to complete the required CPD training for fulfilling the requirements of registration renewal under the Voluntary Registration Scheme for Vehicle Mechanics. In the coming years, we will step up efforts to promote and encourage the trade on making the most of them.

In addition to registration and licensing services, our regulatory work is also gradually heading towards digitalisation. In November 2022, we rolled out the Digital Log-books for Lifts and Escalators, which is a cutting-edge solution that enables responsible persons for lifts and escalators, the trade and the Government to record, view and analyse real-time data. As at September 2023, over 20 000 lifts and escalators, or one-fourth of the installations, in Hong Kong have adopted this blockchain technology based platform in pursuit of better management and safety standard of lifts and escalators.

Another game changer is the artificial intelligence (AI) system for detecting non-compliant household electrical and gas appliances sold on local e-commerce platforms. The first-ever online sweep of local e-commerce platforms conducted within the year has proved that the system contributed to a timelier and more thorough review of the products sold on these platforms.

As the regulator, we have gone the extra mile by pioneering various I&T projects to show regulatees how operational safety can be improved via smart technology, and incentivising the regulatees to use I&T tools more extensively to elevate their safety performance, with a view to setting a good example to encourage businesses and manufacturers in the E&M trade to pursue more projects that capture the potential of I&T to enhance safety in their respective fields.

服務回顧
OPERATIONS REVIEW

有見及此，我們於2022年建立了創科交流和轉移機制，方便我們與受規管者交流和分享創科新知、技術細節及設計，鼓勵他們更踴躍地參與創科發展。當機電署牽頭的創科項目完成實地概念驗證後，我們會與受規管者分享相關技術資料，讓他們在既有基礎上延續系統開發工作。「司機隨身寶」、「語義人工智能預測鐵路軌道維修工作」以及「乘客安全提示系統」均是透過這種分享模式的先導項目計劃，並於本年相繼推出。

這個策略的成效越見顯著。近年機電署研發的創新解決方案不僅在本地和國際獎項中屢獲殊榮，各受規管者亦樂於採用有關方案，甚或自行開發，這都有助建設更安全、更環保的城市。

In 2022, we established an I&T sharing and transfer mechanism for exchanging and sharing knowledge on I&T advances, technical details and designs with our regulatees, to encourage them to involve more actively in I&T development. Upon completion of on-site proof of concept trials of I&T projects led by the EMSD, technical information will be shared with the regulatees to enable them to further the system development work on top of the established foundation. During the year, some of the pilot projects that were shared this way included the Smart Driver Assistant for Automated People Mover, the Semantic AI for Predictive Maintenance of Railway Track Systems and the Passenger Misbehaviour Detection System.

Such strategy is bearing more and more fruit. In recent years, not only have the innovative solutions developed by the EMSD garnered awards in major local and international award programmes, but they also sparked a keen interest among our regulatees in adopting them or developing their own, which contributed towards building a safer and greener city.

加強與內地及區域組織合作

作為機電領域的「超級連繫人」，我們積極連繫內地與世界，利用我們與內地、地區和國際伙伴的緊密聯繫推動創新，進一步加強機電安全和能源效益。

疫情期間，機電署透過線上方式與內地和海外合作單位保持聯繫和協作。隨着疫情結束，跨境活動全面復常，機電署隨即恢復與有關單位進行會面交流，加快與各方的協作。

在2023年年初，我們接待了由國家海關總署副署長帶領的高級代表團，與海關總署正式續簽已生效20年的《機電產品安全及能源效益合作安排》，以進一步提升兩地機電產品安全和推動兩地實現碳中和。廣深港段高鐵服務於本年初恢復營運，是現時唯一連接內地各主要城市的鐵路線，服務需求持續增加，最高單日載客量超逾十萬人次。我們與國家鐵路局一直保持緊密溝通及合作，除了舉行定期工作會議，我們於本年三月聯同國家鐵路局完成檢視廣州和香港的廣深港高速鐵路設施。此外，我們亦於六月派員陪同國家鐵路局局長到歐洲一帶一路國家與當地鐵路規管機構作交流及說好國家的高鐵發展和香港故事。

FORGING CLOSER COLLABORATION WITH MAINLAND AND REGIONAL COUNTERPARTS

Moreover, we continue to play to our unique strength as a "super connector" between the Mainland and the world in all E&M fields, leveraging our close ties with the Mainland, regional and international partners to drive innovation, thereby further enhancing E&M safety and energy efficiency through every means.

During the epidemic, the EMSD maintained communication and collaboration with its Mainland and overseas counterparts through online means. Upon the end of the epidemic and full resumption of cross-boundary activities, EMSD immediately resumed in-person exchanges with the counterparts concerned, expediting collaboration with all parties.

In early 2023, we received a high-level delegation led by the Vice Minister of the General Administration of Customs of the People's Republic of China (GACC). On the occasion, the GACC and the EMSD also formally signed for the renewal of the Cooperation Arrangement on Electrical and Mechanical Products Safety and Energy Efficiency, which has been in place for 20 years, to further enhance the safety of E&M products and facilitate the achievement of carbon neutrality of the two places. The Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link resumed operation earlier this year and is currently the only railway connecting major cities in mainland China. The demand for this service continues to increase, with peak daily passenger numbers exceeding 100 000. We maintain close communication and cooperation with the National Railway Administration, conducting regular work meetings. In March of this year, we, together with the National Railway Administration, conducted an inspection of the Guangzhou and the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link facilities. Additionally, in June, our representatives accompanied the Director-General of the National Railway Administration on a visit to countries along the Belt and Road in Europe, engaging in discussions and sharing insights with local railway regulatory authorities on high-speed rail development and the Hong Kong experience.

2023年初，中港兩地恢復通關後，我們多個代表團前往內地參觀合作單位的設施，並從中獲得寶貴的體驗，有助推動相關項目在本地的發展。舉例來說，透過到北京和大灣區考察，我們更深入了解氫氣基礎設施和氫能車輛的發展、安全管理和第三方認證。我們亦在2023年中到訪經營區域供冷系統的深圳前海國有企業，讓我們就區域供冷系統的設計、落實和營運與行業人士進行交流，為未來在北部都會區建造大型區域供冷系統提供重要參考。

Upon the resumption of normal travel between Hong Kong and the Mainland in early 2023, the EMSD formed delegations to visit the facilities of our Mainland counterparts and gained valuable insights for facilitating the local development of the relevant projects. To name a few examples, the visits to Beijing and the Greater Bay Area (GBA) gave us a better understanding of the development, safety management and third-party certification of hydrogen infrastructure and hydrogen fuel cell vehicles. The visit to a state-owned company operating district cooling systems (DCSs) in Qianhai, Shenzhen in mid-2023 also enabled us to exchange views with trade practitioners on the design, implementation and operation of DCSs under various constraints, providing important references for the construction of a large-scale DCS in the Northern Metropolis Development in the future.

我們在疫情期間建立了妥善的線上渠道，在疫情結束後亦繼續採用線上線下混合溝通模式，加強香港與內地的合作伙伴關係。我們與國家市場監督管理總局及其屬下的廣東省市場監督管理局保持緊密聯繫，在監察、報告和回收不安全電氣產品方面展開合作。我們與中國標準化研究院亦正擬備合作備忘錄，以建立兩地能源效益標籤計劃的資訊互通機制，有助簡化本地業界遵守兩地能源效益標籤計劃要求的程序。

With solid online channels established during the epidemic, we have continued to adopt a hybrid communication mode after the end of the epidemic, with a view to strengthening the Hong Kong-Mainland partnership through a two-pronged approach. We have maintained close communication with the State Administration for Market Regulation and its subsidiary Guangdong Administration for Market Regulation to explore collaboration in monitoring, reporting and recalling unsafe electrical products. We are also collaborating with the China National Institute of Standardisation to prepare a Memorandum of Cooperation for establishing an information exchange mechanism concerning the energy efficiency labelling schemes in both Hong Kong and the Mainland, which can help streamline the process for the local trade to comply with the requirements of the energy efficiency labelling schemes in both regions.

此外，我們亦不斷深化與內地有關部門的創科合作。我們與廣東省科學院成功設計和製造了智能缸車檢測機械人，以檢查及分析石油氣缸車氣缸的狀況。該項目大大提高了檢查氣缸的安全性和效率，更在2023年日內瓦國際發明展上獲得銀獎，令人鼓舞。此外，我們促成了香港電燈有限公司與廣東省科學院合作，利用無人機檢查連接廣東大鵬液化天然氣接收站和香港南丫島發電廠的海底天然氣管道，辨別漏氣跡象。

During the year, we continued to deepen our I&T collaboration with relevant Mainland departments. In collaboration with the Guangdong Academy of Sciences, we have successfully designed and fabricated the Intelligent Tank Robot for inspecting and analysing the condition of the tanks of LPG road tankers. Enhancing greatly the safety and efficiency of tank inspection, the project achieved encouraging results with a Silver Medal at the International Exhibition of Inventions of Geneva 2023. Besides, we facilitated the collaboration between the Hongkong Electric Company Limited and the Guangdong Academy of Sciences to utilise a drone to check for any signs of gas leakage in the subsea pipeline connecting the Guangdong Dapeng Liquefied Natural Gas (LNG) Terminal and Lamma Power Station of Hong Kong.

服務回顧
OPERATIONS REVIEW

在亞太區機電和能源效益及節約領域，機電署的影響力繼續擴大。作為最早在亞太區域組織中擔任領導職務的政府部門之一，我們很榮幸有兩名高級人員分別在亞太區經濟合作組織（亞太經合組織）的能源工作組和能源效益及節能專家小組擔任領導崗位。此外，我們也積極主辦亞太經合組織專家小組會議，並成功獲得亞太經合組織撥款資助開展項目，包括以亞太經合組織名義舉辦多個研討會。2023年，我們還擴大與東南亞國家聯盟（東盟）的合作，更首次根據香港與東盟的《自由貿易協定》，成功獲得東盟資助開展經濟技術合作項目，並暫定於2024年首季在香港籌辦重新校驗研討會。屆時，我們會邀請東盟十個成員國的專家和政府官員參加，以交流知識和探索合作機會。我們相信機電署在亞太區域組織的領導經驗，會為香港其他機構起示範作用，我們亦會盡最大的努力，在國際間說好香港故事。

The EMSD's influence in the E&M and Energy Efficiency and Conservation fields continues to expand in the Asia-Pacific region. Being one of the first government departments to take on leadership roles in key Asia-Pacific regional organisations, the EMSD is honoured to have two senior officials assuming leadership positions in the Energy Working Group and the Expert Group on Energy Efficiency and Conservation of the Asia-Pacific Economic Cooperation (APEC) respectively. Besides, we actively host APEC expert group meetings and have successfully obtained APEC funding to conduct projects, including hosting various workshops in the name of APEC. In 2023, the EMSD expanded its cooperation with the Association of Southeast Asian Nations (ASEAN). For the first time, we successfully obtained ASEAN funding to conduct economic and technical cooperation projects under the Free Trade Agreement between Hong Kong and ASEAN, and are tentatively planning to host a workshop on retro-commissioning in Hong Kong in the first quarter of 2024. We will invite experts and government officials from the ten ASEAN member states to participate in the workshop to exchange knowledge and explore collaboration opportunities. We believe that our leadership experience in Asia-Pacific regional organisations will serve as a role model for other counterparts in Hong Kong, and we will make the best endeavours to tell the good stories of Hong Kong in the international arena.

為實現碳中和作出貢獻

《香港氣候行動藍圖2050》訂出清晰的路線圖，力爭在2050年前實現碳中和。機電署為此把自身的倡議付諸行動，並支持落實藍圖的多個重要目標。

在推廣綠色能源方面，我們其中一項重點措施是為發展氫能作為燃料制定路線圖。為推動氫能作為燃料，除了為立法作準備外，我們亦在技術和風險評估方面提供持續支援。同時，我們致力為車輛氫燃料系統和加氫站制訂安全守則，以及有關加氫站定量風險評估方法的指引，以確保氫燃料的使用安全。

此外，我們銳意在不同層面推進實現碳中和，包括監測全新海上液化天然氣接收站的興建，使發電廠的燃氣供應多元化；就安全探索和試驗氫燃料項目向政府提供建議；發展和營運區域供冷系統，以大規模生產環保冷卻能源；優化建築物的能源效益；透過「強制性能源效益標籤計劃」不斷提升電氣和氣體器具的能源表現；促進更廣泛地採用可再生能源；以及鼓勵建築物業主使用新推出的「建築物電力使用指數網上基準工具」以改善能源效益等。

CONTRIBUTING TO CARBON NEUTRALITY

Having regard to the clear roadmap outlined in Hong Kong's Climate Action Plan 2050 to strive for carbon neutrality before 2050, the EMSD has put our own initiatives into action and supported the implementation of many key objectives in the plan.

Formulating the roadmap for developing hydrogen as fuel is one of our key initiatives to promote green energy. In this regard, apart from paving the way for legislation, the Regulatory Services has provided continuous support for technical and risk assessment issues. Meanwhile, we are devoted to establishing safety guidelines for hydrogen vehicle fuel system and hydrogen filling stations, as well as the Guidance Note on Quantitative Risk Assessment methodology of Hydrogen Filling Stations, in order to ensure the safe use of hydrogen fuel.

In addition, our initiatives for striving towards carbon neutrality span multiple levels, including monitoring the construction of the new Offshore LNG Terminal for diversifying gas supply to power stations, advising the Government on the safe exploration and trial of hydrogen fuel projects, developing and operating DCSs for large-scale production of environmentally friendly cooling energy, optimising energy efficiency of buildings, continuously enhancing the energy performance of electrical and gas appliances through the Mandatory Energy Efficiency Labelling Scheme, facilitating the wider adoption of renewable energy, as well as encouraging building owners to improve energy efficiency through the newly launched "Online Building Based Electricity Utilization Index Benchmarking Tool".

為使社會大眾把節能放在首位，我們透過「採電學社」計劃，開發了STEAM小學和中學教材套裝，從小向學生灌輸節能意識。

To make energy conservation top of mind for the general public, we have developed STEAM educational kits for primary and secondary schools based on our Solar Harvest scheme, to instil environmental awareness into students at a young age.

另一方面，我們分別於2020/21和2022/23年度推出「綠色校園2.0－智能慳電」和「綠色社福機構」計劃，資助300所合資格學校和300個非政府組織的處所進行節能項目。為進一步提升有關處所的能源表現和培養學生的節能意識，我們為合資格學校安裝實時能源監察系統，幫助學生找出能源管理機會，並實行環保內務管理措施。

Furthermore, we launched the "Green Schools 2.0 – Energy Smart" and "Green Welfare NGOs" schemes in 2020/21 and 2022/23 respectively, subsidising 300 eligible schools and 300 NGO premises to carry out energy-saving projects. In order to further enhance the energy performance of the premises concerned and cultivate students' awareness about energy conservation, a real-time energy monitoring system was also installed at each eligible school to help students identify energy management opportunities and implement green housekeeping measures.

由於推展環保策略、監管措施、綠色能源設施和能源效益計劃的步伐不斷加快，因此與《建築物能源效益條例》相關的《建築物能源效益守則》和《能源審核守則》每三年便會檢討一次，較其他守則更為頻密，以緊貼能源效益領域的急速發展。有鑑《建築物能源效益條例》已經實施超過十年，我們計劃更新條例，逐步提高能源效益標準，從而引導樓宇業主和相關行業達到更高的節約能源目標，以推進實現碳中和。

While the pace of rolling out and evolving eco-friendly strategies, regulatory measures, green energy facilities and energy efficiency programmes has been accelerating, the cycle of reviewing the Building Energy Code and the Energy Audit Code related to the Buildings Energy Efficiency Ordinance (BEEO) every three years is more frequent than other CoPs, in order to keep up with the rapid development in the energy-efficiency landscape. Moreover, the time is ripe for updating the BEEO, which has been in force for over 10 years. Our ultimate goal is to gradually raise energy efficiency standards, thereby guiding building owners and relevant trades to achieve higher energy conservation goals for striving towards carbon neutrality.

培育機電業人才

隨著香港發展，機電業的規模亦同步擴大，為機電業培育後晉成為我們不容忽視的核心工作。

機電業的人手需求不斷增加，新發展區尤甚。北部都會區需要大規模的區域供冷系統網絡，以供應公共和商業設施的節能空調。新建築物和處所的升降機和自動梯亦需要更多人手進行保養維修工作。另外，電動車日益普及，對保養這些技術先進的車輛及充電基礎設施的維修技工需求亦隨之而增加。然而，機電業正面對人手老化的挑戰。雖然近年30歲以下加入機電業的新人比例有所提升，但各行各業求才若渴，我們必須確保機電業依然能夠吸引新血。

CREATING E&M TALENT PIPELINES

As the scale of the E&M trade has been expanding in tandem with the growth of Hong Kong, the EMSD has been pulling out all the stops to create pipelines of young talent for the E&M sector.

Manpower demand in the E&M sector is ever increasing. In particular, new development areas such as the proposed Northern Metropolis will require massive networks of DCSs to support energy-saving air-conditioning for public and commercial facilities. Lifts and escalators in new buildings and premises also need more manpower for maintenance work. Moreover, the rising popularity of electric vehicles will lead to increase in demand for mechanics to maintain these technologically advanced vehicles and charging infrastructure. Meanwhile, the E&M trade is inevitably ageing. While we are pleased to observe that the proportion of newcomers aged below 30 to the E&M sector has increased in recent years, we must ensure that the E&M sector remains attractive to young people in the midst of keen competition for talent from other sectors.

服務回顧
OPERATIONS REVIEW

為協助機電業廣納菁英，我們於年內推出多元化的資歷架構，為多個機電領域建立晉升階梯，特別是為升降機/自動梯行業推出新的資歷課程，以及接納技工透過應用「過往資歷認可」機制取得的資歷架構第三級資歷作為申請「車輛維修技工自願註冊計劃」的認可資歷。

Our efforts to bring new blood into the E&M trade expedited during the year. We have assisted in launching diversified qualification framework to create progression pathways for various E&M fields, notably new qualification programmes for the lift/escalator field and acceptance of the Hong Kong Qualifications Framework (HKQF) Level 3 qualifications, through application of the Recognition of Prior Recognition (RPL) mechanism, as the recognised qualifications for registration under the Voluntary Registration Scheme for Vehicle Mechanics.

與此同時，我們推出更多青年計劃，並支援STEAM教育，以啟發年青人對投身機電業和環保領域的興趣，例如可再生能源和區域供冷系統等方面。

More youth engagement programmes and STEAM education support have also been introduced to stimulate young people's interest in pursuing a career in the E&M sector and environmental fields such as renewable energy and DCSs.

機電署亦推出了「啤啤校園之旅－生活小智識」STEM教育先導計劃，讓學生親身體驗機電署在推動智慧生活方面的工作，了解機電業的就業前景。計劃分為三個階段，讓學生從機電署工程師和技術人員中了解有關機電業、創科應用和能源效益的最新資料；製作可應用於家居、學校和社區的創新機電工具原型；以及參觀機電署總部大樓，為投身機電業搶得先機。

The EMSD also launched a pilot STEM education programme, "Witty Bear Campus Tour – EMbrace Smart Living in Daily Life", in which students can get an insider experience of the EMSD's work in promoting smart living and an opportunity to familiarise themselves with the career prospects of the E&M trade. Through the three-stage programme, students received the latest information from engineers and technicians of the EMSD on the latest development of the E&M trade, I&T applications and energy efficiency; made a prototype of an innovative E&M tool on their own, which can be applied at home, at school or in the community; and visited the EMSD headquarters to get a head-start for pursuing an E&M career.

此外，我們致力加速創科工具在機電業的應用，不但減省單調工序和紓緩人手壓力，更為機電工作注入尖端的創新技術，吸引年青人選擇投身機電業。

Besides, our efforts to accelerate the application of innovative tools in the E&M trade not only help reduce monotonous tasks and relieve manpower pressure, but also inject cutting-edge innovative technologies into E&M jobs, making them an appealing career choice for young people.

總結

近年來，機電業正面對一大挑戰——「三高」，即公眾期望高、技術要求高和人才需求高。儘管面對這些挑戰和疫情，規管服務在提升行業安全和質素、推廣能源效益，以及採用綠色能源以推進實現碳中和等多方面，成效理想，並履行了對社會提供可靠的機電服務和促進能源效益的承諾。

SUMMING UP

In recent years, "3H", i.e. high public expectation, high technology and high manpower pressure in the E&M trade, have become our major challenges. In spite of these challenges and the epidemic, the Regulatory Services has achieved notable successes in enhancing safety and quality of the trade, promoting energy efficiency and striving for carbon neutrality with green energy. We have honoured our commitment to providing reliable E&M services as well as promoting energy efficiency to the community.

機電署在全體員工和其他政府部門的支持下克服重重障礙，我們對大家的卓越工作衷心感激。同時，我們一如既往感謝各受規管者、行業合作伙伴、學術界、專業組織、非政府組織、培訓機構和公眾對我們的鼎力支持。

With the backing of all our staff and other government departments, the EMSD has overcome numerous obstacles and become stronger in the face of difficulties. We are grateful for their excellent efforts. As always, we also thank our regulatees, trade partners, academia, professional bodies, NGOs, training institutions and the public for their whole-hearted support.

展望來年，我們會繼續透過發展創新技術以及加強與業界和大灣區伙伴的合作，致力預防事故和推進實現碳中和。我們會積極向年輕一代宣傳機電安全和能源效益，為機電業吸納更多新血，傳承我們的智慧，繼往開來。我們期待來年可以更進一步，為香港建設更美好的未來。

In the coming year, we will devote ourselves to preventing incidents and striving towards carbon neutrality by continuously developing innovative technologies and strengthening our collaboration with the trade and the GBA counterparts. We will play an active role in promoting E&M safety and energy efficiency to the young generations, as well as bringing more new blood to the E&M trade for passing on our fine tradition and wisdom. We look forward to another year of great progress to build a better future for Hong Kong.

潘國英
機電工程署副署長 / 規管服務

Raymond Poon Kwok-ying
Deputy Director/Regulatory Services, EMSD

年度亮點
HIGHLIGHTS OF THE YEAR

延續20年聯繫 加強與內地合作
CONTINUING OUR 20-YEAR LIAISON AND STRENGTHENING COOPERATION WITH THE MAINLAND

機電署與國家海關總署(海關總署)簽署的《機電產品安全及能源效益合作安排》(《合作安排》)已生效20年，有效促進兩地在機電產品安全及能源效益方面的發展。2023年2月，機電署署長和海關總署商品檢驗司司長續簽《合作安排》，就進一步提升兩地機電產品安全及能源效益保持聯繫和合作，並繼續按既定機制互相通報懷疑不合規格的機電產品。《合作安排》亦有助推動兩地實現碳中和。

The Cooperation Arrangement on Electrical and Mechanical Products Safety and Energy Efficiency (Cooperation Agreement), signed by the EMSD and the General Administration of Customs of the People's Republic of China (GACC), has come into force for 20 years, effectively promoting the development of electrical and mechanical (E&M) product safety and energy efficiency in both Hong Kong and the Mainland. In February 2023, the Director of Electrical and Mechanical Services and the Director General of the Department of Commodity Inspection of the GACC signed for the renewal of the Cooperation Agreement to maintain liaison and cooperation in further enhancing the safety and energy efficiency of E&M products in both places, as well as continuing the reciprocal reporting of suspected non-compliant E&M products according to the established mechanism. The Cooperation Agreement could also facilitate the achievement of carbon neutrality in both places.

籌備及參與大亞灣應變計劃演習
PREPARATION FOR AND PARTICIPATION IN THE DAYA BAY CONTINGENCY PLAN EXERCISE

以大亞灣應變計劃為基礎的大型跨部門演習於2023年1月12日舉行。機電署肩負多項重要任務，包括啟動本署的統籌辦事處，以及派員到政府緊急事故監察及支援中心提供技術意見及支援、處理模擬傳媒及公眾查詢、出席行政長官督導小組和大亞灣應變計劃執行小組的會議及模擬新聞發布會等。機電署團隊花了約半年時間籌備這次大型演習，並於2022年12月中旬與各相關政府部門進行預先演習，確保演習當日順利進行。

A large-scale inter-departmental exercise based on the Daya Bay Contingency Plan (DBCP) was held on 12 January 2023. The EMSD undertook a number of important tasks, including activating the EMSD Co-ordination Office, as well as deploying staff to the Emergency Monitoring and Support Centre to provide technical advice and support, handle simulated media and public enquiries, and attend meetings of the Chief Executive's Steering Group and the DBCP Implementation Task Force and simulated press conferences, etc. The EMSD team spent about six months preparing for this major exercise and conducted a rehearsal exercise with relevant government departments in mid-December 2022 to ensure smooth running on the day of the exercise.

第六代山頂纜車投入服務
LAUNCH OF THE SIXTH-GENERATION PEAK TRAM

山頂纜車是全球歷史最悠久的纜索鐵路之一。這次為山頂纜車進行的升級工程，為傳承纜車的製造工藝提供一個千載難逢的機遇。2022年3月，升級工程踏入最後階段，機電署聯同委聘的德國纜車專家一連六日進行行車安全法定檢查，確認纜車系統安全妥善；同年6月，機電署進行纜車運行可靠性測試。全新的第六代山頂纜車終於在2022年8月27日正式投入服務。

The Peak Tram is one of the oldest funicular railways in the world. The upgrading project for the Peak Tram offered an extremely rare opportunity for preserving the craftsmanship of the tramway. As the upgrading project entered the final stage in March 2022, the EMSD conducted statutory inspections with the appointed German ropeway specialist in six consecutive days and confirmed that the Peak Tram system was safe and sound. In June 2022, the EMSD conducted reliability tests of the tramway operation. Eventually, the new sixth-generation Peak Tram was officially launched on 27 August 2022.

規管海上液化天然氣接收站燃氣基礎設施
REGULATING GAS INFRASTRUCTURE OF THE OFFSHORE LIQUEFIED NATURAL GAS TERMINAL

本港首座海上液化天然氣接收站項目的建造工程已於2023年4月大致完成。在項目建造期間，氣體標準事務處經常派員到現場視察，確保海上接收站的氣體裝置達到安全標準，以便在收到建造或使用批准申請文件時，能夠最大程度地縮短審批時間，使接收站能夠儘早進行調試階段，並在第三季投入運作。

The construction works of the first offshore liquefied natural gas (LNG) terminal in Hong Kong have been largely completed in April 2023. During the construction of the project, the GasSO often dispatched officers to conduct on-site inspections to ensure that the gas installations at the terminal meet the safety standards. This have expedited the approval process when receiving applications for construction or use approval and facilitated early commissioning work for its full operation by the third quarter of 2023.

推動氫能發展
PROMOTING THE DEVELOPMENT OF HYDROGEN ENERGY

在「綠色運輸」方面，為配合政府計劃就陸上運輸使用氫能制訂長遠策略，機電署已聘請氫燃料顧問於2022年11月開展各項研究工作，與不同持份者商討及制訂關於氫燃料系統、加氫站和量化風險評估的技術指引；審視氫燃料電池車試驗計劃；以及研究未來氫燃料應用的規管模式。我們又籌辦了跨部門氫能發展海外考察活動，積極聯繫本地及內地的氫能行業持份者，了解他們的技術方案和建議，為本地氫能試驗計劃做好準備。截至2023年6月，機電署已為八個氫燃料技術試驗項目的申請進行初步技術評估，並提交建議。

In terms of "green transport", to tie in with the Government's plan of formulating the long-term strategies for using hydrogen energy in land transport, the EMSD engaged hydrogen fuel consultants to carry out various studies in November 2022. The consultants would tap into the views of different stakeholders to formulate technical guidelines on hydrogen fuel systems, hydrogen refilling stations and quantitative risk assessment; review the hydrogen fuel cell vehicle trials; and explore the regulatory framework for future hydrogen fuel application. We also organised inter-departmental overseas visits on hydrogen energy development, and actively liaised with local and Mainland stakeholders in the hydrogen energy industry to learn about their technical solutions and recommendations in preparation for local hydrogen trials. As at June 2023, the EMSD had conducted preliminary technical assessments and submitted recommendations for eight applications of trial projects on hydrogen fuel technology.

東鐵線過海段通車 自動月台閘門安裝工程隨之陸續展開
SUCCESSIVE COMMENCEMENT OF INSTALLATION OF AUTOMATIC PLATFORM GATES UPON COMMISSIONING OF EAST RAIL LINE CROSS-HARBOUR EXTENSION

東鐵線過海段在所有法定檢查及試營運完成後，於2022年5月15日正式通車，而該線的列車車隊已由12卡列車全面改為9卡列車。東鐵線過海段通車後，相關的自動月台閘門工程亦陸續展開。就此，機電署持續監察香港鐵路有限公司對閘門進行的測試，檢視關於閘門設計的安全性報告，並實地測試閘門的安全聯鎖裝置，確保有關閘門運作安全。

Upon completion of all statutory inspections and trial operation, the cross-harbour extension of the East Rail Line (EAL) was officially commissioned on 15 May 2022. The train fleet operating on the EAL had been fully converted from 12-car trains to 9-car trains. Upon commissioning of the cross-harbour extension of the EAL, the relevant installation works of automatic platform gates (APGs) commenced successively. In this regard, the EMSD continuously monitored the MTR Corporation Limited's testing of APGs, reviewed safety reports on APG design, and carried out on-site tests of the safety interlocks of APGs for ensuring the operational safety of the APGs.

年度亮點
HIGHLIGHTS OF THE YEAR

推行升降機及自動梯數碼工作日誌
IMPLEMENTATION OF THE DIGITAL LOG-BOOKS FOR LIFTS AND ESCALATORS

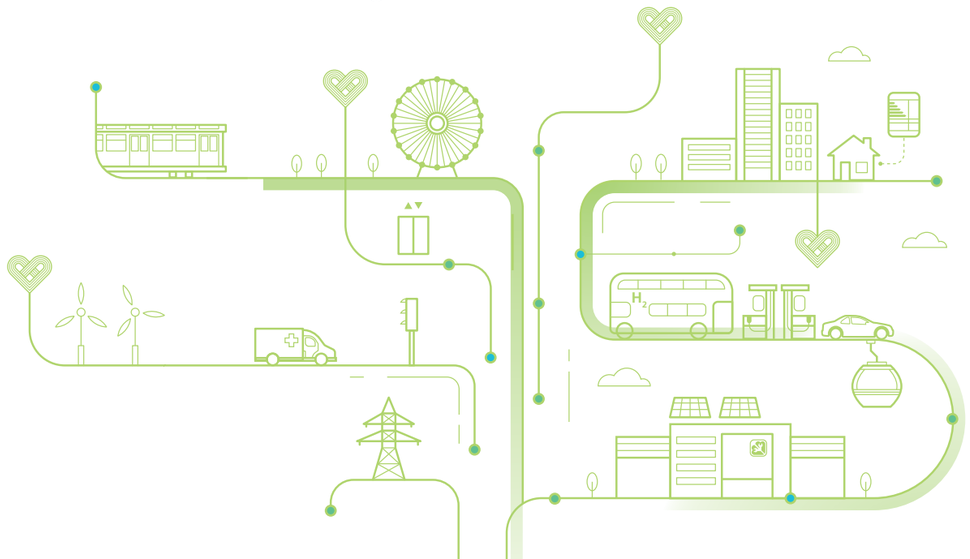
機電署於2022年11月推出升降機及自動梯數碼工作日誌。數碼工作日誌提供一個雲端平台，並加入以「智方便」及生物特徵認證登入系統的功能，讓升降機及自動梯的負責人、業界和機電署可隨時隨地透過流動應用程式或網上平台實時記錄、閱覽及分析升降機及自動梯的操作及保養資料，便利三方共同管理升降機及自動梯。

In November 2022, the EMSD launched the Digital Log-books for Lifts and Escalators (Digital Log-books). Incorporated the functions of login with iAM Smart and biometric authentication, the Digital Log-books provides a cloud-based platform for the responsible persons for lifts and escalators, the trade and the EMSD to record, view and analyse the operation and maintenance information of lifts and escalators in real time through a mobile application and web portal anytime and anywhere, enabling the tripartite management of lifts and escalators.

為升降機及自動梯行業從業員建立更完善的晉升階梯
ESTABLISHING AN ENHANCED CAREER LADDER FOR LIFT AND ESCALATOR TRADE PRACTITIONERS

機電署作為規管者，致力為升降機及自動梯行業從業員建立更完善的晉升階梯，並鼓勵註冊承辦商向香港學術及職業資歷評審局(評審局)申請專業認證，自行開辦屬資歷架構第二級或第三級的內部培訓課程，更協助評審局審核及評估相關考核與課程內容。另外，隨着機電署在2022年與職業訓練局(職訓局)攜手推出行業首個屬資歷架構第五級的「升降機及自動梯大師級專業文憑」課程，以及職訓局在2023/24年度增辦屬資歷架構第四級的升降機及自動梯課程，升降機及自動梯行業成為機電業內首個提供涵蓋資歷架構第二級至第五級課程的行業。

Being the regulator, the EMSD endeavoured to establish a more well-defined progression pathway for lift and escalator trade practitioners, encourage registered contractors to apply for professional accreditation from the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) and organise their own internal training programmes pegged at Qualifications Framework (QF) Level 2 or Level 3, and assist the HKCAAVQ in the assessment and evaluation of the relevant test and programme content. Also, with the EMSD collaborating with the Vocational Training Council (VTC) to launch the Professional Diploma Meister in Lift and Escalator Engineering programme, the first QF Level 5 programme in the trade, in 2022 and the VTC offering an additional QF Level 4 lift and escalator programme in 2023/24, the lift and escalator trade will be the first in the E&M sector to provide programmes covering QF Level 2 to Level 5.



「強制性能源效益標籤計劃」第四階段的準備工作
PREPARATION FOR THE FOURTH PHASE OF THE MANDATORY ENERGY EFFICIENCY LABELLING SCHEME

「強制性能源效益標籤計劃」(強制性標籤計劃)首三階段已經全面實施，第四階段會擴大涵蓋範圍至發光二極管(LED)燈、氣體煮食爐和即熱式氣體熱水爐三類產品。相關修例和同步修訂《產品能源標籤實務守則》的工作已經完成。第四階段會在2023年9月1日開始生效，並在15個月過渡期後全面實施。在實施第四階段後，強制性標籤計劃所涵蓋產品的住宅總能源消耗量會由約五成大幅提升至約八成。

Riding on the full implementation of the first three phases of the Mandatory Energy Efficiency Labelling Scheme (MEELS), the fourth phase will cover three more types of products, including light-emitting diode (LED) lamps, gas cookers and gas instantaneous water heaters. The related legislative amendments and the simultaneous revision of the Code of Practice on Energy Labelling of Products had been completed. The fourth phase will come into effect on 1 September 2023 and be fully implemented after a 15-month transitional period. Upon the implementation of the fourth phase, the total residential energy consumption by products covered under the MEELS will significantly increase from about 50% to about 80%.

《建築物能源效益條例》生效十周年
BUILDINGS ENERGY EFFICIENCY ORDINANCE IN PLACE FOR 10 YEARS

《建築物能源效益條例》於本年度已實施十周年。與該條例相關的兩份守則，即《建築物能源效益守則》和《能源審核守則》，至今已進行三次主要修訂，務求與時並進，緊貼相關技術和國際普遍應用能源效益標準的最新發展。

為提升年青人對建築物能源效益的關注和加深他們對潔淨能源的興趣和認識，我們在2023年1月中至3月中期間舉辦關於該條例的網上問答比賽，並在同一學年正式推出與環境局(時稱)和教育局合作編製的「採電學社」STEAM(即科學、科技、工程、藝術和數學)小學教材套。

This year marks the 10th anniversary of the implementation of the Buildings Energy Efficiency Ordinance (BEEO). The two codes relating to the BEEO, namely the Building Energy Code and the Energy Audit Code, have thus far undergone three major reviews to keep abreast of the times and in pace with the latest developments of relevant technologies and common energy efficiency standards in the international arena.

In order to raise the awareness of building energy efficiency among young people and deepen their interest in and understanding of clean energy, we organised an online quiz competition about the BEEO from mid-January to mid-March 2023, and officially rolled out the Solar Harvest STEAM (Science, Technology, Engineering, Arts and Mathematics) educational kit for primary schools, which we compiled in collaboration with the then Environment Bureau and Education Bureau, in the same academic year.

區域供冷系統新發展
NEW DEVELOPMENT OF DISTRICT COOLING SYSTEMS

因應啟德發展區的發展規模擴大，而且啟德體育園等其他非住宅項目陸續增加，啟德區域供冷系統第三廠的建造工程於2020年開展，預計於2024年起分階段啟用。

With the expansion of the Kai Tak Development (KTD) and the increasing number of other non-residential projects such as the Kai Tak Sports Park in the area, the construction of the third plant of the Kai Tak District Cooling System commenced in 2020 and it is expected to be commissioned in phases from 2024.

重要數字
KEY FIGURES

電業工程人員 ELECTRICAL WORKERS

	2021/22	2022/23
註冊電業工程人員 REGISTERED ELECTRICAL WORKERS	83 298 名 NOS.	83 506 名 NOS.

電業承辦商 ELECTRICAL CONTRACTORS

	2021/22	2022/23
註冊電業承辦商 REGISTERED ELECTRICAL CONTRACTORS	15 107 間 NOS.	15 380 間 NOS.

升降機及自動梯 LIFTS AND ESCALATORS

	2021/22	2022/23
升降機 LIFTS	71 295 部 NOS.	72 442 部 NOS.
自動梯 ESCALATORS	10 255 部 NOS.	10 512 部 NOS.

燃氣供應 GAS SUPPLY

	2021/22	2022/23
氣體喉管網絡總長 TOTAL LENGTH OF GAS PIPE NETWORK	3 709 公里 KM	3 723 公里 KM

車輛維修技工 VEHICLE MECHANICS

	2021/22	2022/23
註冊車輛維修技工 REGISTERED VEHICLE MECHANICS	8 235 名 NOS.	8 139 名 NOS.

車輛維修工場 VEHICLE MAINTENANCE WORKSHOPS

	2021/22	2022/23
註冊車輛維修工場 REGISTERED VEHICLE MAINTENANCE WORKSHOPS	2 065 間 NOS.	2 005 間 NOS.

鐵路 RAILWAY

	2021/22	2022/23
鐵路年度載客量 RAILWAY ANNUAL PATRONAGE	1 499 百萬 MILLION	1 650 百萬 MILLION

保障公眾安全
PROTECTING PUBLIC SAFETY

電力安全

電力事故數目略增

過去三年，隨着疫情放緩，本港電力事故數目稍為上升，由2020年的97宗，微升至2021年的121宗，在2022年再略升至129宗。因應社會活動全面復常，我們會加強對業界及公眾的宣傳和教育工作，務求提升各方保障電力安全的意識，以減少電力事故的發生。

ELECTRICAL SAFETY

Slight Increase in Electrical Incidents

Over the past three years, the number of electrical incidents in Hong Kong increased slightly from 97 cases in 2020 to 121 cases in 2021 and further to 129 cases in 2022, as the COVID-19 epidemic eased. With the full resumption of social activities, we will strengthen promotional and educational efforts for the trade and the general public to elevate their awareness of electrical safety, with a view to minimising the occurrence of electrical incidents.

過去三年本港電力事故宗數
NUMBER OF ELECTRICAL INCIDENTS OVER THE PAST THREE YEARS

2020	2021	2022
97 宗 CASE	121 宗 CASE	129 宗 CASE

規管服務邁向全面數碼化

在本年度，我們繼續推動規管服務數碼化的進程。繼在2021年推出與《電力條例》相關的一站式網上註冊申請服務後，業界人士由2022年7月起可在網上提交多項註冊申請，包括註冊電業工程人員、註冊電業承辦商、已被認可作為確定地下電纜所在的合資格人士、電氣產品認可核證團體及電氣產品認可製造商等的註冊申請。與此同時，我們亦推出註冊電業工程人員及已被認可作為確定地下電纜所在的合資格人士的數碼機電牌照。此外，自2022年11月起，網上註冊申請服務已連接至網上持續進修訓練平台，業界人士可在完成註冊續期所需的持續進修訓練後，透過平台的連結，經「機電工程署(規管服務)網上註冊服務」和「智方便+」流動應用程式以電子表格申請註冊續期。

在本年度經電子途徑遞交的註冊或續期申請佔總申請量約15%。我們會繼續聯繫各持份者，鼓勵業界踴躍使用電子平台。除向業界講解使用電子平台申請註冊及續期的方法，以及製作電子服務的教學宣傳短片外，我們亦邀請業界工會協助其會員填寫電子表格，然後由申請人以「智方便+」進行數碼簽署後遞交。

Heading Towards Full Digitalisation of Regulatory Services

The digitalisation of regulatory services continued during the year. Following the introduction of one-stop online registration application services regarding the Electricity Ordinance in 2021, electronic submissions were enabled for the application of registration of Registered Electrical Workers (REWs), Registered Electrical Contractors (RECs), Approved Competent Persons for Locating Underground Electricity Cables (CPs), Recognized Certification Bodies for Electrical Products (RCBs) and Recognized Manufacturers for Electrical Products (RMs) from July 2022. Digital E&M licences were also introduced for REWs and CPs at the same time. Furthermore, the e-services have been connected to the online training platform for Continuing Professional Development (CPD) since November 2022. Trade practitioners can apply for registration renewal by completing an e-form via the "EMSD (Regulatory Services) Web-Based Registration Services" and "iAM Smart+" mobile application through the link at the platform in one go after they have completed the required CPD training for registration renewal.

About 15% of the applications for registration and renewal were submitted by electronic means during the year. We will continue to engage the stakeholders to encourage the trade to make use of the e-platform. Apart from providing guidance to the trade on how to use the e-platform for registration and renewal application, as well as producing tutorial videos about the e-services, we also invited trade unions to help their members fill in the e-forms, which would be signed digitally by applicants via "iAM Smart+" before submission.

註冊電業工程人員在每三年註冊續期前必須完成所需的持續進修訓練。近年，通過網上持續進修訓練平台完成訓練的註冊電業工程人員數目持續增加，本年度更上升至85%。

REWs must complete the required CPD training prior to registration renewal every three years. In recent years, the number of REWs completing CPD training on the CPD online training platform has been on the increase, and it has risen to 85% in the year.

善用人工智能系統監察電商平台供應的電氣產品

我們在2022年年初建立一套人工智能數據分析系統，蒐集和分析在本地電商平台售賣的家用電氣產品資料，藉此找出懷疑不符合香港法規的電氣產品。該系統於2022年9月正式啟用，大大便利本署人員進行網上商店查核工作，有助確保本地電商平台供應的電氣產品符合香港法規。除此之外，我們亦進行多項宣傳活動，讓平台營運者對有關供應電氣產品的法定要求加深了解。我們會持續檢討人工智能系統的成效，並積極探索更多人工智能科技的應用，以優化我們的工作。

Using an Artificial Intelligence System for Monitoring Electrical Products Supplied on E-Commerce Platforms

An artificial intelligence (AI) and data analytics system was developed in early 2022 to collect and analyse information about the household electrical products put on sale on local e-commerce platforms, and identify items suspected to be non-compliant with the statutory requirements in Hong Kong. Officially launched in September 2022, the system effectively facilitated our inspection of online shops and helped ensure the electrical products supplied on local e-commerce platforms were compliant with the statutory requirements in Hong Kong. Moreover, promotional activities were conducted to help online store operators better understand the statutory requirements for supplying electrical products. We will continue to review the efficacy of the AI system and explore more AI applications to enhance our work.

便利劏房戶安裝獨立電錶

為協助劏房租戶裝設獨立電錶以提升電力安全及避免劏房業主向其租戶濫收電費，兩家電力公司(兩電)推出計劃，資助劏房戶重鋪電線及安裝獨立電錶。為了讓更多劏房租戶受惠，我們與兩電協商，最終達成共識，兩電同意對現有計劃作出兩項微調：第一，靈活地容許把獨立電錶裝設在劏房單位內的公用地方，而非僅限裝設於大廈的公用地方；第二，接納劏房租戶或其業主作為資助計劃申請人，讓更多劏房租戶可以符合資格申請資助。我們喜見兩電全力配合及積極推展相關的宣傳工作。

為確保劏房的電力安全，我們在年內聯同區域服務隊、差餉物業估價署及水務署，協助檢查劏房的電力裝置。我們亦與地產代理監管局合作，通過持牌地產代理和營業員，向劏房業主和租戶分享電力及氣體安全的資訊，以提高他們的電力安全意識。

Facilitating Installation of Independent Electricity Meters for Tenants of Subdivided Units

To facilitate the installation of independent electricity meters for tenants of subdivided units (SDUs) to enhance electrical safety and prevent SDU landlords from overcharging their tenants for electricity, the two power companies have introduced subsidy schemes to subsidise SDUs for rewiring work and installation of independent electricity meters. To benefit more SDU households, we negotiated with the power companies and reached a consensus to make two adjustments to the existing schemes, including firstly, to flexibly allow installation of independent meters in the common areas of the SDUs rather than only in those of the building; and secondly, to accept either SDU tenants or their landlords as applicants for the subsidy schemes, so that more SDU tenants would become eligible for the subsidy. We were delighted that the two power companies were agreeable on this issue and actively took forward the relevant publicity initiatives.

To ensure the electrical safety of SDUs, we assisted in inspecting their electrical installations in conjunction with District Service Teams, the Rating and Valuation Department and the Water Supplies Department during the year. We also cooperated with the Estate Agents Authority in engaging licensed estate agents and salespersons to share electrical and gas safety information with SDU landlords and tenants, in order to raise their awareness of electrical safety.

保障公眾安全
PROTECTING PUBLIC SAFETY

每三至五年進行一次的大型大亞灣應變計劃演習於2023年1月12日舉行，六個決策局、28個部門和三間機構共派出逾1 400名人員參與。

A large-scale exercise on the DBCP, which was to be conducted once every three to five years, was held on 12 January 2023. Over 1 400 personnel from six bureaux, 28 departments and three organisations participated in the exercise.

籌備及參與大亞灣應變計劃演習

每三至五年進行一次的大型大亞灣應變計劃演習於2023年1月12日舉行，六個決策局、28個部門和三間機構共派出逾1 400名人員參與。在署長及副署長/規管服務帶領下，機電署肩負多項重要任務，包括啟動本署統籌辦事處，以及派員到政府緊急事故監察及支援中心提供技術意見及支援、處理模擬傳媒及公眾查詢、出席行政長官督導小組和大亞灣應變計劃執行小組的會議及模擬新聞發布會等。除此之外，鑑於由保安局統籌的演習管理組需要為大亞灣應變計劃演習設計一個獨特的情境，故此機電署借調了一名具備相關知識的工程師到該組，負責統籌大亞灣應變計劃演習的相關工作。

機電署花了約半年時間籌備這次大型演習，準備工作包括為參加者提供複修課程，內容涵蓋大亞灣核電廠的運作和相關理論、廠房事故模擬器及應變方案等。機電署團隊於2022年12月中與各相關政府部門進行預先演習，確保演習當日能夠順利進行。

雖然在香港出現核電事故的機會率頗低，但仍須確保人員具備足夠的應變能力，以及維持跨部門的溝通和協調，而這類大型演習對於維持香港處理核電事故的應變能力十分重要。我們更在演習的團隊加入年輕的同事，並於演習後妥善記錄有關檢討及改善報告，將核電事故應變能力和經驗傳承下去，讓新一代接棒。

Preparation for and Participation in the Daya Bay Contingency Plan Exercise

A large-scale exercise on the Daya Bay Contingency Plan (DBCP), which was to be conducted once every three to five years, was held on 12 January 2023. The exercise involved 1 400 personnel from six bureaux, 28 departments and three organisations. Under the leadership of the Director of Electrical and Mechanical Services and the Deputy Director/Regulatory Services, the EMSD undertook a number of important tasks, including activating the EMSD Co-ordination Office, and deploying staff to the Emergency Monitoring and Support Centre (EMSC) to provide technical advice and support, handle simulated media and public enquiries, attend meetings of the Chief Executive's Steering Group and the DBCP Implementation Task Force and simulated press conferences, etc. In addition, since the Exercise Management Team coordinated by the Security Bureau had to design a unique scenario for the DBCP exercise, an engineer with relevant knowledge was seconded from the EMSD to the team to coordinate the related work of the DBCP exercise.

The EMSD spent about six months preparing for the major exercise. The preparation work included organising refresher courses for the participants, covering the operations of the Daya Bay Nuclear Power Plant and related theories, the simulator of the incidents at the plant and contingency plans. The EMSD team conducted a rehearsal exercise with relevant departments in mid-December 2022 to ensure smooth running on the day of the exercise.

While the probability of a nuclear incident in Hong Kong is quite low, it is still necessary to ensure that staff have sufficient emergency response capabilities and maintain cross-departmental communication and coordination. These large-scale exercises are essential for maintaining Hong Kong's response capabilities to deal with nuclear incidents. Moreover, young colleagues were included in the exercise team and the relevant review and improvement reports were properly recorded after the drill, so that the response ability and experience of handling nuclear incidents could be passed on to the new generation.

進行全方位宣傳 提升公眾及業界的電力安全意識

年內，我們繼續多管齊下，加強與電力安全相關的公眾宣傳教育，包括舉辦幼稚園探訪活動、製作宣傳單張及出版《電力快訊》等。此外，我們更首度安排在收視率高的電視資訊節目中播放兩分鐘的宣傳片，講解村屋的電力裝置設有電流式漏電斷路器的重要性，節目播出當晚，共有約130萬人次觀看。我們亦與消費者委員會緊密合作，支援其測試電氣產品及發表報告。

在對業界宣傳方面，我們舉辦業界講座，向註冊電業承辦商、註冊電業工程人員和物業管理公司的代表，傳遞有關泳池電力裝置的安全信息及講解泳池電力裝置定期檢測工作的法例規定。

「傑出註冊電業工程人員選舉」提供平台讓電業界人士互相切磋學習，樹立業界典範，以持續提升電業工程人員的專業技術和工作安全水平。選舉分兩個階段進行測試，第一階段以網上問答形式進行，而第二階段分為實務測試和面試。參選者須在實務測試中為一個電力裝置進行測試，找出線路錯誤的地方，並在面試中回答有關電氣法例及安全規定和有關電氣技術知識的問題，以展示其專業水平。選舉因疫情而停辦了兩年，至2022年度復辦，備受業界重視，並獲媒體報道。

Holding Comprehensive Promotion to Enhance Electrical Safety Awareness of the Public and the Trade

During the year, we continued to strengthen publicity and education on electrical safety for the public through multiple means, such as organising kindergarten visits, producing promotional leaflets and publishing our newsletter, the Electricity News. In addition, we, for the first time, arranged for airing a two-minute promotional segment to explain the importance of installing residual current devices at village houses in a high-rating television information programme, which was watched by about 1.3 million viewers on its broadcast. We also worked closely with the Consumer Council to support its testing of electrical appliances and publication of reports on the tests.

Regarding promotion work for the trade, a trade seminar was held for RECs, REWs and representatives of property management companies to deliver safety messages concerning electrical installations in swimming pools and explain the statutory requirements for periodic inspection and testing of electrical installations in swimming pools.

The Outstanding Registered Electrical Worker Awards Scheme provides a platform for the electrical trade to share expertise, learn from each other and set up role models so as to continuously enhance the technical and work safety standards of REWs. The competition is conducted in two stages of testing. The first stage is conducted in the form of an online question-and-answer test, while the second stage comprises a practical test and an interview. Contestants are required to carry out testing for an electrical installation and identify defects in the circuit in the practical test, and answer questions about electrical legislation, safety requirements and technical knowhow in the interview, in order to demonstrate their professional standards. The competition resumed in 2022 after a suspension for two years due to the epidemic. It was highly regarded by the trade and attracted media coverage.

停辦兩年的「傑出註冊電業工程人員選舉」在2022年度復辦，提供平台讓電業界人士交流專業知識，以持續提升註冊電業工程人員的專業技術和工作安全水平。

The Outstanding Registered Electrical Worker Awards Scheme resumed in 2022 after a suspension of two years, providing a platform for the electrical trade to share expertise, so as to continuously enhance the technical and work safety standards of REWs.

2023年2月，機電署署長和海關總署商品檢驗司司長在環境及生態局局長和海關總署副署長的見證下續簽《合作安排》，以進一步提升兩地機電產品安全和推動兩地實現碳中和。

Witnessed by the Secretary for Environment and Ecology and the Vice Minister of the GACC, the Director of Electrical and Mechanical Services and the Director General of the Department of Commodity Inspection of the GACC signed for the renewal of the Cooperation Arrangement in February 2023 to further enhance the safety of E&M products and facilitate the achievement of carbon neutrality in Hong Kong and the Mainland.

加強與內地及國際合作

自機電署與國家海關總署(海關總署)於2003年簽署《機電產品安全及能源效益合作安排》(《合作安排》)以來，雙方在過去20年間一直合作無間，有效促進兩地在機電產品安全及能源效益方面的發展。在2023年2月，機電署署長和海關總署商品檢驗司司長在環境及生態局局長和海關總署副署長見證下續簽《合作安排》，以進一步提升兩地機電產品安全和推動兩地實現碳中和。我們會繼續與海關總署就電氣產品的安全事宜保持聯繫和合作，並按既定機制互相通報懷疑不合規格的電氣產品。

為進一步加強資訊互通，我們於去年為現有的網上電子資訊平台進行升級，以便機電署及海關總署人員通過線上平台直接上載及更新通報事項，從而提高執法及工作效率。

另外，我們為內地的核證組織和產品製造商舉行線上簡介會，解釋在香港供應電氣產品的法規要求，並鼓勵內地核證組織在香港註冊成為機電署的認可核證團體。內地核證組織不單為眾多內地製造商提供核證服務，還提供有關產品安全標準的建議。該等組織註冊為認可核證團體後，有助內地廠商更清楚了解供應給香港的電氣產品的要求，從而提高其產品的安全性。

Strengthening Mainland and International Cooperation

Since the Cooperation Arrangement on Electrical and Mechanical Products Safety and Energy Efficiency (Cooperation Agreement) was signed in 2003, the EMSD and the General Administration of Customs of the People's Republic of China (GACC) have been working closely and effectively promoted electrical and mechanical (E&M) safety and energy efficiency in the past 20 years. In February 2023, witnessed by the Secretary for Environment and Ecology and the Vice Minister of the GACC, the Director of Electrical and Mechanical Services and the Director General of the Department of Commodity Inspection of the GACC signed for the renewal of the Cooperation Agreement to further enhance the safety of E&M products and facilitate the achievement of carbon neutrality in Hong Kong and the Mainland. We will continue to communicate and cooperate with the GACC on electrical product safety and maintain reciprocal reporting of suspected non-compliant electrical products according to the established mechanism.

To enhance mutual information flow, the existing online electronic information platform was upgraded last year to enable direct uploading and updating of reported items by officers of the EMSD and the GACC through the platform, thereby improving enforcement and work efficiency.

Separately, we held online briefing sessions for Mainland certification bodies and manufacturers. In the sessions, we explained the regulatory requirements for electrical products supplied in Hong Kong, and encouraged Mainland certification bodies to register with the EMSD as RCBs. Mainland certification bodies provide not only certification services to many Mainland manufacturers, but also recommendations on the safety standards of electrical products. Upon their registration as RCBs, these bodies can help Mainland manufacturers better understand the requirements for electrical products supplied to Hong Kong and enhance the safety of their products accordingly.

我們分別在2023年3月和5月與中國電器科學研究院和中國家用電器研究院開會交流。兩者均是國際機構國際電工委員會的中國對口單位及中國國家標準化管理委員會代表。機電署可以透過與他們溝通，了解國際標準的最新發展，並將香港所關注的問題及意見通過研究院向國際電工委員會反映，使香港的實際情況和所建議的意見，在電氣產品安全標準的檢討周期中得以納入考慮範圍，從而提高香港電氣產品的安全水平。

此外，我們於2023年3月與國家市場監督管理總局及其屬下的廣東省市場監督管理局會面，交流兩地在回收不安全產品方面的規管要求和管理機制。我們會與國家市場監督管理總局保持緊密聯繫，並尋求合作機會，以強化雙方對不安全電氣產品的監察和回收安排。

區域合作方面，我們於2022年8月參加「亞太區經濟合作組織」(亞太經合組織)第29次電氣及電子設備聯合規管諮詢委員會會議暨研討會，在會上發表兩份報告，並就一般家用電氣產品(如拖板、適配接頭)的安全及產品的最新發展，以及電子商貿平台供應家用電氣產品的規管機制等課題，與各成員經濟體的代表分享經驗及交流意見。

未來工作重點

機電署與海關總署已建立20年的合作關係，適逢機電署慶祝成立75周年，我們會藉此機會邀請海關總署領導人員在2023年11月來港出席第19次《合作安排》年度會議，深化雙方作為監管機構的交流、分享資訊和互認大灣區的電氣產品安全標準。

與業界合作方面，我們會與兩電共同全面檢討重大電力供應事故的應變措施，務求提升電力安全及保障電力供應穩定。我們亦計劃與電力公司合作製作短片，提醒在地下電纜附近工作的工地人員在施工時需採取的預防措施，避免損壞地下電纜並保障自身安全。

We conducted meetings with the China National Electric Apparatus Research Institute and the China Household Electric Appliance Research Institute in March and May 2023 respectively. Both Institutes are Chinese counterparts of the International Electrotechnical Commission (IEC) and representatives of the Standardization Administration of the People's Republic of China. Not only could the EMSD grasp the latest developments in international standards through communication with these Institutes, we could also convey Hong Kong's concerns and opinions to the IEC through them, so that the actual situation in Hong Kong and our proposed recommendations would be taken into consideration in the review cycles of electrical product safety standards, and in turn the safety standards of relevant products in Hong Kong would be raised.

We also held a meeting with the State Administration for Market Regulation (SAMR) and its subsidiary Guangdong Administration for Market Regulation in March 2023 to discuss the regulatory requirements and management mechanisms for the recall of unsafe electrical products. We will maintain close communication with the SAMR and explore collaboration opportunities to strengthen reciprocal arrangements for monitoring and recalling unsafe electrical products.

Regarding regional cooperation, we attended the 29th Meeting cum Workshop of the Joint Regulatory Advisory Committee on Electrical and Electronic Equipment of the Asia-Pacific Economic Cooperation (APEC) in August 2022. During the meeting, we presented two reports, shared experience and exchanged views regarding such issues as the safety of general household electrical products (e.g. extension units and adaptors) and the latest product development, as well as the regulatory regime for electrical products supplied on e-commerce platforms with other APEC member economies.

The Way Forward

The partnership between the EMSD and the GACC has been established for 20 years. Riding on the occasion of the 75th anniversary of the establishment of the EMSD, we will invite the GACC leaders to Hong Kong to attend the 19th annual meeting on the Cooperation Arrangement in November 2023 to deepen exchanges as regulatory organisations, share information and mutually recognise the electrical product safety standards for the Greater Bay Area.

In terms of collaboration with the trade, we will work with the two power companies to comprehensively review the contingency measures for major power supply incidents, so as to enhance electrical safety and ensure stability of power supply. We also plan to produce short video clips in cooperation with the power companies to remind construction site workers who work near the underground electricity cables of the necessary preventive measures to be adopted to avoid damaging underground cables and keep themselves safe.

保障公眾安全
PROTECTING PUBLIC SAFETY

我們繼續廣泛使用社交平台進行宣傳和教育，發放電氣安全的信息。

We continued to extensively leverage social media platforms for publicity and education to disseminate electrical safety messages.

公眾宣傳教育方面，我們會繼續廣泛使用社交平台和利用電視節目，發放電氣安全的信息，並會繼續以各種有效方式，向少數族裔傳遞有關信息。

In terms of publicity and education for the public, we will continue to extensively leverage social media and employ television programmes to disseminate electrical safety messages. We will also continue to adopt all kinds of effective means to convey such messages to ethnic minority groups.

創新科技方面，我們會探討使用語音識別和語音轉化為文字的技術，在執法的過程中將口頭證供轉化為文字，提升執法效率。相關技術的市場調查、應用及可行性研究已於2022年完成。我們於2023年首季開始系統的開發工作，預期於2023年年底完成系統測試程序後正式啟用系統。此外，我們會於2023年為電力法例及規管服務電腦運作系統進行升級，進一步簡化及加快工作流程，提升規管服務的水平。

Regarding I&T, we will explore using voice recognition and speech-to-text technology to convert oral evidence into text in the course of law enforcement to elevate law enforcement efficiency. The market research, application and feasibility studies related to these technologies were completed in 2022. The system development began in the first quarter of 2023, and the system is expected to be officially launched after its testing is completed in late 2023. The computer operating system of the Electricity Ordinance and Electricity Ordinance and Regulation System (EORS) will also be upgraded in 2023 to further streamline and expedite the work process, and enhance the standard of regulatory services.

迅速應對電力事故 多管齊下化險為夷
RESOLVING THE CRISIS OF ELECTRICAL INCIDENT BY RENDERING MULTI-PRONGED AND QUICK RESPONSES

2022年6月21日黃昏時分，當機電署電力法例部多名工程師和督察正與家人共進晚飯時，驚聞中華電力有限公司(中電)於元朗的一座電纜橋起火。電力法例部團隊立即動員參與緊急應變行動。

In the evening of 21 June 2022 when engineers and inspectors of the Electricity Legislation Division (ELD) were having dinner with their families, they heard the shocking news that a cable bridge of the CLP Power Hong Kong Limited (CLP Power) in Yuen Long had caught fire. The ELD team immediately mobilised staff to join the emergency response action.

電力法例部團隊兵分多路展開行動，有的趕赴現場評估狀況並監督中電進行復電及搶修工作，同時籌備繁複的事故調查工作；有的前往政府總部的緊急事故監察及支援中心，參與協調及應變工作；有的整理繁多的資料，以擬備初步事故報告及相關參考資料和回應口徑等等。電力法例部在整個過程中展現出對嚴重事故的迅速應變能力。

The ELD team swung into action in different directions. Some rushed to the scene to evaluate the situation and supervise the power resumption and emergency repair works of the CLP Power while preparing for a complex incident investigation. Some headed to the Emergency Monitoring and Support Centre (EMSC) at the Central Government Offices to take part in the coordination and emergency response work. Others compiled an avalanche of information for preparing a preliminary incident report and reference materials, the line-to-take, etc. The ELD demonstrated its swift emergency response capabilities for serious incidents during the entire process.

得知事故發生後，大家都齊心協力，第一時間協助維持受影響公共設施的運作。電力法例部核電及電力供應安全分部高級機電工程師黃子沖先生憶述：「當時除了電力法例部外，機電署各個策略業務單位也通力合作，為維持緊急及基本服務正常運作提供鼎力支援，包括搶修交通燈系統；調配多部臨時發電機到受停電影響的醫院作後備之用；盡快修復相關政府部門及公共服務機構設施以維持其基本運作等。即使在電力恢復後，機電署也未敢鬆懈，繼續加緊監察有關情況，直至電力供應穩定為止。」

Upon knowing about the incident, everyone worked together to help maintain the operation of affected public facilities in the first place. Mr Wong Tsz-chung, Jack, a senior electrical and mechanical engineer of the Nuclear and Utility Safety (NUS) Sub-division of the ELD, recalled, "In addition to the ELD, various strategic business units of the EMSD rallied to maintain the normal operation of emergency and basic services by providing full support, including urgent repair of traffic lights, deployment of temporary power generators for backup use of hospitals affected by the power outage, and prompt repair of facilities of relevant government departments and public service organisations to maintain their basic operations. Even after the power was restored, the EMSD did not let up and continued to monitor the situation closely until the power supply was stable."

監察復電情況亦刻不容緩。核電及電力供應安全分部機電工程師林天相先生補充說：「作為電力公司的規管機構，我們盡力掌握這宗大型事故的現場資料和實況，以作進一步應變安排。在復電的過程中，我們一直與中電保持緊密聯繫，以便盡早獲知復電情況及所需的時間。然而，當時情況十分嚴峻，中電無法提供確切的時間表，因此大家都心急如焚，不斷監察事態發展。儘管中電在當晚已分段復電，但我們仍然在緊急事故監察及支援中心通宵留守，進行支援及協調工作，確保逾17萬受影響住戶的電力供應恢復正常。緊急事故監察及支援中心於事故翌日上午約11時40分停止運作，我們才能安心離開。」

Monitoring the resumption of electricity also allowed no delay. Mr Lam Tin-sheung, Timmy, an electrical and mechanical engineer of the NUS Sub-division, added, "As the regulator of power companies, we tried our best to grasp the on-site information and actual situation of the large-scale incident to plan for further emergency action. During the power restoration process, we maintained close communication with the CLP Power to obtain timely updates on the power restoration progress and estimated timeframe. However, due to the dire circumstances, the CLP Power was unable to provide an exact timetable. We were therefore all very anxious and monitored the development of the incident consistently. Though the CLP Power was restoring power in stages in the night, we stayed overnight at the EMSC to provide support and coordination to ensure over 170 000 households affected by this incident had their power supply restored. Only when the EMSC ceased operation at around 11:40 am the following day, we were able to leave with peace of mind."

當晚，機電署同事亦盡速到現場為意外原因搜證。核電及電力供應安全分部前高級電氣督察梁耀明先生負責現場評估和搜證工作。他收到令人震驚的消息後，馬上與另一位同事趕赴現場。

That night, the EMSD colleagues also went to the site promptly for collecting evidence for the cause of the fire. Mr Leung Yiu-ming, a former senior electrical inspector of the NUS Sub-division, was responsible for on-site assessment and evidence taking work. After receiving the shocking news, he rushed to the scene

保障公眾安全
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「在前往火災現場的路上，我已在腦中預演所需進行的搜證工作。當我們抵達現場並進行初步觀察後，我們與消防處的同事一同到現場的臨時指揮中心進行協調工作。走進指揮中心恍如置身於電影場景，氣氛凝重，指揮官忙於分派工作給各單位並設定目標。大家各司其職，趕緊着手工作。我們代表機電署，根據現場狀況就電力安全方面提供技術意見。」

事故翌日，電力法例部即時進行跟進和善後工作。該部別的總機電工程師鄭佩雯女士成立一個由電力法例部各個分部的工程師、總技術主任和督察組成的特別小組。小組成員或具備多年火警調查的經驗，或擁有豐富的供電系統知識，或熟悉消防條例。他們立即開始處理大量工作，包括監察三組受損132千伏電纜的復修進度，以確保為受影響地區全面恢復可靠的電力供應；跟進事故調查工作；以及即時檢查類似設計的電纜橋，並檢視其消防裝置的改善工程等。

with another colleague immediately. "On the way to the fire scene, I was mentally running through the required procedures for collecting evidence. After we got there and did a preliminary observation, we joined the colleagues of the Fire Services Department (FSD) for the coordination work at the temporary command centre on site. Entering the command centre felt like stepping into a movie set with a gloomy atmosphere. The commander was busy assigning tasks to different units and setting goals. Everyone set to embark on their own duties urgently. Representing the EMSD, we provided technical advice on electrical safety based on the site condition."

On the day after the incident, the ELD commenced the follow-up work and dealt with the aftermath at once. Ms Cheng Pui-man, a chief electrical and mechanical engineer of the ELD, formed a special task force comprising engineers from various sub-divisions of the ELD, a chief technical officer and inspectors, who either had years of experience in fire incident investigation or rich knowledge of power supply systems, or were very familiar with fire regulations. They immediately dived into the massive load of work, including monitoring the repair progress of the three sets of damaged 132-kilovolt cables to ensure the full restoration of reliable power supply to the affected areas, following up on the incident investigation, and conducting immediate inspections of cable bridges of similar design and improvement works of their fire services installations, etc.

談起事故調查和搜證的過程，同事都表示當中遇上重重挑戰。機電署聯同多個部門，包括消防處、警務處和政府化驗所，進行搜證和調查。電力法例部用戶裝置分部總技術主任林偉基先生是其中一位最早進入橋內搜證的人員，他說：「大火燒了三至四個小時後，橋樑的結構已變得不穩定。為安全起見，我們需要等待數天，待橋加固後才能分批進入現場。我們進入現場後，發現電纜橋內部遭大火嚴重燒毀，當時情況實在難以想像。我們的職責是調查火警是否由電力裝置問題引起。為此，我們要沿着整條電纜橋檢查可疑之處，首先根據現場環境盡可能找出懷疑的起火位置，並檢查附近有機會起火的電力裝置，然後抽絲剝繭，將眾多的可能性逐一排除，找出火警真正原因。」

此外，鑑於天氣原因，現場搜證工作極具挑戰性。梁耀明先生憶述：「當時香港天氣炎熱，電纜橋內更熱氣迫人，猶如桑拿浴室般。走到橋內有水的位置就像進入了蒸氣浴室；待在橋外範圍，感覺像在曬日光浴，現場只有一棵小樹可供遮蔭。其後，即使在7月1日八號風球生效下，我們仍要到現場檢取樣本，繼續進行調查工作。」

隨後的調查工作需時。然而，由於電纜橋塌下，阻塞了排水渠，因此電纜橋需在短期內移除，這麼現場證據的細節也會隨之消失。有見及此，電力法例部善用創新技術，採購並運用360攝錄機，沿着電纜橋拍攝整個現場環境，把現場所有細節情況以數碼形式記錄下來。這些錄影片段在後續調查工作中發揮了重要作用，小組成員可隨時翻看片段探視現場情況，甚至可放大高解像度影像，以便觀察當中的細節。

Talking about the processes of investigation and evidence collection, colleagues remarked that they met numerous challenges. The EMSD joined various departments, including the FSD, the Hong Kong Police Force and the Government Laboratory, to collect evidence and conduct an investigation. Mr Lam Wai-kei, a chief technical officer of the Consumer Installations Sub-division of the ELD, was one of the first personnel to enter the incident bridge to collect evidence. "After burning for three to four hours, the structure of the bridge had become unstable. For safety reasons, we had to wait a few days for bridge reinforcement before entering the site in small groups. Upon going in, we could see the interior of the cable bridge was seriously damaged by the fire, and the situation at that time was truly unimaginable. Our task was to investigate whether the fire was caused by electrical installation problems. To this end, we had to check any suspicious spots along the entire cable bridge. Firstly, we had to determine the suspected origin of the fire as much as possible based on the on-site environment, and check nearby electrical installations that might have caught fire. We then eliminated the many possibilities one by one in order to find out the true cause of the fire.

In addition, the on-site evidence finding was very arduous due to the weather. Mr Leung Yiu-ming recalled, "It was very hot in Hong Kong then. The interior of the cable bridge was filled with hot air like a sauna room. Walking to the area with water inside the bridge was as if entering a steam room while staying in the area outside the bridge felt like sunbathing. There was only a small tree on site that could provide shade. Subsequently, even when typhoon signal no. 8 was hoisted on 1 July, we still had to go to the site to collect samples for the ongoing investigation."

The ensuing investigation took time. However, the collapsed cable bridge would have to be removed soon afterward as it was blocking the drainage channel. This would result in the loss of details of the site evidence. In view of this, the ELD leveraged innovative technology and procured a 360 camera to film the entire condition along the cable bridge, capturing all site details digitally. The footage was important for the ongoing investigation as the team could watch it and revisit the site digitally anytime, and even enlarge the high-resolution images to examine any fine detail.

核電及電力供應安全分部機電工程師何建業先生除了搜購合適的360攝錄機外，還在調查過程中，每天整理簡報。他說：「我會在其他同事完成當日的調查及視察工作後，立刻開始整合資料，務求在數小時內完成有關工作並為同事及管理層提供每日最新資訊，讓他們可緊貼調查及修復進度。跟進工作所需處理的資料數量非常龐大，有關的數碼資料儲存量高達數十吉字節。」

核電及電力供應安全分部機電工程師黃苡晴女士負責整理與事故相關的資料，為機電署擬備回應口徑。她說：「事故後，我率先要做的是預備和撰寫初步事故報告，並處理公眾及傳媒的查詢。其後，我參與草擬有關是次事故的文件，包括資料摘要、回應口徑等，為答覆立法會議員的相關提問作好準備。與此同時，我也需要擬備新聞稿和整合內部及跨部門的相關文件和資料。」

為確保調查公正無私以釋除公眾疑慮，機電署委託了獨立第三方專家進行研究和桌面研究，以及就改善措施提出建議。中電也邀請不同範疇的專家共同研究事故成因，透過搭建一比一模型模擬實境，驗證有關起因。結果證實，事故起因是電纜橋內橫樑上的熒光燈起火，火種掉到下方最接近的通訊電纜，再蔓延至旁邊的高壓電纜。調查結束後，在機電署與消防處、水務署和屋宇署積極協調下，中電在短時間內為轄下所有電纜橋完成改善措施，包括加裝防火及滅火裝置，更換所有可能會引致火警的低壓電力裝置等。

這次事故體現了「治未病」的重要性。黃子沖先生說：「事故後，我們除了監督中電為類似設計的電纜橋裝設防火設施外，還敦促中電採取中長期措施，為其相關輸電設施進行風險評估，並檢討事故發生時的應變措施。此外，我們計劃在2023年年底舉行演習，模擬重大事故，以期提升恢復電力供應的速度，改善匯報和更新資料的流程。經此一役，我們深刻體會到即使事故看似極不可能發生，我們都必須時刻保持高度警覺；否則一旦發生，後果不堪設想。因此，大家都應竭盡所能，想辦法減少同類事故再度發生的機會，同時建立更有效的應變機制。此外，在未來處理嚴重事故時，必須做好溝通工作，特別是確保各部門與受規管對象能在事故發生後的混亂情況下，透過更有效的即時通訊渠道保持充分溝通。」

電纜橋火災突如其來，令廣大市民措手不及，電力法例部的人員急民所急，在嚴重事故中處變不驚，發揮靈活應變和團隊合作精神，迅速辦好善後、調查和改善等多方面的工作，妥善緩解危機，並且防患於未然。

Apart from searching for and procuring the appropriate 360 camera, Mr Ho Kin-yip, Henry, an electrical and mechanical engineer of the NUS Sub-division, also compiled daily updates during the investigation process. He said, "I would begin consolidating information immediately after my colleagues finished the day's investigation and inspections, with a view to completing the relevant work within a few hours and providing daily updates to colleagues and the management, so that they could keep track of the progress of the investigation and the repair work. The amount of information processed in the follow-up work was massive, with digital data taking up tens of gigabytes (GB) of storage space."

Ms Wong Yee-ching, Stephanie, an electrical and mechanical engineer of the NUS Sub-division, consolidated all information about the incident to prepare lines-to-take for the EMSD. She said, "Right after the incident, I had to prepare and write a preliminary incident report, as well as handling enquires from the public and media. Afterwards, I participated in drafting documents related to the incident, including information briefs and lines-to-take, etc. to make preparation for answering the relevant questions raised by Legislative Council Members. At the same time, it was necessary for me to prepare press releases and consolidate relevant internal and inter-departmental documents and information."

To ensure impartiality of the investigation to allay public concern, the EMSD engaged independent third-party experts to conduct studies and desktop researches as well as providing recommendations on the improvement measures. The CLP Power also invited experts from different fields to jointly study the cause of the incident. A life-sized model simulating the scene was built for verifying the relevant cause. It was eventually proved that the incident was caused by the fire of a fluorescent light on a cross beam inside the cable bridge, because of which sparks dropped down to the nearest pilot cable below, and then the fire spread to the adjacent high-voltage cables. After the investigation, the CLP Power completed improvement measures, including adding fire protection and fire-fighting installations, and replacing all low-voltage electrical installations that may cause fire, for all its cable bridges within a short time, under the active coordination of the EMSD, the FSD, the Water Supplies Department, and the Buildings Department.

The incident underscored the importance of preventative treatment. Mr Jack Wong said, "After the incident, we not only oversaw the CLP Power's installation of fire services facilities for cable bridges of similar design, but also urged the CLP Power to take medium-to-long-term measures to conduct risk assessments for relevant power transmission facilities, as well as reviewing its emergency response measures. Furthermore, we plan to hold a drill by the end of 2023, simulating a major incident, with a view to enhancing the speed of power restoration and improving the reporting and updating processes. Through this experience, we deeply realise the importance of staying vigilant even when incidents seem highly unlikely to occur; otherwise, once they do occur, the consequences can be dire. Therefore, all of us should do our utmost to find ways to reduce the chances of similar incidents happening again and establish more effective emergency response mechanisms. Besides, when dealing with serious incidents in the future, good communication is essential, especially ensuring that various departments and the regulatees can maintain adequate communication through effective instant communication channels even in chaotic situations following the incidents."

The sudden onslaught of the cable bridge fire has caught the public unprepared. Much concerned about the well-being of those affected by the fire, the ELD rose to the challenges by exercising its agility and team spirit, expeditiously completing the remedy, investigation and improvement work, thereby resolving the crisis and curbing other potential problems in the bud.

保障公眾安全
PROTECTING PUBLIC SAFETY

氣體安全

規管燃氣基礎設施及推動氫能發展

《香港氣候行動藍圖2050》提出四大減碳策略，其中兩項為「淨零發電」及「綠色運輸」。機電署氣體標準事務處一直積極參與落實有關策略。在「淨零發電」方面，我們持續監察兩家電力公司合作在香港西南水域發展本港首座海上液化天然氣接收站(海上接收站)的各項氣體裝置建造工程，並在測試成功後批准使用各項氣體裝置，讓電力公司可及時進行所需的調試工作。在「綠色運輸」方面，我們為政府推動氫能運輸提供技術支援。

GAS SAFETY

Regulating Gas Infrastructure and Promoting the Development of Hydrogen Energy

Hong Kong's Climate Action Plan 2050 outlined four major decarbonisation strategies, two of which were "net-zero electricity generation" and "green transport". The Gas Standards Office (GasSO) of the EMSD has been actively participating in the implementation of the strategies. Regarding "net-zero electricity generation", we continuously monitored the construction of various gas installations at the first offshore liquefied natural gas (LNG) terminal in the south-western waters of Hong Kong jointly developed by the two power companies, and granted approval for the use of the gas installations upon successful testing so that the power companies could carry out necessary commissioning procedures in a timely manner. For "green transport", we provided technical support to the Government in promoting hydrogen transport.

我們持續監察兩家電力公司合作在香港西南水域發展本港首座海上接收站的各項氣體裝置建造工程，並在測試成功後批准使用各項氣體裝置，讓電力公司可及時進行所需的調試工作。

海上接收站建造期間，氣體標準事務處經常派員到現場視察，以確保海上接收站的氣體裝置達到安全標準。

We continuously monitored the construction of various gas installations at the first offshore LNG terminal in the south-western waters of Hong Kong jointly developed by the two power companies, and granted approval for the use of the gas installations upon successful testing, so that the power companies could carry out necessary commissioning procedures in a timely manner.

During the construction of the offshore LNG terminal, the GasSO often dispatched officers to conduct on-site inspections, so as to ensure that the gas installations at the terminal meet the safety standards.

海上接收站項目的海上工程於2020年展開，並已大致完成。項目建造期間，氣體標準事務處以「治未病」的精神，經常派員到現場視察，即使未收到建造或使用批准申請文件也多次到訪，以確保海上接收站的氣體裝置達到安全標準，並加快審批流程。2023年4月18日，浮式儲存再氣化裝置船(即儲氣船)到達並長期停泊在海上接收站，日後用於接收、儲存液化天然氣，以及把液化天然氣再氣化供發電之用。海上接收站已進入最後的整體調試階段，我們會繼續監察海上接收站餘下的調試工作，預計接

The offshore construction works of the offshore LNG terminal project began in 2020, and the construction works of the project have been largely completed. During the construction of the project, the GasSO practised the prevention strategy and often dispatched officers to conduct on-site inspections even before receiving applications for construction or use approval, so as to ensure that the gas installations at the terminal meet the safety standards and expedite the approval process. The Floating Storage and Regasification Unit vessel, which will be used to receive, store and regasify LNG for power generation, has been permanently moored at the terminal since its arrival on 18 April 2023. As the terminal entered the final fine-tuning stage, we would continue to monitor the remaining work in preparation for its full

環境及生態局局長謝展寰先生於2023年4月參觀位於香港西南水域的海上接收站及儲氣船，同行還有環境及生態局常任秘書長(環境)謝小華女士、環境及生態局副局長黃淑嫻女士及機電署署長彭耀雄先生等相關政府官員。

Mr Tse Chin-wan, the Secretary for Environment and Ecology, visited the offshore LNG terminal and the Floating Storage and Regasification Unit vessel in the south-western waters of Hong Kong in April 2023, together with Ms Janice Tse, the Permanent Secretary for Environment and Ecology (Environment), Ms Diane Wong, the Under Secretary for Environment and Ecology, Mr Eric Pang, the Director of Electrical and Mechanical Services, and other relevant government officials.

收站可按計劃於2023年第三季投入運作。屆時，兩家電力公司可直接在國際市場採購液化天然氣，本港能源供應會更可靠、更多元化，同時有助減少碳排放量。

commissioning by the third quarter of 2023 as scheduled. By then, the two power companies will be able to purchase LNG directly in the international market, which will ensure a more reliable and diverse energy supply for Hong Kong and help reduce carbon emission.

為配合政府計劃在2025年制訂陸上運輸使用氫能的長遠策略，務求香港在2050年前達致車輛零排放和實現碳中和的目標，機電署積極參與由環境及生態局領導的氫能源跨部門工作小組(工作小組)，全力提供技術支援。機電署已聘請氫燃料顧問在2022年11月開展各項研究工作，與不同持份者商討及制訂關於氫燃料系統、加氫站和量化風險評估的技術指引；審視氫燃料電池車試驗計劃；以及研究未來氫燃料應用的規管模式。此外，我們籌辦了跨部門氫能發展海外考察活動，分別在2022年10月和2023年2月到訪英國及德國，考察當地的氫燃料電池巴士及加氫站、綠氫生產設施、氫能設備的測試及認證設施等。我們也積極聯繫本地及內地的氫能行業持份者，包括氫氣生產及供應商、設備生產商、加氫站營運商、氫燃料電池車輛供應商

In line with the Government's plan of formulating the long-term strategies on the application of hydrogen energy in road transport by 2025 in order that Hong Kong would achieve zero vehicular emissions and carbon neutrality before 2050, the EMSD actively participated in the Inter-departmental Working Group on Using Hydrogen as Fuel (the Working Group), led by the Environment and Ecology Bureau (EEB), and provided full technical support. The EMSD engaged hydrogen fuel consultants to start various studies in November 2022 and would gather input from various stakeholders and formulate technical guidelines on hydrogen fuel systems, hydrogen refilling stations and quantitative risk assessment, review the hydrogen fuel cell vehicle trial scheme, and explore the regulatory framework for future hydrogen fuel application. In addition, we organised inter-departmental overseas study visits on hydrogen energy development to the United Kingdom and Germany in October 2022 and February 2023 respectively. The delegations explored local hydrogen fuel cell buses and hydrogen refilling stations, green hydrogen production facilities, as well as testing and certification facilities for hydrogen

機電署籌辦了跨部門氫能發展海外考察活動，分別到訪英國及德國，考察當地的氫燃料電池巴士及加氫站、綠氫生產設施、氫能設備的測試及認證設施等。

The EMSD organised inter-departmental overseas study visits on hydrogen energy development to the United Kingdom and Germany, to explore local hydrogen fuel cell buses and hydrogen refilling stations, green hydrogen production facilities, as well as testing and certification facilities for hydrogen equipment.

保障公眾安全
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等，了解他們的技術方案和建議，為本地氫能試驗計劃做好準備。截至2023年6月，機電署已為八個氫燃料技術試驗項目的申請進行初步技術評估，並向工作小組提交建議。工作小組已於2023年3月及6月原則上同意合共六個試驗項目的申請，包括城巴有限公司試驗一輛氫燃料電池雙層巴士及其廠房的加氫設施、香港中華煤氣有限公司(煤氣公司)在其煤氣廠試驗抽氫設施、中石化(香港)有限公司在元朗凹頭建設和試驗加氫站、香港鐵路有限公司以非載客形式在屯門試行氫燃料有軌電車(輕鐵)，以及林德港氧有限公司試驗由氫氣長管拖車供應氫氣予氫燃料輕鐵。

equipment. We also actively engaged with local and Mainland stakeholders in the hydrogen energy industry, including hydrogen producers and suppliers, equipment manufacturers, hydrogen refilling station operators and hydrogen fuel cell vehicle suppliers etc., to understand their technical solutions and recommendations, in preparation for local hydrogen trials. By June 2023, the EMSD had conducted preliminary technical assessments for eight applications of trial projects on hydrogen fuel technology, and submitted recommendations to the Working Group. In March and June 2023, the Working Group gave agreement-in-principle to a total of six applications of trial projects, which included the trial of one hydrogen fuel cell double-deck bus and associated hydrogen refilling facility at a bus depot by Citybus Limited, the trial of a hydrogen extraction facility at a gas production plant by Hong Kong and China Gas Company Limited (HKCG), construction and testing of a hydrogen refilling station at Au Tau, Yuen Long by Sinopec (Hong Kong) Limited, the trial of a hydrogen-fuelled, non-passenger carrying light rail vehicle (LRV) in Tuen Mun by MTR Corporation Limited, and the trial of using a hydrogen tube trailer to deliver hydrogen to a hydrogen-fuelled LRV by Linde HKO Limited.

在專用石油氣加氣站(專用氣站)方面，機電署於2021年批出全港12個專用氣站的新合約後，各專用氣站陸續按合約要求進行更換石油氣設施等翻新工程。截至2023年6月，已有十個經翻新的專用氣站重新投入服務。至於餘下兩個位於馬鞍山及元朗的專用氣站，翻新工程預計於2023年年底前完成。

Regarding dedicated liquefied petroleum gas (LPG) filling stations (DFSs), after the EMSD awarded new contracts for all 12 DFSs in Hong Kong in 2021, the DFSs have been progressively undergoing renovation works, including the replacement of LPG facilities, in accordance with the contract requirements. As at June 2023, ten renovated DFSs were re-opened for operation. It is expected that the renovation works for the remaining two DFSs, located in Ma On Shan and Yuen Long, will be completed by the end of 2023.

機電署批出12個專用氣站的新合約後，各專用氣站陸續按合約要求進行更換石油氣設施等翻新工程。截至2023年6月，已有十個經翻新的專用氣站重新投入服務。

After the EMSD awarded new contracts for 12 DFSs, the DFSs have been progressively undergoing renovation works, including the replacement of LPG facilities, in accordance with the contract requirements. As at June 2023, ten renovated DFSs were re-opened for operation.

保障社區的氣體安全

如住宅大廈外牆的煤氣及石油氣立管出現老化，會對氣體用戶構成安全隱患。過去幾年，我們一直與各註冊氣體供應公司攜手合作，持續加強檢查氣體立管的狀況。我們秉持「治未病」的方針，找出風險相對較高的屋苑，勸喻和鼓勵用戶盡早更換老化和銹蝕的煤氣及石油氣立管。在本年度，我們選定了17個屋苑，包括八個使用煤氣和九個使用中央石油氣供應系統的屋苑，向業主和物業管理公司宣傳更換老化立管的重要性。在選定的屋苑中，15個已完成立管更換工程。

Ensuring Gas Safety in the Community

Ageing gas risers attached to the external walls of residential buildings for supplying town gas and LPG will pose potential safety hazards to gas users. Over the past few years, we have been working closely with registered gas supply companies (RGSCs) to continuously strengthen inspection of gas risers. Embracing the strategy of prevention, we identified residential estates with relatively higher risks, and advised and encouraged users to replace aged and corroded gas risers as early as possible. During the year, we selected 17 residential estates, including eight using town gas and nine using centralised LPG supply systems, to promote the importance of replacing aged risers to their owners and property management companies. Among the selected estates, 15 have completed the gas riser replacement works.

除此之外，我們繼續推動在村屋安裝中央石油氣供應系統，鼓勵村屋業主及建造商在新建村屋採用該類共用的中央式供氣系統。安裝中央石油氣供應系統不但可減少村屋用戶儲存石油氣瓶的數量，從而提升安全和減少不必要的風險，還可避免個別用戶在石油氣未用盡時便更換氣瓶而造成浪費。我們於2023年4月發布《氣體應用指南：新建村屋的瓶裝石油氣裝置》，就建造村屋的中央石油氣供應系統提供技術建議。

Apart from that, we continued to promote the installation of centralised LPG supply systems at village houses by encouraging village house owners and developers to adopt such systems for shared use in newly built village houses. Installing centralised LPG supply systems helps not only reduce the number of LPG cylinders stored by gas users living in village houses, which will enhance safety and mitigate risks, but also minimise LPG wastage from premature replacement of LPG cylinders. In April 2023, we issued the Guidance Note on LPG Supply Installations for New Village Houses, providing technical recommendations on the construction of centralised LPG supply systems for village houses.

機電署於2023年4月發布《氣體應用指南：新建村屋的瓶裝石油氣裝置》，就建造村屋的中央式石油氣供氣系統提供技術建議。

The EMSD issued the Guidance Note on LPG Supply Installations for New Village Houses in April 2023, providing technical recommendations on the construction of centralised LPG supply systems for village houses.

我們於2019年進行全港食肆氣體安全問卷調查後，推行「快速檢查」計劃，以提升食肆氣體裝置安全。我們安排註冊氣體供應公司為需要優先處理的食肆進行快速檢查，並鼓勵食肆為氣體裝置進行定期安全檢查，以盡早處理安全隱患，提升氣體安全水平。由於上年度為300多家食肆進行快速檢查的工作頗見成效，我們在年內為更多食肆進行快速檢查，更擴大計劃範圍，把洗衣店納入為計劃對象。我們曾走訪逾400家洗衣店，發現約半數店鋪使用以瓶裝石油氣作為燃料的乾衣機。其後，我們安排註冊氣體供應公司為選定的洗衣店進行快速檢查，其中七成的檢查已經完成。檢查期間，我們提醒店主為其氣體裝置進行定期安全檢查，避免潛在的安全風險。我們會持續更新氣體安全指引，供使用燃氣的洗衣店跟從，以確保店鋪人員安全地使用氣體燃料。

Following a territory-wide survey on gas safety at food premises conducted in 2019, a "Quick Check" scheme was introduced to enhance the safety of gas installations in catering establishments. Not only did we arrange for RGSCs to conduct quick checks for prioritised restaurants, we also encouraged restaurants to carry out regular safety inspections (RSIs) of gas installations to address potential safety hazards as early as possible to improve gas safety. Due to the positive results brought by the quick checks conducted for more than 300 restaurants in the past year, we conducted quick checks for more restaurants and extended the scope of the scheme to cover laundry shops during the year. We visited over 400 laundry shops and found that about half of them used clothes dryers fuelled by LPG cylinders. RGSCs were then arranged to conduct quick checks for selected shops, and 70% of them were inspected already. During the inspections, shop owners were reminded to carry out RSIs of their gas installations to avoid safety hazards. We will continue to update the gas safety guidelines for laundry shops using fuel gas to follow, so as to ensure their safe use of fuel gas.

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本年度第五波疫情高峰期間，註冊氣體供應公司因社交距離措施而須暫停為住宅氣體用戶進行定期氣體裝置安全檢查工作。2022年共錄得274宗氣體事故，較2021年的歷史低位有所增加，可見有關的定期安全檢查工作對保障氣體安全至為重要。綜觀2022年的氣體事故，大部分為喉管輕微洩漏，涉及傷亡的氣體意外宗數仍維持單位數字，與過往幾年相若。

At the peak of the fifth wave of the epidemic during the year, RGSCs had to suspend RSIs of gas installations for domestic gas users due to social distancing measures. A total of 274 gas incidents were recorded in 2022, representing an increase from the record low level in 2021. The increase underlined the importance of RSIs in ensuring gas safety. Most of the gas incidents in 2022 were minor leaks in pipes, and the number of cases involving casualties remained at a single-digit level, which was similar to that of previous years.

在2023年首五個月，在強制性能源效益標籤計劃下獲得能源標籤的新型號家用冷氣機中，超過八成使用R32輕度易燃雪種。安裝這類冷氣機必須符合生產商所訂有關房間最小面積及安裝高度下限的要求，並須由受過專業訓練或已註冊的家用冷氣機輕度易燃雪種處理工程人員進行。機電署秉持「治未病」的做法，在新住宅發展項目的建造階段主動參考相關售樓說明書，審視新建樓宇安裝R32冷氣機的情況，確保冷氣機的安裝符合房間最小面積及安裝高度下限的要求。在本年度，我們審視了兩個裝有R32冷氣機的新樓盤，並確認相關冷氣機的安裝符合安全標準。此外，我們正協助環境及生態局推動在空調及製冷系統使用環保雪種，期望逐步取代使用對全球暖化帶來負面影響的氫氟碳化物的空調及製冷系統，讓本港繼續邁向可持續的未來。

In the first five months of 2023, among the new models of household air-conditioners that obtained energy labels under the Mandatory Energy Efficiency Labelling Scheme, over 80% use R32 refrigerant, which is a mildly flammable refrigerant. Installation of these air-conditioners must comply with the requirements on the minimum room area and the minimum installation height as specified by their manufacturers, and must be carried out by professionally trained or registered technicians handling mildly flammable refrigerant of household air-conditioners. In line with the approach of prevention, the EMSD proactively reviewed relevant sales brochures of new residential developments under construction to examine the installation of air-conditioners using R32 refrigerant (R32 air-conditioners) in the buildings, so as to ensure the installation adhered to the minimum room area and installation height requirements. During the year, we verified the installation of R32 air-conditioners in two new residential developments as compliant with the safety standards. We are also assisting the EEB in promoting the use of environmentally friendly refrigerants in air-conditioning and refrigeration systems, aiming to gradually replace those using hydrofluorocarbon refrigerants that will have a negative impact on global warming, and move towards a sustainable future for Hong Kong.

善用創科加強氣體安全

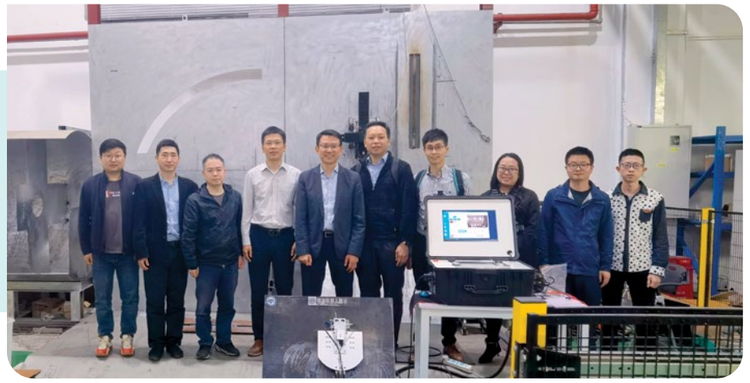
香港電燈有限公司(港燈)目前依賴一條長達93公里的海底天然氣管道，從廣東大鵬液化天然氣接收站輸入天然氣。港燈以往需要每兩個月派員在直升機上進行空中視察，檢查海底管道是否有漏氣跡象。在本年度，機電署成功促成港燈與廣東省科學院合作，利用無人機進行水面視察，檢查海底管道上方有否因漏氣而產生的氣泡。採用此做法可更頻繁地進行實地檢查，更可有效監察海底管道附近的海面，確保管道不受海上各類作業的影響。未來，我們計劃引入創新的人工智能分析功能，加強保障海底管道的維修管理，使輸氣系統更穩定可靠。

Leveraging I&T to Enhance Gas Safety

The Hongkong Electric Company Limited (HEC) currently relies on a 93-km-long subsea pipeline to import natural gas from Guangdong Dapeng LNG Terminal. The HEC used to deploy staff for aerial inspection on helicopters every two months to check for any signs of gas leakage in the pipeline. During the year, the EMSD successfully facilitated the collaboration between the HEC and the Guangdong Academy of Sciences to utilise a drone for water surface inspection to check if there were bubbles above the pipeline that may indicate gas leakage. Adopting this approach enabled more frequent on-site inspections, as well as effective monitoring of the sea surface in the vicinity of the pipeline to ensure that the pipeline would not be affected by various offshore operations. We plan to introduce innovative artificial intelligence (AI) analysis features in the future to strengthen the maintenance of subsea pipelines, so as to further improve the stability and reliability of the gas transmission system.

此外，機電署與廣東省科學院於2023年第一季共同研發和製造智能缸車檢測機械人，用於檢測及分析石油氣缸車氣缸的內部狀況。機械人體積細小且具備爬壁功能，可倒掛及360度靈活運作，攝錄氣缸內的實時高清影像，還配備超聲波檢測模組，可準確檢測焊縫是否完整並量度缸壁厚度。機械人亦會自動分析檢測模組採集的數據，為每輛缸車建立標準化數據庫，方便日後分析和監察。這個機械人研發項目榮獲多個內部及國際獎項，包括第四十八屆日內瓦國際發明展銀獎及韓國消防協會頒發的特別獎。我們預期智能缸車檢測機械人不但可協助規管團隊克服人手檢測所面對如狹窄的氣缸內部等的環境限制，更可大幅縮短檢測時間至數小時 完成，減少安全隱患。另外，缸車的數據分析亦有助我們進行預先評估及跟進，確保氣體安全。隨着機械人技術日趨成熟，我們計劃向業界推廣這項技術，提高行業整體檢查氣體設施的安全和可靠程度。

In addition, the Intelligent Tanker Robot for inspecting and analysing the inner shell condition of the tank of LPG road tankers was co-developed and fabricated by the EMSD and the Guangdong Academy of Sciences in the first quarter of 2023. With its compact size and wall climbing capabilities, the robot can operate flexibly by hanging upside down and rotating 360 degrees to take real-time, high-resolution images of the tank interior. It is also equipped with the ultrasound inspection module that can accurately examine the integrity of welds and measure the thickness of the tank shell. Furthermore, the robot will autonomously analyse the data collected by the inspection module and set up a standardised database for each road tanker to facilitate future analysis and monitoring. This robot invention won several internal and international awards, including a silver medal at the 48th International Exhibition of Inventions of Geneva and the Special Prize from the South Korea Fire Services Association. We expect that not only will the Intelligent Tanker Robot help the regulatory team overcome the environmental constraints of manual inspection such as narrow tank interior, but it can also shorten the inspection time significantly to just a few hours, posing less potential hazard. Besides that, data analysis of the road tankers can facilitate early assessment and follow-up action to ensure gas safety. As the robotic technology has become increasingly mature, we plan to promote this technology to the trade for enhancing the overall safety and reliability of gas facility inspections in the industry.



機電署與廣東省科學院共同研發和製造智能缸車檢測機械人，用於檢測及分析石油氣缸車氣缸的內部狀況。

The EMSD and the Guangdong Academy of Sciences co-developed and fabricated the Intelligent Tanker Robot for inspecting and analysing the inner shell condition of the tank of LPG road tankers.

為了協助制定更有效的氣體立管定期檢查及預防性維修策略，機電署開發了一個具備人工智能分析功能的「氣體管道健康智能預測模型」。該模型能預測樓宇氣體立管的健康狀況及按有關健康狀況進行排序，並在地圖上顯示，以便安排檢查的優先次序，提升氣體安全。

To facilitate the formulation of a more effective strategy for regular inspection and predictive maintenance of gas risers, the EMSD has developed the "Gas Pipe Health AI Prediction Model" with AI analysis features. The model can predict and rank the health condition of gas risers of buildings, as well as displaying them on a map to help us determine which gas pipes to attend to first, so as to enhance gas safety.

全港有兩萬多幢樓宇設有氣體立管，這些管道需要定期檢查及維修保養，以確保其正常運作和安全性。為了更有效地安排這類工作的優先次序，我們開發了一個具備人工智能分析功能的「氣體管道健康智能預測模型」。預測模型根據全港建築物的氣體立管的運作情況、地理位置、環境因素等資料，為每棟建築物的氣體立管評分。該模型可按氣體立管健康狀況進行排序，並在地圖上

There are more than 20 000 buildings in Hong Kong equipped with gas risers that require regular inspections and maintenance to ensure their proper operation and safety. To facilitate prioritisation of such work more effectively, we have developed a model with AI analysis features that can predict the health condition of gas pipes. With the predictive model, the gas risers of each building are scored based on data such as operational condition, geographical location and environmental factors of gas risers in all the buildings across the territory. By ranking the health condition of gas risers

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展示，讓我們清楚掌握全港哪些建築物的氣體立管需要優先檢查。註冊氣體供應公司已利用這個創新方案，以更科學、更有效的方法安排氣體立管檢查服務的先後次序，並制定氣體立管的預測性維修計劃，以提升氣體立管的安全水平。該系統在第四十八屆日內瓦國際發明展榮獲銅獎，充分肯定我們的創科成果。

and displaying them on a map, the model provides a clear overview of the gas risers of buildings that require priority inspection. RGSCs have been utilising this innovative solution as a more scientific and effective means to determine which gas pipes to attend to first and draw up predictive maintenance plans, in order to enhance the safety level of gas risers. The system won a bronze medal at the 48th International Exhibition of Inventions of Geneva, serving as a significant recognition of our I&T achievements.

全港石油氣儲存庫大都遠離民居。然而，當發生氣體洩漏事故時，我們必須迅速作出應急反應。有鑑於此，我們一直與業界合作，致力尋求創新解決方案。2022年8月，我們率先在美孚新邨的中央石油氣儲存庫安裝「氣體偵測連鎖系統」，並在儲存庫的不同區域設置氣體洩漏感應器，一旦某個區域出現氣體洩漏，系統便會立即啟動應急程序，停止供氣並同時發送短訊至註冊氣體供應公司或維修承辦商，以便他們從速跟進。經過六個月的反覆測試，我們證實系統性能穩定可靠，操作表現令人滿意。因此，我們會推動業界在其他大型中央石油氣儲存庫安裝同類系統，亦會在相關的工作守則中加入這項最佳設計及操作方案，以防止發生重大的燃氣事故，提升氣體安全水平。

Most LPG storage facilities in Hong Kong are located far away from the residential areas. However, in the event of gas leakage incidents, prompt emergency response becomes crucial. In this light, we have been working with the trade to explore innovative solutions. In August 2022, we took the lead to install the Smart Gas Detection Interlocking System in the central LPG storage facility at Mei Foo Sun Chuen. Gas leakage sensors were set up in different locations within the facility. When a gas leakage is detected, the system will activate the emergency response procedure immediately, stop gas supply and simultaneously send a message to the RGSC or maintenance contractor concerned for swift follow-up. After six months of repeated testing, the system was proved reliable with satisfactory performance. Therefore, we will encourage the trade to install similar systems in other large-scale central LPG storage facilities. We will also incorporate this best design and operational solution into the relevant code of practice in a bid to prevent major gas incidents and enhance gas safety standards.

我們安排在美孚新邨的中央石油氣儲存庫安裝「氣體偵測連鎖系統」，並在儲存庫的不同區域設置氣體洩漏感應器，當某個區域出現氣體洩漏，系統便會立即啟動應急程序。

We arranged for the installation of Smart Gas Detection Interlocking System in the central LPG storage facility at Mei Foo Sun Chuen. Gas leakage sensors were set up in different locations within the facility. When a gas leakage is detected, the system will activate the emergency response procedure immediately.

由於在疫情期間難以進入氣體用戶的家中檢查外牆的燃氣喉管，我們在幾年前引入的激光甲烷檢測儀因而大派用場。這款用於遙距檢測燃氣喉管的儀器可安裝在腳架上，從遠至200米的距離對準外牆的氣體喉管進行檢測，偵測漏氣情況。年內，我們除了製作關於檢測儀的教學短片外，還安排機電署的工程師在香港電台的資訊節目，講解我們如何使用這款儀器進行遙距喉管檢測，以提升氣體安全規管工作的效率；同時我們透過該節目鼓勵市民為氣體裝置定期「驗身」，及早更換老化氣體喉管及爐具，令他們在家中使用氣體爐具時更安心。

The Laser Methane Detector that we acquired a few years ago came in handy when it was difficult to enter gas users' homes to inspect the gas risers on the external walls during the epidemic. The device, which is used for remote inspection of gas pipes, can be mounted on a tripod and pointed at the gas risers on the external walls to detect potential gas leaks from up to 200 metres away. During the year, in addition to producing a tutorial video about the detector, we arranged for an EMSD engineer to explain how the device was used for remote detection of gas leaks to enhance the efficiency of gas safety regulatory work in an RTHK information programme, through which we also encouraged the public to conduct regular inspections of gas installations and replace ageing gas pipes and appliances, in order to ensure peace of mind while enjoying domestic gas supply.

本署的工程師在香港電台的資訊節目中講解如何使用激光甲烷檢測儀器進行遙距喉管檢測，以提升氣體安全規管工作的效率；並鼓勵市民為氣體裝置定期「驗身」，及早更換老化氣體喉管及爐具，令他們使用氣體爐具時更安心。

In an RTHK information programme, our engineer explained how the laser methane detector was used for remote detection of gas leaks to enhance the efficiency of gas safety regulatory work, and encouraged the public to arrange regular inspections of gas installations and timely replace ageing gas pipes and appliances, in order to ensure peace of mind when using the gas appliances.

煤氣公司研發的智能煤氣錶具備多種安全功能，包括內置安全閥門。如使用煤氣出現異常情況，例如氣體流量過大、長時間持續用氣或長期沒有進行安全檢查，內置安全閥門便會自動關上，截斷供氣。為了提升家居使用煤氣的安全，煤氣公司已於本年度開始在新建的住宅樓宇裝設智能煤氣錶。

The HKCG has developed a smart gas meter with a variety of safety features, including a built-in safety valve, which will shut off automatically to cut off the gas supply when anomalies, such as excessive gas flow, prolonged and continuous gas use or a lack of safety inspection over a long duration, are detected. To enhance the safety of using town gas at home, the HKCG has begun installing the smart gas meters in all new residential buildings during the year.

2022年10月，我們推出「註冊氣體供應公司網站」，供石油氣加氣站、石油氣缸車及石油氣儲存庫的營運商以及其他註冊氣體供應公司，以標準格式上載氣體設備資料、安全論證報告、事故數據、日常檢查及保養維修記錄等。該網站有助我們作為規管者更便捷地查閱和分析業界提交的資料，並預先規劃監管及風險管理工作。

The RGSC Online Portal was launched in October 2022, through which the operators of LPG filling stations, LPG road tankers and LPG storage facilities as well as other RGSCs can upload the gas facilities information, safety reports, incident data, regular check and maintenance records in standardised format. This facilities our role as the regulator in reviewing and analysing the information submitted by the trade, and enables us to plan ahead for regulatory and risk management work.

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應對疫情挑戰

在2022年疫情高峰期間，我們與煤氣公司及各註冊氣體供應公司緊密聯繫，確保業界遵守防疫規例及措施，以及煤氣公司的煤氣廠和各石油氣庫維持正常運作。此外，我們制定緊急應變措施，確保供氣正常。

鑑於社交距離措施，註冊氣體供應公司無法提供入屋檢查服務，導致氣體裝置定期安全檢查暫停了長達四個月，使檢查工作出現滯後。在疫情稍緩時，我們與註冊氣體供應公司商討在恢復進行氣體裝置定期安全檢查後應採取的安全措施。例如，有關人員在入屋檢查時，應戴上口罩、手套以至鞋套等，令住戶更安心。在疫情緩和後，註冊氣體供應公司安排人員加班處理積壓的檢查個案，至2023年3月，已大致趕上定期安全檢查的進度。

在疫情期間，輸港石油氣的船期延誤，導致石油氣供應緊張。經我們與廣東省對口機關協調後，供應迅速恢復穩定。此外，由於個別專用加氣站有職員確診或需要隔離，造成人手短缺。為此，機電署密切監察各專用加氣站的營運情況，並要求營運商制定應急計劃及建議優化人手調配。我們亦提醒各加氣站，在有需要時及早通知石油氣車輛業界，鼓勵他們轉往其他加氣站加氣。

提升車輛維修水平

為提升車輛維修業的認受性及對年輕人的吸引力，政府致力於「車輛維修技工自願註冊計劃」應用香港資歷架構的「過往資歷認可」。就此，由政府及業界代表組成的車輛維修技術諮詢委員會(諮詢委員會)已達成共識，同意把該計劃下四類主要服務類別(即機械服務、電工服務、車身修理及車身噴漆)的相關資歷指定為「職業資歷階梯」第三級資歷，並讓註冊車輛維修技工可透過汽車業「過往資歷認可」機制取得相關服務類別的香港資歷級別第三級資歷，而尚未註冊或從事其他服務的車輛維修技工亦可透過該機制，在通過評估測試後取得相關服務類別的香港資歷級別第三級資歷，以符合該計劃的註冊資格。符合資格的七千多名註冊車輛維修技工可在未來三年於註冊續期時申請取得有關資歷。過往資歷認可安排將於2023年7月實施，預料會有1 500名車輛維修技工率先受惠。

Responding to the Challenges of the Epidemic

During the peak of the epidemic in 2022, we liaised closely with the HKCG and RGSCs to ensure the trade's compliance with anti-epidemic regulations and measures, as well as the smooth operation of the HKCG's gas production plants and various LPG storage facilities. Additionally, we formulated contingency measures for ensuring normal supply of gas.

Due to social distancing measures, RGSCs were unable to provide in-home inspection services, resulting in a four-month suspension of RSIs of gas installations and a backlog in the inspection work. When the epidemic situation slightly eased, we discussed with the RGSCs the safety measures to be taken after the resumption of RSIs of gas installations. For example, the staff concerned should wear a face mask, gloves and shoe coverings, etc. while conducting in-home inspection to assure the residents of public hygiene. After the epidemic subsided, the RGSCs arranged for staff to work overtime to clear the backlog. By March 2023, they had largely caught up with the progress of RSI.

During the epidemic, the LPG shipment to Hong Kong was delayed, resulting in a tight supply of LPG. Through coordination with our counterparts in Guangdong Province, the supply swiftly recovered and stabilised. Additionally, there was a shortage of manpower in certain DFSs as some of their staff were infected with COVID-19 or put under isolation. In response, the EMSD closely monitored the operation of the DFSs, requested DFS operators to formulate contingency plans and suggested optimising manpower deployment. We also reminded the DFSs that, when necessary, early notification should be given to the LPG vehicle trade to encourage them to turn to other LPG filling stations for refuelling.

Enhancing Vehicle Maintenance Standard

To enhance the recognition of the vehicle maintenance trade and its appeal to young people, the Government endeavoured to apply the Recognition of Prior Learning (RPL) under the Hong Kong Qualifications Framework (HKQF) in the Voluntary Registration Scheme for Vehicle Mechanics (VRSVM). In this connection, the Vehicle Maintenance Technical Advisory Committee (VMTAC), which comprises representatives from the Government and the trade, has reached a consensus to designate the relevant qualifications in the four main service classes (i.e. Mechanical Services, Electrical Services, Body Repair and Body Painting) under the VRSVM as Level 3 in the Vocational Qualifications Pathway; and that registered vehicle mechanics (RVMs) can obtain HKQF Level 3 qualifications in the relevant service classes through the RPL mechanism of the automotive industry, whereas vehicle mechanics who have not yet registered or are engaged in other services can also obtain HKQF Level 3 qualifications in the relevant service classes through the mechanism after assessment, in order to be eligible for registration under the VRSVM. More than 7 000 eligible RVMs can apply for the qualifications when their registration is due for renewal over the next three years. It is expected that 1 500 vehicle mechanics will be the first group to benefit from the RPL arrangement upon its implementation in July 2023.

2023年4月，機電署人員與車輛維修技術諮詢委員會的代表一同參觀廣州市交通技師學院，了解該學院的電動車維修培訓課程。

In April 2023, the EMSD officers, together with the VMTAC representatives, visited the Guangzhou Communications Technician Institute, to learn about its EV maintenance training courses.

另外，為支持電動車普及化，我們正與諮詢委員會緊密聯繫，研究在車輛維修自願註冊計劃增設與電動車維修技工及工場相關的服務範圍。我們也會與香港及大灣區的培訓機構保持溝通，力求促成舉辦更多培訓課程，讓車輛維修技工從中掌握電動車維修技巧。舉例而言，我們在2023年4月連同諮詢委員會的代表參觀廣州市交通技師學院，了解該學院的電動車維修培訓課程，並與該學院及廣州市人力資源和社會保障局進行交流，探討合作機會。

我們已於2021年5月展開多層式車輛維修工場的第二階段顧問研究。研究的主要目的是探討首階段提出的設計方案是否能在香港應用，以及根據研究結果制訂一套多層式車輛維修工場的一般設計指引。我們亦邀請了車輛維修業的代表組成行業參與工作小組，以收集業界對多層式車輛維修工場在設計要求、技術細節、運作模式方面的意見，從而制定適用於香港的多層式車輛維修工場通用設計要求。有關研究預計在2023年年中完成。

In addition, to support the popularisation of electric vehicles (EVs), we are liaising closely with the VMTAC regarding the introduction of additional service scopes pertaining to EV mechanics and workshops to the voluntary registration schemes for vehicle maintenance. Moreover, we will continue to communicate with training institutes in Hong Kong and the Greater Bay Area, with a view to facilitating the launch of more training courses to help vehicle mechanics master EV maintenance techniques. For instance, in April 2023, we visited the Guangzhou Communications Technician Institute together with the VMTAC representatives to learn about its EV maintenance training courses, and exchanged views with the institute and the Guangzhou Municipal Human Resources and Social Security Bureau to explore opportunities for cooperation.

The second stage of the consultancy study on the development of vehicle maintenance workshops (VMWs) in multi-storey buildings (MSBs) has begun in May 2021. The main objectives of the study are to examine whether the designs proposed in the first stage can be applied to Hong Kong and to develop a set of general design guidelines regarding VMWs in MSBs based on the study findings. We have also invited representatives of the vehicle maintenance trade to form a trade engagement working group, so as to collect opinions of the trade on the design requirements, technical details and modes of operation of such VMWs in MSBs, with a view to formulating general design requirements regarding VMWs in MSBs that are applicable to Hong Kong. The study is expected to be completed by mid-2023.

保障公眾安全
PROTECTING PUBLIC SAFETY

完善註冊計劃及服務

年內，我們為註冊氣體裝置技工推出一系列的新措施，期望為業界注入新動力，推動業界與時並進。措施包括免費更換更耐用的實體註冊卡、推出「數碼機電牌照」，以及推行「註冊氣體裝置技工自願持續專業進修計劃」（自願進修計劃）。

Optimising Registration Schemes and Services

During the year, we launched a series of new initiatives for registered gas installers (RGIs) with the aspiration of bringing impetus to the trade and motivating it to keep abreast of the times. The initiatives included free replacement of more durable registration cards, the launch of Digital E&M Licences, and the introduction of the Voluntary Continuing Professional Development Scheme for RGI (the Voluntary CPD Scheme).

我們為註冊氣體裝置技工推出一系列的新措施，包括推行自願進修計劃。

We launched a series of new initiatives for RGIs, including the introduction of the Voluntary CPD Scheme.

一直以來，註冊氣體裝置技工一經註冊就永久有效，無須續期。由2022年6月起，我們陸續為註冊氣體裝置技工免費更換現有的紙質註冊卡為更美觀耐用的膠質註冊卡，並推出具防偽設計的數碼版本，註冊氣體裝置技工現在可以使用「智方便」登入「機電行業通」流動應用程式檢視和展示「數碼機電牌照」。新實體註冊卡及「數碼機電牌照」均方便註冊氣體裝置技工日常使用。此外，我們為註冊氣體裝置技工更換註冊卡時，會順道更新他們的個人聯絡資料，方便日後推出新措施和計劃時與業界聯絡。更換計劃推出後，已有1 700名註冊氣體裝置技工更換註冊卡，約佔在職技工總數六至七成。我們會繼續與註冊氣體供應公司和業界組織合作，鼓勵更多註冊氣體裝置技工更換註冊卡。

As an established practice, RGIs have been granted permanent registration status and they are not required to renew registration. From June 2022 onwards, we have been gradually replacing the existing paper registration cards with neater and more durable plastic registration cards for RGIs free of charge. A digital version was also introduced with anti-forgery designs. RGIs can now use "iAM Smart" to log on to the E&M Trade App to retrieve and display their Digital E&M Licences. Both the new registration card and the Digital E&M Licence are convenient for daily use by RGIs. In addition, we would update the personal contact information of RGIs while replacing their registration cards to facilitate future communication with trade practitioners about new initiatives and programmes. Since the replacement exercise was launched, 1 700 RGIs have had their registration cards replaced, equivalent to about 60% to 70% of the total number of in-service RGIs. We will continue to work with the RGSCs and trade organisations to encourage more RGIs to have their registration cards replaced.

至於自願進修計劃方面，我們在2022年6月的氣體安全諮詢委員會會議中得到委員全力支持，並在短短六個月內完成所有準備工作，計劃最終在2023年1月1日正式實施。該計劃以三年為一個周期，包含兩個培訓單元，單元一涵蓋法例及安全規定，單元二則涵蓋技術知識。我們鼓勵註冊氣體裝置技工在每個周期內就各單元最少修畢一個課程，以確保他們緊貼最新法規要求，並不斷提升技術知識。計劃實施後，註冊氣體裝置技工可登入「機電行業通」流動應用程式，瀏覽計劃的最新消息以及報讀機電署舉辦的培訓課程，更可透過流動應用程式的內置地圖輕鬆查看上課地點，以及查閱持續專業進修記錄。

As regards the Voluntary CPD Scheme, after obtaining full support from members of the Gas Safety Advisory Committee at a committee meeting in June 2022 and completing all preparatory work within six months, we officially launched the scheme on 1 January 2023. The scheme is operated in a three-year cycle and consists of two modules, with Module 1 covering content on legislative and safety requirements and Module 2 on technical knowledge. RGIs are encouraged to complete at least one course per module in each cycle to ensure that they are fully conversant with the latest statutory requirements and constantly upgrading their technical knowhow. After the launch of the scheme, RGIs can log on to the E&M Trade App to view the latest news about the scheme and enrol on courses organised by the EMSD. They can also use the embedded map in the mobile application to check the class location easily, as well as checking their CPD records.

自願進修計劃於2023年1月1日正式實施。機電署事前為註冊氣體裝置技工舉辦氣體安全事項簡介會，以介紹相關計劃。

The Voluntary CPD Scheme was officially launched on 1 January 2023, which had been introduced to RGIs at a gas safety briefing organised by the EMSD beforehand.

保障公眾安全
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我們在2023年5月推出「家用冷氣機輕度易燃雪種處理工程人員自願註冊計劃」，並在5月30日在總部大樓舉行啟動禮。該計劃旨在提高工程人員處理家用冷氣機輕度易燃雪種的技術及安全意識，我們預期2023年內約有1 000名工程人員完成註冊，屆時會向公眾宣傳該計劃。

We introduced the Voluntary Registration Scheme for Technicians Handling Mildly Flammable Refrigerant of Household Air-conditioners in May 2023 and held the launching ceremony at the EMSD Headquarters on 30 May 2023. The scheme aims to raise the technical understanding and safety awareness of technicians in handling mildly flammable refrigerants of household air-conditioners. It is expected that about 1 000 technicians will complete registration in 2023. We will publicise the scheme at that time.

2023年5月推出「家用冷氣機輕度易燃雪種處理工程人員自願註冊計劃」，並於該月底在總部大樓舉行啟動禮。該計劃旨在提高工程人員處理家用冷氣機輕度易燃雪種的技術及安全意識。

The Voluntary Registration Scheme for Technicians Handling Mildly Flammable Refrigerant of Household Air-conditioners was launched in May 2023 and its launching ceremony was held at the EMSD Headquarters at the end of the same month. The scheme aims to raise the technical understanding and safety awareness of technicians in handling mildly flammable refrigerants of household air-conditioners.

現行法例規定，石油氣瓶車及石油氣缸車的擁有人均須向機電署申請許可證，證明其車輛符合《氣體安全條例》的法定要求。年內，我們採取「精明規管」的做法並推出自動電子通告系統，系統會在許可證到期日前自動向許可證持有人發出通知，提醒他們從速辦理續期。這個做法不但讓許可證持有人注意按時續期，也可減省部門發出紙本續期通知書的行政開支。

Under the existing legislation, owners of LPG cylinder wagons and road tankers are required to apply for a permit from the EMSD to certify that their vehicles meet the statutory requirements of the Gas Safety Ordinance. During the year, we adopted the "smart regulation" approach and introduced an automated electronic notification system, which would issue notifications to permit holders automatically before the expiration dates to remind them to renew their permits promptly. The initiative helps alert permit holders to renew their permits on time while saving us the administration costs of issuing paper renewal notices.

在探索氫能發展方面，機電署與海關總署能效小組進行會面以保持緊密溝通，並考察大灣區的氫能發展項目。

In exploring the development of hydrogen energy, the EMSD met with the energy efficiency group of the GACC to maintain close communication, and visited hydrogen development projects in the Greater Bay Area.

跨境合作

在探索氫能發展方面，機電署與內地不同單位進行緊密溝通，包括與海關總署能效小組會面，探討設立綠色通道運送氫氣的可行性。我們又汲取中國質量認證中心在加氫站建設、安裝和營運的第三方認證方面的經驗，作為日後在香港監察加氫站運作的重要技術指引。此外，我們到北京和大灣區各地考察氫燃料發展及相關技術。我們與當地政府及氫能業界會面，參觀了製氫設施，以及氫氣長管拖車、加氫站、氫燃料輕鐵、氫燃料電池巴士及重型車輛等氫能設施。這些考察為本港規管和引入氫能運輸的工作提供了重要參考。

Cross-border Cooperation

In exploring the development of hydrogen energy, we have been maintaining close communication with various Mainland counterparts, including meeting with the energy efficiency group of the GACC to examine the feasibility of setting up a green channel for hydrogen delivery. Moreover, we drew on the experience of the China Quality Certification Centre in third-party certification of the construction, installation and operation of hydrogen refilling stations, and took it as important technical guidelines for monitoring the operation of hydrogen refilling stations in Hong Kong in the future. We also visited Beijing and various cities in the Greater Bay Area to study the local development of hydrogen fuel and relevant technologies. We met with the local governments and hydrogen industry, and visited hydrogen production facilities as well as hydrogen-powered facilities, such as hydrogen tube trailers, hydrogen refilling stations, hydrogen-fuelled LRVs, hydrogen fuel cell buses and heavy vehicles. These visits provide us with important references for the regulation and introduction of hydrogen transport in Hong Kong.

保障公眾安全
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疫情期間，我們繼續透過線上會議與內地對口單位保持溝通，合力阻截經網上平台違規售賣的未獲批准家用氣體爐具及氣瓶輸港。為進一步加強與內地電商企業的溝通交流，我們參加了由國家海關總署舉辦的規管政策宣講會，向各電商企業介紹香港燃氣市場的最新總體情況和輸港氣體用具的安全規定，以助內地企業優化內部監管措施。

During the epidemic, we continued to maintain communication with our Mainland counterparts through online meetings and made a concerted effort to intercept non-approved domestic gas appliances and cylinders that were sold illegally through online platforms from entering Hong Kong. To further strengthen communication and exchanges with Mainland e-commerce enterprises, we participated in a seminar on the regulatory regime organised by the GACC and shared with various e-commerce enterprises the latest overview of the Hong Kong gas market and safety regulations concerning gas appliances supplied to Hong Kong, to enable the Mainland enterprises to optimise their internal control measures.

此外，我們參與了在2022年11月舉行的西太平洋地區燃氣用具認證會議，今屆會議主題是「淨零排放路徑」，區內多家核證機構及實驗所均踴躍參與。在會議上，我們介紹了香港的強制性能源效益標籤計劃，並講解該計劃的最新階段把涵蓋範圍擴展至氣體煮食爐及即熱式氣體熱水爐。我們闡述該計劃的目的是鼓勵供應商向消費者提供更多種類的高能效產品，讓市民除了透過GU標誌識別獲批准的家用氣體用具，還可以根據能源標籤挑選具能源效益的爐具，在確定爐具安全和品質之餘也節省更多能源。

In addition, in November 2022, we participated in the Western Pacific Gas Appliance Certification Meeting, which brought together various certification bodies and laboratories in the region under the theme of "The Pathway to Net Zero Carbon Emissions". At the meeting, we introduced the Mandatory Energy Efficiency Labelling Scheme of Hong Kong and supplemented that the coverage of the scheme was extended to gas cookers and gas instantaneous water heaters in the latest phase. We explained that the objective of the scheme was to encourage suppliers to provide consumers with a greater variety of energy-efficient products, so that members of the public could not only identify approved domestic gas appliances by the GU mark, but also select more energy-efficient appliances according to the energy labels, thereby ensuring the safety and quality of the appliances while saving more energy.

來年展望
THE YEAR AHEAD

重點一：全力推進氫能發展
Focus 1: Taking Forward Hydrogen Energy Development

來年，我們會繼續推進氫燃料的測試和應用，在2023年內逐步完成多項顧問研究工作，並為本地氫燃料運輸試驗計劃制定安全指引。為了規管未來氫燃料的安全使用，我們會在2023年第三季委託顧問就訂立相關法例框架展開研究及進行營商環境影響評估，並正考慮透過修改現行的《氣體安全條例》以涵蓋氫燃料，有效規管氫燃料電池車、氫燃料供應鏈及氫燃料電池車維修人員和工場的安全。我們希望在2024年開展修訂法例的準備工作，並在2025年向立法會提交修例建議。

In the coming year, we will continue to advance the testing and use of hydrogen as fuel, completing gradually a number of consultancy studies and drawing up safety guidelines for the trials of local hydrogen fuel transport technologies in 2023. To regulate the safe use of hydrogen as fuel in the future, we will commission consultancy studies in the third quarter of 2023 for formulating the relevant regulatory framework and conducting business impact assessment. We are also considering making amendments to the existing Gas Safety Ordinance to cover hydrogen fuel, so as to effectively regulate hydrogen fuel cell vehicles, hydrogen fuel supply chain and the safety of mechanics and VMWs of hydrogen fuel cell vehicles. We hope to commence the preparatory work for the legislative amendments in 2024 and introduce the legislative amendments to the Legislative Council in 2025.

重點二：與業界緊密協作
Focus 2: Collaborating Closely with the Trade

為慶祝機電署75周年，我們會在2023年第三季舉辦氣體業界暨創新科技論壇，並會邀請煤氣公司、註冊氣體供應公司、職業訓練局、註冊氣體工程承辦商、註冊氣體裝置技工及相關工會等氣體業界持份者參與論壇，共同討論氣體安全和創科應用方面的議題。我們亦會邀請一些重點機構及註冊氣體供應公司與氣體業界分享他們的創科應用案例，以期進一步加強與業界的聯繫與協作，促進業界的創科發展。

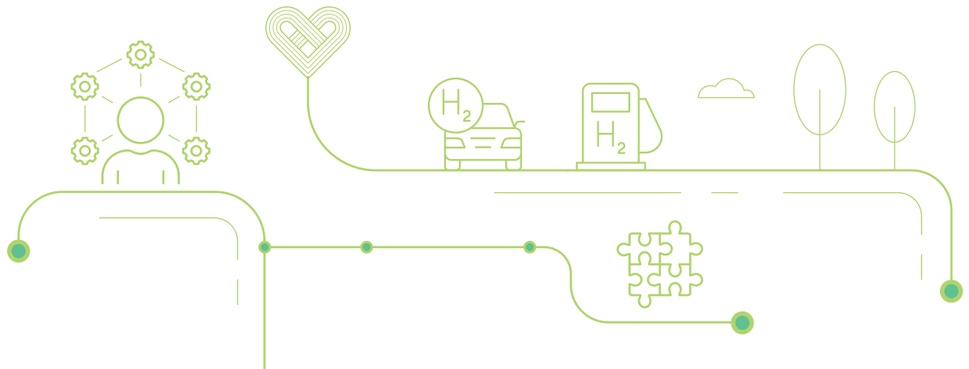
To celebrate the 75th Anniversary of the EMSD, we will organise a Gas Trade cum I&T Forum in the third quarter of 2023 and invite stakeholders of the gas trade, including the HKCG, RGSCs, the VTC, registered gas contractors (RGCs), RGIs and related trade organisations, to participate in the forum to jointly discuss topics on gas safety and I&T applications. We will also invite notable organisations and RGSCs to share examples of their I&T applications with the gas trade, so as to strengthen ties and collaboration with the trade and promote the I&T development of the trade.

《香港石油氣業工作守則第一單元(第三版)：石油氣庫及石油氣瓶儲存間》的更新工作已經完成，更新工作期間我們與業界緊密協作和溝通。新版工作守則已於2023年5月生效，確保石油氣系統的設計、操作及維修標準在世界級水平。我們會再接再厲，與業界攜手更新《香港石油氣業工作守則第二單元：地下石油氣管道》，並會加入更多創科元素，與時並進。

In close collaboration and communication with the trade, we completed the updating of Code of Practice for Hong Kong LPG Industry, Module 1 (Issue 3) - LPG Compounds and Cylinder Stores. The latest edition of the code of practice took effect in May 2023, ensuring the design, operation and maintenance standards of gas system at a world-class level. We will maintain our efforts and continue to work with the trade to update Module 2 - Underground LPG Pipework of the Code of Practice for Hong Kong LPG Industry, with more I&T elements incorporated to keep abreast of the times.

隨着自願進修計劃推出，氣體業界對註冊氣體裝置技工持續進修的認同大大提升，技工更有動力持續進修。主要的註冊氣體供應公司、氣體工程承辦商及相關工會均已制訂認可課程供註冊氣體裝置技工進修，期望藉此提升他們的專業水平和形象。在2023年，我們會深化推展工作，繼續廣傳該計劃的理念，及至較小型的氣體工程承辦商，讓更多註冊氣體裝置技工參與計劃。我們亦準備舉辦首屆「優秀註冊氣體裝置技工比賽」，以嘉許表現優秀的技工，鼓勵業界技工持續進修，並鞏固他們與機電署的聯繫，為未來與業界協作鋪路。

With the launch of the Voluntary CPD Scheme, the buy-in of the gas trade for the continuing professional development of RGIs has been significantly enhanced. RGIs are now more motivated to pursue continuing professional development. Major RGSCs, RGCs and related trade organisations have developed recognised courses for RGIs, with a view to improving their professionalism and image. In 2023, we will further promote the scheme and continue to spread its concept to smaller RGCs, so that more RGIs will participate. We are also preparing to organise the first Outstanding Registered Gas Installers Award Scheme, with a view to recognising RGIs with outstanding performance, encouraging RGIs to pursue continuing professional development and reinforcing the connection between them and the EMSD, so as to pave the way for future collaboration with the trade.



保障公眾安全
PROTECTING PUBLIC SAFETY

重點三：善用創科工具提升規管效率

Focus 3: Leveraging I&T Tools to Enhance Regulatory Efficiency

香港的地下氣體喉管網絡總長度達3 700公里，為規管工作帶來不少困難。有見及此，我們正研究運用光纖傳感與人工智能技術探測地下氣體喉管洩漏的可行性。該系統透過偵測管道洩漏時發出的細微聲音或溫度變化，全天候監察主體喉管網絡的運作狀態，讓我們可以及早發現洩漏情況並盡快通知煤氣公司從速跟進。我們會繼續引入創科工具保障氣體安全，並在工作守則和指引中加入優良創科作業，不斷突破界限，務求更有效地監察氣體安全。

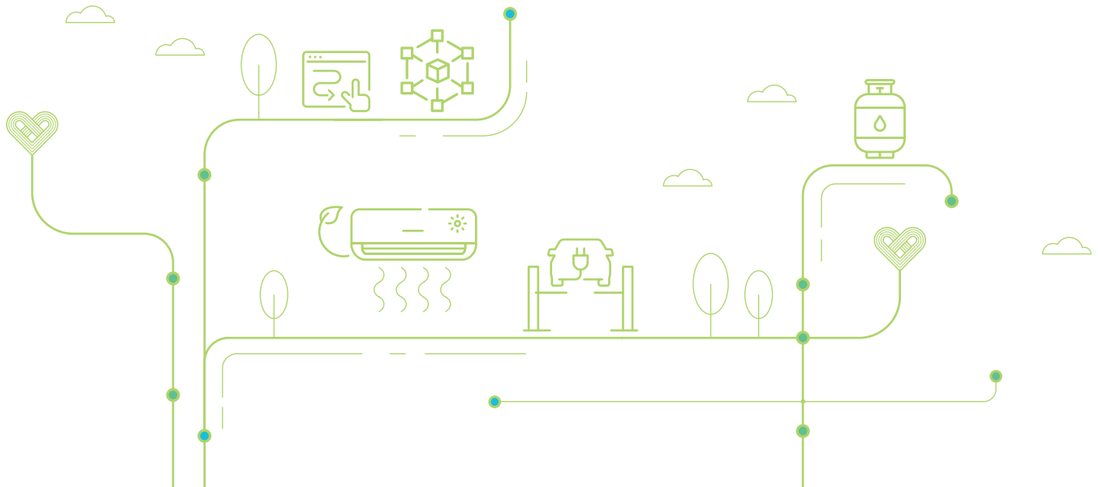
Hong Kong's underground gas pipe network measures a total of 3 700 kilometres in length, posing huge difficulties for regulatory work. In view of this, we are exploring the feasibility of using optical fibre sensing and AI technologies for detecting underground gas pipe leakage. By detecting tiny noise or temperature changes resulting from pipe leakage, the system can monitor the operating condition of the gas pipe network on a round-the-clock basis, enabling our early detection of gas leakage and prompt notification to the HKCG for immediate follow-up action. We will continue to introduce I&T tools to ensure gas safety, and incorporate I&T best practices into our codes of practice and guidelines, so as to push the boundaries further for more effective monitoring of gas safety.

為了加強監管新建的海上液化天然氣接收站，我們計劃在來年研究於接收站安裝人工智能遙距監察系統，好讓我們能全天候實時監察接收站的氣體安全狀況，而無需在惡劣天氣或大風浪的情況下，派員前往接收站進行實地巡查。

To strengthen the monitoring of the newly built offshore LNG terminal, we plan to embark on a study in the year ahead to install an AI remote monitoring system at the terminal. This will allow us to monitor the gas safety condition of the terminal round-the-clock on a real-time basis, without the need to send officers to the terminal for on-site inspection under inclement weather or rough sea conditions.

在內部數碼化方面，我們會優化及升級綜合氣體安全執法系統。這次升級主要包括增設清晰的地理信息介面顯示全港的氣體裝置，方便人員管理日常巡查工作及處理相關規管工作記錄；亦會在系統加入流動應用功能，讓人員在進行巡查時即場透過他們的流動裝置直接把巡查記錄輸入系統，以精簡工作流程。

On internal digitalisation, we will optimise and upgrade our Integrated Gas Safety Enforcement System. The upgrade mainly includes the addition of a clear geographic information interface that displays all gas installations across the territory, to facilitate the management of regular inspection work and the handling of relevant regulatory records by the staff. A mobile application feature will also be incorporated into the system to enable the staff to directly input inspection records into the system on the spot through their mobile devices during inspection, so as to streamline the workflow.



重點四：提升瓶裝石油氣業界的安全表現

Focus 4: Improving the Safety Performance of the LPG Cylinder Trade

「瓶裝石油氣分銷商安全表現評級計劃」實行至今已七年，現行計劃按表現把五間在本港供應瓶裝石油氣的註冊氣體供應公司旗下的全部分銷商分為金、銀、銅三個級別。為了進一步提升瓶裝石油氣業界的安全表現，我們會深入檢討計劃的成效，並正考慮實施更仔細的分級制度及加插更多新元素，務求令計劃與時並進，提高其認受性。另外，有見於快速檢查成效甚高並廣為業界認可，我們將擴展快速檢查服務至所有使用瓶裝石油氣的食肆及洗衣店，以便及早發現並消除安全隱患。此外，為了進一步提升氣體安全水平，我們現正研究為石油氣瓶裝設更多安全設備的技術可行性。

The LPG Cylinder Distributor Safety Performance Recognition Scheme has been in operation for seven years. Under the existing scheme, all distributors of the five RGSCs supplying LPG cylinders in Hong Kong are classified into gold, silver and bronze ratings based on their performance. To further enhance the safety performance of the LPG cylinder trade, we will conduct an in-depth review on the effectiveness of the scheme, and are considering the implementation of a more detailed rating system and the incorporation of more new elements, with a view to keeping the scheme up to date and boosting its recognition. Separately, in view of the high effectiveness and wide trade acceptance of quick checks, we will extend the quick check service to all restaurants and laundry shops using LPG cylinders for early detection and elimination of potential safety hazards. Moreover, we are studying the technical feasibility of equipping LPG cylinders with more safety equipment to further enhance gas safety.

重點五：推廣「家用冷氣機輕度易燃雪種處理工程人員自願註冊計劃」，促進業界安全使用低全球變暖潛能值雪種

Focus 5: Promoting the Voluntary Registration Scheme for Technicians Handling Mildly Flammable Refrigerant in Household Air-Conditioners and Safe Use of Low-GWP Refrigerants by the Trade

我們會擴展「家用冷氣機輕度易燃雪種處理工程人員自願註冊計劃」的推廣及宣傳工作，讓公眾和消費者了解該計劃及其好處。此外，我們會協助環境及生態局推動業界以安全及務實的方式採用低全球變暖潛能值的雪種，配合政府履行根據《蒙特利爾議定書》下的《基加利修正案》須承擔的國際責任，逐步減少使用具高全球變暖潛能值的氫氟碳化物。

We will extend the promotion and publicity of the Voluntary Registration Scheme for Technicians Handling Mildly Flammable Refrigerant in Household Air-Conditioners to raise public and consumer awareness of the scheme and its benefits. In addition, we will assist the EEB in driving the trade to adopt refrigerants with low global warming potential (GWP) in a safe and practical manner, so as to complement the Government's international obligations under the Kigali Amendment to the Montreal Protocol to phase down the use of high-GWP hydrofluorocarbons.

重點六：擴大車輛維修自願註冊計劃以涵蓋電動車維修

Focus 6: Extending the Voluntary Registration Schemes for Vehicle Maintenance to Cover EV Maintenance

政府正積極諮詢車輛維修技術諮詢委員會，探討擴大現有的車輛維修自願註冊計劃以涵蓋電動車維修。我們期望在2023/24年度就有關註冊要求（包括電動車輛維修技工申請註冊所需的培訓和技能，以及電動車輛維修工場申請註冊所需的設施）、詳細安排和實施時間提出具體建議。

The Government is actively consulting the VMTAC to explore the extension of the existing voluntary registration schemes for vehicle maintenance to cover EV maintenance, with a view to putting forward specific proposals on the registration requirements (including necessary training and skills for EV mechanics' registration and necessary facilities for EV workshops' registration), detailed arrangements and implementation timeframe in 2023/24.

保障公眾安全
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宣傳教育「治未病」文化 務求減少執法需要
MINIMISING LAW ENFORCEMENT NEEDS THROUGH PUBLICITY AND EDUCATION ON PREVENTION CULTURE

氣體標準事務處助理機械督察吳序強先生負責審批申請、執法以及宣傳教育事宜。他表示在云云工作中，宣傳及教育工作給予他最大滿足感，因為有效的宣傳教育可以提高市民對氣體安全的意識，進而減低發生氣體意外的機會。

Mr Ng Chui-keung, Nick, an assistant mechanical inspector of the Gas Standards Office (GasSO) responsible for application approval, law enforcement, publicity and education, said that of all his work areas, he got the most satisfaction from publicity and education work, because effective publicity and education could raise public awareness of gas safety, which would in turn reduce the chance of gas accidents.

吳先生於2011年加入機電署，起初在衞生工程部主要從事技術工作，例如醫院各類機電裝置的保養維修和管理。他在2020年調任氣體標準事務處，此後主要擔任審批註冊文件、事故調查、執法等規管工作，同時肩負宣傳教育的職責，而後者正是他使命感和滿足感的最大來源。他表示：「只要做好預防工作，很多事故和執法行動都可以避免。」

機電署宣傳教育的目標對象多元化，包括普羅市民、兒童及各少數族裔。為了有效向目標羣體進行宣傳，機電署採取針對性的策略。舉例而言，為使面向兒童的宣傳教育更生動有趣，在他們心中留下深刻印象，他和團隊在2023年年初製作了一部關於氣體安全的教育動畫。

他說：「我們在動畫中把氣體煮食爐和氣體熱水爐等日常用品卡通化，並運用鮮豔色彩，向兒童傳達氣體安全信息。我們在一個學校外展活動期間播放動畫，學生都看得津津有味，並踴躍參與後續的問答環節。我們樂見他們僅僅用了一個課堂的時間便認識到機電署是氣體安全的把關者，以及學會選用附有GU標誌的氣體爐具，而各位老師也對機電署在氣體安全的規管角色以及相關法規有更深入的了解，有效達到宣傳教育的目的。」

外傭也是部門宣揚氣體安全信息的重點對象。吳先生指出：「外傭在家鄉的生活環境與香港有別，他們對氣體安全的認知與香港的法例要求往往有很大的區別。由於外傭通常是家用氣體爐具的使用者，向他們灌輸適用於本地環境的氣體安全知識十分重要。」

有見及此，他和團隊以外傭的母語印製宣傳單張，以簡單淺白的文字推廣氣體安全，並與外傭服務組織協作，在他們舉辦的活動中向外傭派發宣傳單張。

吳先生認為，氣體安全意識需要從小培養。機電署的宣傳教育方針是向兒童灌輸正確的氣體安全知識，把知識一代傳一代。我們也力求提升外傭的氣體安全意識，並期望透過他們向其他外傭、僱主及家人傳揚相關信息。

Mr Ng joined the EMSD in 2011 and initially worked in the Health Sector Division, where he was mainly engaged in technical work such as maintenance, repair and management of various electrical and mechanical installations in hospitals. In 2020, he was transferred to the GasSO, and since then he has undertaken regulatory work such as vetting of registration documents, incident investigation and law enforcement. He is also responsible for publicity and education, which is exactly the largest source of his sense of mission and satisfaction. "With proper prevention, many incidents and law enforcement actions can be avoided," he said.

The publicity and education work of the EMSD has a diverse target audience, including the general public, children and various ethnic minorities. To effectively reach out to the target groups, the EMSD has adopted a focused strategy. For example, to make promotion and education for children more vivid and interesting, and to leave a lasting impression on them, he and his team produced an educational animation video on gas safety in early 2023.

"In the animation video, we cartoonise everyday objects such as gas cookers and gas water heaters and use bright colours to help convey gas safety messages to children. We broadcast the animation video during a school outreach activity. The students were engrossed in the animation video and enthusiastically participated in the Q&A session that followed. We were pleased to see that after just one class, they had learnt that the EMSD is the gatekeeper of gas safety and that people should use gas appliances bearing a GU mark; and the teachers also gained a deeper understanding of the EMSD's regulatory role in gas safety and relevant legislation. The publicity and education purposes were effectively achieved," he said.

Foreign domestic helpers (FDHs) are also our major targets for disseminating gas safety messages. "The living environment of the FDHs in their hometowns varies from that in Hong Kong. Their understanding of gas safety often differs considerably from the legislative requirements in Hong Kong. As the FDHs are usually users of household gas appliances, it is very important to instil in them gas safety knowledge applicable to the local environment," Mr Ng remarked.

In this light, he and his team produced promotional leaflets in the mother tongues of the FDHs to promote gas safety in simple and straight-forward language, and collaborated with FDH service organisations to distribute the promotional leaflets to FDHs during their activities.

Mr Ng opined that gas safety awareness should be cultivated from an early age. The objectives of the publicity and education work of the EMSD are to instil correct knowledge of gas safety in children and pass on the knowledge from generation to generation. The department also aims to raise the awareness of FDHs regarding gas safety and, through them, spread the relevant messages to other FDHs, their employers and family members.

乘風破浪視察海上液化天然氣接收站 積極進行安全規管工作
BRAVING THE WIND AND THE BILLOWS FOR THE GAS SAFETY REGULATION OF OFFSHORE LIQUEFIED NATURAL GAS TERMINAL

香港兩家電力公司(兩電)共同建造的海上液化天然氣接收站(接收站)，位處索罟群島附近頭顱洲以東約四公里的海域。過去兩年，負責規管接收站氣體設施安全的機電署工程師團隊，經常乘船前往接收站實地監督重點測試，風雨不改。從審核階段開始，他們全程參與規管和審批工作，確保有關氣體裝置的建造及使用安全。氣體標準事務處工程師李兆凝女士是團隊其中一位要員。

The offshore liquefied natural gas (LNG) terminal (the terminal) co-constructed by the two power companies of Hong Kong is located in the waters about 4 km east of Tau Lo Chau near the Soko Islands. In the past two years, the EMSD team of engineers responsible for regulating the safety of the terminal's gas installations often took ferry rides, rain or shine, to conduct on-site monitoring of critical tests. From the vetting stage onwards, they had been fully involved in the regulatory and approval work to ensure the safe construction and use of gas installations. Ms Li Siu Ying, Rachel, an engineer of the Gas Standards Office (GasSO), is a key member of the team.

李女士在2022年8月到任氣體標準事務處後，隨即加入規管接收站的團隊。她曾多次乘坐兩電安排的小輪，與同事和工程人員乘風破浪，一同前往接收站實地監察各項關鍵氣體設施的測試，包括高壓天然氣管道滲漏測試、接收站上傳送天然氣的卸料臂緊急制停系統測試等。他們每次都全力以赴，善用待在接收站的五個小時，監察多項與審批工作相關的測試。

前往接收站的旅程，往往不是一帆風順。雖然可因應天氣預報安排行程，但海上天氣總是變幻莫測。李女士憶述一次難忘經歷：「有一次啟程後，風力逐漸增強，更達到五級程度。我們在船上晃了兩個小時才抵達接收站，但因風急浪高而無法登上接收站。我們只好改道前往長洲，靜待風浪平靜再乘船返回尖沙咀。當時海浪狂湧，令船身劇烈晃動，不少人暈船，甚至連經驗豐富的海外專家也在該趟行程中嘔吐不已。我只略懂水性，不禁心生恐懼，只好緊緊抓着救生衣，一動都不敢動。」

接收站的所有工程及氣體安全測試已大致完成，預計接收站可如期在2023年年中投入運作。機電署正積極研發遙距監測系統，以持續監察接收站氣體設施的警報系統狀態。然而，這些創新工具並不能取代實地監察測試及檢查等工作。即使在接收站投入運作後，李女士仍須頻繁地到現場視察。

為了繼續這項意義重大的工作，即使要面對波濤洶湧的大海，李女士仍然無畏無懼。她表示：「這個接收站不僅可長遠令香港的能源供應更可靠穩定，還可讓香港在全球市場上以更優惠的價格和條件採購天然氣。接收站是全球首個及規模最大的離岸式鋼結構雙泊位設施，亦是支持香港邁向碳中和的重要基建。我們可透過這項大型天然氣基建工程項目，為市民締造更環保和安全的生活環境，同時為香港實現碳中和目標以及為大自然出一分力。我熱愛大自然，且極力支持環保，對於能參與這個項目深感榮幸。」

Ms Li joined the team that regulates the safety of the terminal immediately after assuming her position at the GasSO in August 2022. She has for numerous times boarded the ferry arranged by the two power companies, braving the wind and the waves to travel to the terminal with her colleagues and engineering personnel for on-site monitoring of the critical gas installation tests, including leak tests of high-pressure natural gas pipelines and emergency shutdown system tests for the marine loading arms at the terminal. Every time, they went all out, making the most of their five-hour stay at the terminal to monitor multiple tests related to the approval work.

The trips to the terminal were seldom smooth sailing. Though weather forecasts could be made reference to in scheduling the journeys, the weather in the open sea was somehow capricious. Ms Li recalled an unforgettable experience, "Once after we set off, the wind picked up to force 5. We were tossed about on the ferry for two hours before arriving at the terminal, but the waves were too high that we could not disembark. We had no choice but to divert to Cheung Chau and wait until the wind subsided to return to Tsim Sha Tsui. The waves were incredibly unforgiving then, rocking the ferry violently. Most of us were rather seasick, and even the highly experienced overseas experts who joined us on that trip were throwing up. Being a weak swimmer, I was scared and held onto a life jacket tightly for dear life."

All the works and gas safety tests for the terminal have been more or less completed, and the terminal is expected to be commissioned in mid-2023 as scheduled. The EMSD is actively developing a remote monitoring system for ongoing monitoring of the alarm system of the gas facilities on the terminal. However, such innovative tools will not negate the need for on-site monitoring of tests and inspections. Even after the terminal commences operation, Ms Li will still need to conduct on-site inspections frequently.

Ms Li will not be deterred by the rough seas in continuing this meaningful mission. She stated, "This terminal not only enhances Hong Kong's long-term energy reliability, but also allows Hong Kong to negotiate better terms for purchasing natural gas in the global market. The terminal is the world's first and largest offshore double-berth steel structure, and an essential infrastructure that supports Hong Kong in moving towards carbon neutrality as well. Being a strong advocate for environmental protection with a deep appreciation for nature, I am honoured to be involved in such a magnificent natural gas infrastructure, through which we can build a more environmental friendly and safer living environment for the public while contributing to Hong Kong's carbon neutrality goal for the good of nature."

機械安全

升降機和自動梯事故數字稍降

過去一年，儘管香港仍飽受嚴峻的2019冠狀病毒病疫情衝擊，機電署依然緊守崗位，以靈活創新的態度，維持與升降機和自動梯安全相關的公共服務和執法工作，並繼續與業界緊密聯繫，這些工作都有助把事故數字維持在低水平。2022年共錄得2 106宗升降機和自動梯事故，較2021年的2 247宗稍微下降，其中不當使用升降機和自動梯而導致的事故亦由2021年1 732宗下降至2022年1 701宗。隨着疫情後社會全面復常，預料升降機及自動梯的使用量會大幅增加，我們會繼續加強向業界與公眾推廣升降機和自動梯安全。

持續完善業界資歷架構

香港建造業目前面對人手不足的問題，雖然升降機和自動梯行業的情況不算嚴重，但是從業員老化和招聘困難的問題亦不容忽視。隨着現有的升降機及自動梯日益老化而需要加強保養維修，加上新建築物相繼落成，新建升降機及自動梯的數量也隨之不斷增加，未來業界的人手需求只會有增無減。現時全港每年約有2 000部升降機及自動梯投入服務，同時每年因退休或其他原因流失的註冊工程人員約為150人。要應付本地所有升降機及自動梯的工程需要，業界每年需吸納約200個新人註冊入行。

為了吸引更多年輕人投身升降機及自動梯行業，我們去年為業界籌策一系列認證培訓課程，並建立更完善的晉升階梯，讓有意入行的人士能夠確立奮鬥目標。其中一項措施是繼續鼓勵註冊承辦商向香港學術及職業資歷評審局(評審局)申請專業認證，自行開辦屬資歷架構第二級或第三級的內部培訓課程，機電署則作為規管者協助評審局審核及評估相關考核與課程內容。

法例要求註冊升降機及自動梯工程人員必須通過資歷架構第二級或同等資歷的正規學徒訓練或具備同等資歷，方可取得註冊資格。現時，行內的新人主要透過修讀職業訓練局(職訓局)的升降機和自動梯培訓課程入行。然而，近年職訓局的日間及夜間課程的總收生額已達飽和，短時間內亦難以增加培訓計劃及學額。有見及此，機電署主動聯繫評審局向業界介紹評審流程，並鼓勵各註冊承辦商積極考慮自行籌辦資歷架構第二或第三級培訓課程。由承辦商自行舉辦培訓課程更具彈性，可因應其人手需要調整學額。承辦商提供專業訓練，配合優厚的薪酬和福利，以及完善的職涯規劃，可有效培訓出優秀的人才，並率先把他們羅致旗下，無須與同行競爭職訓局課程的畢業生。在短短不足一年間，已有兩家註冊承辦商的課程於2023年2月成功獲評審局認證，有關課程屬資歷架構第二或第三級，為期兩年，由2023年起開辦，預計每年每家註冊承辦商可培訓約30至50名機電工程人員。另外亦有兩家註冊承辦商已開展申辦同類課程的程序，預計半年內可完成認證程序。機電署期望有更多註冊承辦商緊隨其後，積極為有意投身升降機和自動梯行業的人士提供更多專業培訓機會，培育更多機電人才，為行業注入新血。

MECHACNICAL SAFETY

Lift and Escalator Incidents Declined

In the past year, Hong Kong was still weathering the peak of the COVID-19 epidemic. Nevertheless, the EMSD steadfastly maintained public services and enforcement work in relation to lift and escalator safety with agility and innovativeness, and continued to liaise closely with the trade. These helped to keep the number of incidents at a low level, with 2 106 lift and escalator incidents reported in 2022, a slight decrease from 2 247 cases in 2021. The number of incidents resulting from the improper use of lifts and escalators also decreased from 1 732 cases in 2021 to 1 701 cases in 2022. In anticipation of much heavier use of lifts and escalators following the full resumption of normality in society after the epidemic, we will continue to strengthen the promotion of lift and escalator safety among the trade and the public.

Ongoing Improvement of the Qualifications Framework of the Trade

The local construction sector is facing a shortage of manpower. Although the situation in the lift and escalator trade is not serious, the problems of ageing practitioners and recruitment difficulties cannot be overlooked. With the existing lifts and escalators ageing and in need of enhanced repair and maintenance, as well as the number of new lifts and escalators constantly increasing attributable to newly completed buildings, the manpower demand of the trade will only continue to increase in the days ahead. At present, about 2 000 new lifts and escalators are installed in Hong Kong every year while there is an annual attrition of about 150 registered workers due to retirement and other reasons. In order to cope with the engineering needs of all the lifts and escalators in Hong Kong, the trade has to secure about 200 new entrants every year.

To attract more young people to join the lift and escalator trade, in the year we devised a series of certified training programmes for the trade and established a more well-defined progression pathway for those who are interested in joining the trade to set a goal to strive for. One initiative was to continue to encourage registered contractors to apply for professional accreditation from the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) and organise their own internal training programmes to be pegged at Qualifications Framework (QF) Level 2 or Level 3. The EMSD would act as the regulator and assist the HKCAAVQ in the assessment and evaluation of the relevant test and programme content.

Registered lift and escalator workers are required by the law to pass formal apprenticeship training at QF Level 2 or possess equivalent qualifications to be eligible for registration. Currently, new entrants join the trade mainly by completing lift and escalator training programmes offered by the Vocational Training Council (VTC). However, the day and evening programmes of the VTC have reached their maximum capacity in recent years, and the provision of additional training programmes and enrolment places is unlikely in the short term. In view of this, the EMSD took the initiative to liaise with the HKCAAVQ for introducing the accreditation process to the trade and encourage registered contractors to actively consider organising their own training programmes pegged at QF Level 2 or Level 3. Training programmes organised by contractors are more flexible, as the contractors can adjust the size of intake according to their manpower needs. Providing professional trainings, attractive remuneration and benefits, as well as well-developed career planning, contractors can effectively train up talent and be the first to recruit them without having to compete for VTC graduates with their trade counterparts. In less than a year, two registered contractors have had their programmes successfully accredited by the HKCAAVQ in February 2023. The programmes, which are pegged at QF Level 2 or Level 3, will be operated on a two-year basis starting in 2023, and it is expected that each registered contractor can train around 30 to 50 electrical and mechanical (E&M) workers annually. Two other registered contractors have also commenced the application procedures for running similar programmes, and the accreditation process is expected to be completed within six months. The EMSD expects that more registered contractors will follow suit and actively provide more professional training opportunities for those interested in joining the lift and escalator trade so as to nurture more E&M talent and inject new blood into the industry.

本署與職訓局緊密合作，為業界推出升降機及自動梯大師級專業文憑課程，開課典禮於2022年6月23日舉行。

We closely cooperated with the VTC to launch the Professional Diploma Meister in Lift and Escalator Engineering course for the trade. An opening ceremony of the course was held on 23 June 2022.

此外，由於我們多年來與職訓局緊密合作，推動增加培訓課程數目和學額，職訓局現提供超過300個升降機和自動梯培訓課程學額，當中超過六成學徒在畢業後入行，與五、六年前每年僅50至60人入行的數字相比數量倍增，而入行人數亦較建築及其他行業高。隨着機電署在2022年與職訓局攜手推出行業首個屬資歷架構第五級的「升降機及自動梯大師級專業文憑」課程，以及職訓局在2024年增辦屬資歷架構第四級的升降機及自動梯課程，升降機及自動梯行業會成為機電業內首個提供涵蓋資歷架構第二

Furthermore, thanks to our long-term and close cooperation with the VTC in increasing the number of training programmes and enrolment places, the VTC now provides more than 300 places in lift and escalator training programmes annually, with over 60% of the trainees joining the trade upon graduation, which represents a multi-fold increase compared to only 50 to 60 new entrants annually five to six years ago. The number of new entrants to the trade also surpasses that of construction and other industries. With the EMSD collaborating with the VTC to run the Professional Diploma Meister in Lift and Escalator Engineering programme, the first QF Level 5 programme in the trade, in 2022 and the VTC offering an additional QF Level 4 lift and escalator programme in 2024, the lift and escalator trade will be the first in

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級至第五級課程的行業。與此同時，隨着升降機及自動梯行業趨向專業化，行業從業員的地位及形象也顯著提升，加上我們持續進行全方位的推廣工作，必定能吸引更多年輕人入行，為應付未來的社會需求建立充足的人才儲備。

另外，我們積極鼓勵業界應用新興科技，例如採用遙距科技監控升降機及自動梯的運作，藉此及早偵測故障情況等。此舉既可讓工程人員預早規劃保養維修工作，亦可取代部分定期人手檢測工作，從而有效減輕工程人員的工作量和壓力。

積極推行升降機及自動梯數碼工作日誌

機電署於2022年11月推出升降機及自動梯數碼工作日誌，推動以數碼工作日誌取代傳統的紙本工作日誌。截至2023年6月中旬，超過15 000部由機電工程營運基金、香港房屋委員會、香港機場管理局、香港鐵路有限公司及各大物業管理公司管理的升降機及自動梯已採用數碼工作日誌。

數碼工作日誌提供一個雲端平台，讓升降機及自動梯的負責人(即擁有人或物業管理公司)、業界和機電署可隨時隨地透過流動應用程式或網上平台實時記錄、閱覽及分析升降機及自動梯的操作保養資料，而且費用全免，便利三方共同管理升降機及自動梯，有助提升維修保養工作的效率和設施的安全水平，惠及業界和公眾。

數碼工作日誌加入「智方便」及生物特徵認證功能，讓用家可方便及安全地登入系統，並運用區塊鏈及全球定位技術，確保工程資料的真確性。透過使用數碼工作日誌，負責人能深入了解升降機或自動梯的狀況及監察承辦商的表現，提升設施管理成效；從業員可方便地讀取及填寫工程記錄，提升工作效率；承辦商可監察工作進度，有效規劃工作和調配資源；機電署亦可進行數據分析並因應分析結果制定合適的策略，以提高規管成效和促進行業的健康發展。此外，系統設有精明提示功能，在使用者管理的升降機或自動梯的准用證有效期即將屆滿時會向他們發送提示信息，提醒他們適時安排檢驗，而機電署亦可透過系統向各持份者發送安全信息，提高宣傳教育的效益。

the E&M sector to provide programmes covering QF Level 2 to Level 5. At the same time, as the trade becomes increasingly professional, practitioners enjoy a significantly elevated status and image, coupled with continuous comprehensive promotion, more young people will definitely be drawn to the trade, and a sufficient pool of talent will be built to meet the future needs of society.

In addition, we actively encourage the trade to adopt emerging technologies, such as using remote technologies to monitor lift and escalator operation for early detection of failures. This not only enables workers to plan the repair and maintenance work in advance but also replaces some of the regular manual inspection work, effectively reducing the workload and pressure of the workers.

Digital Log-books for Lifts and Escalators Vigorously Implemented

In November 2022, the EMSD launched the Digital Log-books for Lifts and Escalators (the Digital Log-books), promoting the replacement of traditional paper log-books with digital ones. As at mid-June 2023, more than 15 000 lifts and escalators managed by the Electrical and Mechanical Services Trading Fund, the Hong Kong Housing Authority, the Airport Authority Hong Kong, the MTR Corporation Limited and major property management companies adopted the Digital Log-books.

The Digital Log-books provides a cloud-based platform for the responsible persons for lifts and escalators (i.e. owners or property management companies), the trade and the EMSD to record, view and analyse the operation and maintenance information of lifts and escalators in real time through a mobile application and web portal anytime, anywhere and free of charge. Enabling the tripartite management of lifts and escalators, the system helps enhance the repair and maintenance efficiency and safety standards of the facilities for the benefit of the trade and the public.

The Digital Log-books has incorporated the functions of login with iAM Smart and biometric authentication, allowing users to log on to the system conveniently and securely. Blockchain and global positioning technologies are also adopted to ensure the authenticity of the works information. By using the Digital Log-books, responsible persons can gain a thorough understanding of the condition of lifts and escalators and monitor the performance of contractors to enhance the effectiveness of facility management; trade practitioners can easily read and input works records with improved work efficiency; contractors can monitor the work progress and make effective work planning and resource allocation; the EMSD can also carry out data analytics and formulate appropriate strategies according to the results to boost regulatory effectiveness and promote healthy development of the trade. In addition, the system is equipped with a smart notification function, which will send alert messages to users when the use permits of the lifts or escalators they manage are about to expire, reminding them to make timely arrangements for examination. The EMSD can also disseminate safety tips to stakeholders through the system for more effective publicity and education.

整體而言，數碼工作日誌為升降機及自動梯負責人、業界和機電署的共同協作開展了新里程，在提升升降機及自動梯管理和安全水平方面踏出重要一步。展望將來，我們會繼續積極推廣數碼工作日誌，進一步提高使用率，加快升降機及自動梯工作日誌的數碼化轉型。

追趕優化升降機資助計劃工程進度

政府自2018年至今共撥款45億元推行優化升降機資助計劃，為有需要的樓宇業主提供資助及專業支援，協助他們籌組法團並開展升降機優化工程，以提升舊式升降機的安全水平。

我們一直與市區重建局(市建局)緊密合作，並為業界提供技術及協調支援，以助推行該計劃。然而，在過去三年的疫情期間，由於社交距離限制，很多參與計劃的業主立案法團未能就落實細節舉行面談會議，導致計劃進度受到影響。隨着疫情後社會全面復常，業主立案法團終於可以再次舉辦面談會議。我們與市建局加緊協調，全力推進工程進度，與此同時亦兼顧業界的承受能力，避免導致工程成本上升。

另外，我們與市建局在年內繼續就該計劃為有特殊需要的受影響市民提供外展社區服務，例如長者和殘疾人士所居住的樓宇只有一部升降機或各樓層只有一部升降機能直達，在升降機優化工程進行期間，我們會提供送遞膳食、代購日常生活用品及樓梯機服務等，以紓解他們在工程期間因出入困難而遇到的問題。現時市建局已委託四家社福機構在全港各區提供關愛服務，讓有需要的市民能夠獲得適切的照顧。

In general, the rollout of the Digital Log-books marked a new milestone in the collaboration among the responsible persons for lifts and escalators, the trade and the EMSD, and a significant stride in uplifting the management and safety standards of lifts and escalators. Looking ahead, we will continue to actively promote the Digital Log-books to further increase the utilisation rate and accelerate the digital transformation of lift and escalator log-books.

Catching up on the Lift Modernisation Subsidy Scheme

The Government has so far allocated a total of $4.5 billion to the implementation of the Lift Modernisation Subsidy Scheme (LIMSS) since 2018, to provide subsidies and professional support to needy building owners in forming owners' corporations and commencing lift modernisation works in order to enhance the safety level of aged lifts.

We have been working closely with the Urban Renewal Authority (URA) and providing technical and coordination support to the trade to facilitate the implementation of the LIMSS. However, during the epidemic in the past three years, many owners' corporations participating in the LIMSS were unable to hold face-to-face meetings on the implementation details due to social distancing restrictions, hampering the progress of the scheme. Following the full resumption of normality in society after the epidemic, face-to-face meetings of the owners' corporations have been resumed eventually. We stepped up coordination with the URA to expedite works progress while taking into account the trade's capacity to avoid driving up costs.

In addition, the EMSD and the URA continued to provide outreach social services for affected residents with special needs regarding the LIMSS during the year. For example, we arranged for services such as delivery of meals, procurement of daily supplies and provision of stair-climber service for the aged and disabled residents living in subsidised buildings with single lift or with floors served by one lift only, so as to resolve the problems they encountered due to travelling difficulties during the works period. Currently, the URA has commissioned four social and welfare organisations to provide caring services territory-wide so that all members of the public in need can receive appropriate care.

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嚴格監督昂坪360「全景纜車」的安全測試

自2019年起，昂坪360就改裝標準車廂為四面側板及底部均採用全透明強化玻璃的「全景纜車」進行研究及準備工作。由於「全景纜車」從車廂結構以至物料均與標準車廂不同，有關工程屬重大改裝，昂坪360須事先獲得機電署的許可，才能推出新纜車運載公眾人士。機電署嚴格監督新纜車的安全測試，並特別派員遠赴法國製造商的總部，實地了解新纜車的製造過程及視察強化玻璃板的關鍵測試。

Close Supervision of Safety Testing on Crystal+ Cabins of Ngong Ping 360

Since 2019, Ngong Ping 360 has been conducting studies and preparatory work for the conversion of its standard cabins into Crystal+ cabins with the four side panels and bottom made of fully transparent tempered glass. As the structure and materials of the Crystal+ cabins differed from the standard cabins, the conversion works were considered major alterations and hence Ngong Ping 360 was required to obtain the EMSD's approval before launching the new cabins for carrying members of the public. The EMSD closely supervised the safety testing of the new cabins and specially deployed staff to visit the headquarters of the French manufacturer to gain an on-site understanding of its manufacturing process and observe the critical tests of tempered glass panels.

機電署人員實地了解「全景纜車」主要部件的製造過程及視察強化玻璃板的關鍵安全測試，並確保纜車營運商在獲得署方許可後，才推出新纜車供公眾使用。

The EMSD officers gained an on-site understanding of the manufacturing process of the key components of the Crystal+ cabins, observed the critical safety tests of tempered glass panels, and ensured that the cable car operator had sought approval of the EMSD before launching the new cabins for use by the public.

「全景纜車」在香港組裝完成後，我們強制要求昂坪360按照製造商指引進行相關檢驗及測試，以確保「全景纜車」的機電安全。考慮到萬一發生事故時乘客在炎熱天氣下乘搭全玻璃纜車的安全問題，我們亦要求每個車廂均須配備裝有飲用水和風扇的應急包，以供乘客應急之用。經過嚴格測試，並獲機電署確認「全景纜車」完全符合安全標準後，十輛「全景纜車」先後獲批准使用並分批於2022年12月及2023年3月正式投入服務，為香港增添全新、安全和舒適的架空纜車觀光體驗。

After the assembly of the Crystal+ cabins in Hong Kong, we mandated Ngong Ping 360 to carry out relevant examinations and tests in accordance with the manufacturer's guidelines to ensure the E&M safety of the Crystal+ cabins. Considering the safety of passengers riding in the all-glass cabins in hot weather in case of incidents, we also required each cabin to be equipped with an emergency kit containing drinking water and a fan for emergency use by passengers. After rigorous testing and confirmation of the EMSD that the Crystal+ cabins fully met the safety standards, 10 Crystal+ cabins were consecutively approved for use and officially came into service in December 2022 and March 2023 in batches, bringing to Hong Kong a brand-new cabin car sightseeing experience that is safe and comfortable.

加強建築工地升降機及塔式工作平台的安全巡查

2022年建築工地事故有所增加，機電署高度重視有關情況，在事故後立即加強巡查各建築工地升降機及塔式工作平台，並於同年9月調動人手突擊巡查全港共66部建築工地升降機，包括11部躍層升降機，經巡查後確認各建築工地升降機安全無虞。機電署已提醒工地負責人與合資格操作員避免做出利用升降機運送過重的建築材料等不當行為。未來，機電署會繼續執行突擊巡查，確保業界時刻遵守使用建築工地升降機及塔式工作平台的安全規定。

Safety Inspections of Builders' Lifts and Tower Working Platforms Strengthened

As there was an increase in incidents on construction sites in 2022, the EMSD was highly concerned about the situation and immediately stepped up inspections of builders' lifts (BLs) and tower working platforms (TWPs) after the incidents. Surprise inspections were also conducted in September 2022 for all 66 BLs in the territory, including 11 jump lifts. Upon the inspections, all BLs were confirmed to be safe. Site managers and qualified operators were reminded to avoid improper practices, such as using lifts to transport overweight construction materials. Looking ahead, the EMSD will continue to conduct surprise inspections to ensure that the trade complies with the safety requirements for the use of BLs and TWPs at all times.

機電署加強巡查各建築工地升降機及塔式工作平台，調動人手突擊巡查全港共66部建築工地升降機，包括11部躍層升降機，確保建築工地升降機及塔式工作平台符合安全規定。

The EMSD stepped up inspections of BLs and TWPs by deploying manpower to conduct surprise inspections of all 66 BLs in the territory, including 11 jump lifts, to ensure their compliance with safety requirements.

為了進一步宣傳建築工地安全文化，機電署在2022年9月舉行網上研討會，向業界講解建築工地升降機及塔式工作平台的安全資訊，吸引超過250名建造業從業員參加。機電署其後在同年10月與12家建築工地升降機及塔式工作平台的註冊承建商舉行聯絡會議，冀能不斷提升業界對建築工地升降機及塔式工作平台的安全意識。

To further promote the safety culture at construction sites, the EMSD held a webinar in September 2022 to explain safety information on BLs and TWPs to the trade, attracting over 250 practitioners of the construction industry to attend. Subsequently in October 2022, the EMSD held liaison meetings with 12 registered contractors of BLs and TWPs, with a view to constantly raising the trade's awareness of the safety of BLs and TWPs.

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升降機及自動梯創科方案榮獲本地及國際獎項

機電署一直致力牽頭研發創新科技(創科)工具，以支援業界的工作及加強安全規管。機電署的兩個項目，即升降機及自動梯數碼工作日誌和電梯工程線上預約複檢系統，成功入圍2022年公務員優質服務獎勵計劃，並在卓越團隊協作獎(監管服務)組別中分別榮獲金獎及優異獎。評審委員高度肯定金獎團隊的努力，表示團隊主動聯繫業界及各持份者，利用科技開發數碼工作日誌取代原本的紙本工作日誌，提升部門規管的成效，亦便利負責人及承辦商更有效管理升降機及自動梯，達到共同監察，全面保障市民安全。團隊牽頭一改業界多年的工作文化，大量從業人員需要時間重新適應工作流程，項目的挑戰甚高。

Innovation and Technology Solutions for Lifts and Escalators Won Local and International Awards

The EMSD is committed to spearheading the development of innovation and technology (I&T) tools to support the work of the trade and enhance safety regulatory control. Two EMSD projects, namely the Digital Log-books for Lifts and Escalators and Advance Inspection Booking System for Lifts and Escalators Major Alteration Works, were shortlisted for the Civil Service Outstanding Service Award Scheme 2022 and won the Gold Prize and Meritorious Award, respectively, in the Excellence in Team Collaboration (Regulatory Service) category. The adjudicators spoke highly of the efforts of the Gold Prize-winning team, commending that the team proactively liaised with the trade and various stakeholders and developed the Digital Log-books with the use of technology to replace the conventional paper log-books, which improved the regulatory effectiveness of the department and facilitated more effective management of lifts and escalators by responsible persons and contractors, achieving joint monitoring and ensuring public safety at all fronts. The team led changes to the long-established work culture of the trade and it took time for the large number of practitioners to adapt to the new workflow, posing great challenges to the project.

機電署的兩個項目，即升降機及自動梯數碼工作日誌和電梯工程線上預約複檢系統，在2022年公務員優質服務獎勵計劃的卓越團隊協作獎(監管服務)組別中分別榮獲金獎及優異獎。

Two EMSD projects, namely the Digital Log-books for Lifts and Escalators as well as the Advance Inspection Booking System for Lifts and Escalators Major Alteration Works, won the Gold Prize and Meritorious Award respectively in the Excellence in Team Collaboration (Regulatory Service) category of the Civil Service Outstanding Service Award Scheme 2022.

另外，機電署在2022年日內瓦國際發明展勇奪多個獎項。機電署牽頭研發的智能升降機移動監測裝置和智能數碼自動梯監測系統榮獲金獎，智能架空纜車監測系統則獲頒銀獎，為港爭光之餘，亦為我們打了一枝強心針，令我們更有動力推動本地創科發展，從而惠及市民與業界。

In addition, we won a number of awards at the International Exhibition of Inventions of Geneva 2022. The Intelligent Elevator Movement Surveillance Device and Intelligent Digital Escalator Monitoring System spearheaded by the EMSD each won a gold medal and the Artificial Intelligent Monitoring System for Aerial Ropeways won a silver medal. The awards not only brought honour to Hong Kong but also gave us a boost of confidence, impelling us to promote local I&T development for the benefit of the public and the trade.

內地合作

機電署去年參與由廣東省特種設備檢測研究院領導的大灣區標準(灣區標準)《在用電梯風險評價規範—曳引驅動電梯》的草擬工作，有關工作已完成。該標準列舉了對曳引式升降機進行風險評價的各項要求，包括風險評價程序、內容、方式及風險等級評定等，為香港提供相關的升降機風險評估標準。

Cooperation with the Mainland

Last year, the EMSD participated in the drafting of the Greater Bay Area Standard (GBA Standard) "Specifications for Risk Assessment of Traction Lifts" led by the Guangdong Institute of Special Equipment Inspection and Research, and the works has been completed. The standard sets out the risk assessment requirements for traction lifts, including risk assessment processes, scope, methodologies and risk level assessments, providing lift-related risk assessment standards for Hong Kong.

未來工作

展望未來，我們會繼續大力推廣數碼工作日誌，期望在2024年年底前成功吸引約四萬八千多部升降機及自動梯(佔機電署規管的七萬多部升降機和一萬多部自動梯中的約六成)的負責人採用該系統，從此利用電子記錄取代紙本工作日誌。

我們下一步的工作是積極接觸物業管理公司、大型發展商等，宣傳數碼工作日誌的優點，例如使用該系統可實時掌握升降機及自動梯資料，而且費用全免，以鼓勵他們採用系統。我們的最終目標相當明確，就是全港八至九成的升降機和自動梯採用該系統，迎接數碼化新時代。

Future Endeavours

Looking ahead, we will continue to vigorously promote the Digital Log-books, with a view to successfully attracting the responsible persons for about 48 000 lifts and escalators (about 60% of the 70 000-odd lifts and 10 000-odd escalators regulated by the EMSD) to use the system by the end of 2024, thence replacing paper log-books with electronic records.

Our next step is to proactively engage property management companies and major developers and publicise to them the benefits of the Digital Log-books, such as free access to information about lifts and escalators in real time, so as to encourage them to adopt the system. We have a definite ultimate goal of having 80% to 90% of all the lifts and escalators in the territory using the system, in a bid to embrace the new era of digitalisation.

機電署透過參與國際纜車監管機構會議，加深了解有關纜車系統的最新情況、標準和技術發展，從而提升纜車系統安全的行政管理和規管工作。

Through participating in the ITTAB, the EMSD keeps up to date with the latest scene, standards and technological developments of cableways, and thus enhances its administration and regulatory control of the safety of cableways.

國際纜車監管機構會議是一個國際非商業性的閉門會議，每年由世界各地不同的纜車監管機構輪流舉辦。這項為期四天的年度會議匯集各成員地區的監管人員、專家、專業人士和學術界人士進行多項活動，包括工作會議、技術考察、經驗分享、事故審視等，從中交流有關架空纜車和索道系統安全的行政管理和規管方式。透過參與這個年會，機電署可加深了解在國際上有關架空索道和纜車系統的最新情況、

The International Meeting of Technical Authorities for Cableways (ITTAB) is an international, non-commercial and closed-door meeting held annually on a rotating basis by different supervisory authorities in charge of aerial ropeways or cableways around the world. The four-day annual event brings together regulators, experts, professionals and academia from member jurisdictions for a range of activities, including working sessions, technical visits, experience sharing, incident reviews, etc. During the activities, participants can exchange views regarding the administration and regulatory control of the safety of aerial ropeways and cableways. By participating in the annual meeting, the

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標準和技術發展，從而提升相關專業知識與行政能力，加強對昂坪360纜車、海洋公園的纜車和海洋列車，以及山頂纜車的規管。香港將於2023年9月17至21日假香港海洋公園萬豪酒店主辦第71屆國際纜車監管機構會議。會議期間，我們會安排與一眾來賓體驗本地的纜車系統，以及「電車全景遊」，亦會在會議的部分時間騰出酒店會議場地為學生安排STEAM活動，加深他們對纜車系統的興趣和了解。

EMSD can keep up to date with the latest international scene, standards and technological developments of cableways, and thus enhance its professional knowledge and administrative capacity, so as to strengthen the regulation of the Ngong Ping 360 cableway, the cableway and Ocean Express at the Ocean Park, and the Peak Tram. Hong Kong will host the 71st ITTAB from 17 to 21 September 2023 at Hong Kong Ocean Park Marriott Hotel. During the meeting, we will arrange for attendees to experience the local cableways, as well as the TramOramic Tour. We will also vacate the hotel meeting venue during part of the meeting period to organise STEAM activities for students, so as to deepen their interest in and understanding of cableways.

為了進一步推廣優化舊式升降機，我們於2022年年底加強宣傳工作，包括向大眾宣揚優化升降機的好處，例如提升升降機的安全水平、節能省電等，藉此鼓勵升降機擁有人優化或更換舊式升降機。我們會繼續多管齊下，積極接觸樓宇業主及升降機負責人，並向他們提供有關的資訊，以推動他們加快優化舊式升降機。

To further promote the modernisation of aged lifts, we have stepped up publicity efforts in late 2022, including publicising to the public the benefits of lift modernisation, such as enhancing the safety level of lifts, achieving better energy efficiency and saving energy, etc., so as to encourage lift owners to modernise or replace their aged lifts. We will continue to take a multi-pronged approach to proactively engage building owners and responsible persons for lifts and provide them with relevant information, with a view to motivating them to expedite the modernisation of their aged lifts.

另外，我們會繼續與業界合作推動於本地應用灣區標準《在用電梯風險評價規範—曳引驅動電梯》，包括草擬本地應用指南及進行培訓工作。我們希望透過鼓勵持份者為舊式升降機進行風險評估，加快優化舊式升降機的步伐，進一步保障市民的安全。

We will also continue to collaborate with the trade to promote the local application of the GBA Standard "Specifications for Risk Assessment of Traction Lifts", by means of including drafting local application guidelines and conducting personnel training. We hope that by encouraging stakeholders to conduct risk assessments for aged lifts, the modernisation of aged lifts will speed up, and thereby further enhancing public safety.

我們亦已連續多年實行「優質升降機服務認可計劃」，透過頒發證書或獎項，鼓勵升降機負責人多加進行優化措施，使現有升降機更安全、可靠和舒適。在2023年，我們會檢討計劃的內容、操作及成效並進行優化，務求鼓勵更多升降機負責人參與計劃，從而提升升降機的服務質素及安全水平。

The Quality Lift Service Recognition Scheme has also been implemented for many years in a row. By the presentation of certificates or awards, the Scheme incentivises the responsible persons for lifts to adopt more modernisation measures to improve the safety, reliability and comfort of existing lifts. In 2023, we will review the content, operation and effectiveness of the scheme and introduce enhancements, with a view to encouraging more responsible persons for lifts to participate, and eventually uplifting the service standards and safety level of lifts.

推出數碼工作日誌 開展協作新里程
LAUNCH OF DIGITAL LOG-BOOKS MARKS A NEW MILESTONE FOR COLLABORATION

為提升升降機及自動梯的管理和安全水平，機電署自行研發及推行升降機及自動梯數碼工作日誌(數碼工作日誌)。一般法例部工程師張文晉先生負責相關統籌工作，並與不同持份者緊密合作，攜手開發惠及業界和公眾的數碼系統。

To enhance the management and safety of lifts and escalators, the EMSD led the research and development and launched the Digital Log-books for Lifts and Escalators (Digital Log-books). Mr Mentor Cheung, an engineer of the General Legislation Division, is in charge of the relevant coordination work. He worked closely with various stakeholders in developing the digital system that benefits the trade and the public.

過往機電署一直以紙本形式保存重要的資料和數據，包括技術資料、維修計劃、維修記錄、故障歷史記錄及意外記錄。然而，以紙本作記錄有一定的限制，例如難以確保資料的準確性、保存不便等。有見及此，機電署開發數碼工作日誌，以供作為中央電子平台，集中保存和分析原本分散存放在各大廈管理處的記錄。此舉不僅可以為升降機及自動梯的擁有人和管理人(統稱負責人)以及業界提供更全面的資料，更可以讓機電署更有效地規管升降機及自動梯安全，從而提升整個行業的服務水平。

Traditionally, the EMSD has been keeping important information and data, including technical information, maintenance plans, maintenance records, fault history records and incident records, in paper form. However, paper records have certain limitations, such as difficulties in ascertaining information accuracy and inconvenience in record keeping. In view of this, the EMSD has developed the Digital Log-books to serve as a centralised electronic platform for central storage and analysis of records previously scattered in the management offices of individual buildings. This not only provides more comprehensive information to owners and managers of lifts and escalators (collectively referred to as responsible persons) and the trade, but also allows the EMSD to regulate lift and escalator safety more effectively, thereby enhancing the service standards of the trade as a whole.

張先生的首要任務是聯絡和集合各方持份者，包括升降機、自動梯及物業管理業界、專業團體、公用事業機構等，共同探討開發一個各方受惠的系統。繼而，他和機電署數碼科技部與區塊鏈初創企業攜手合作，匯集各方力量，推進數碼工作日誌的開發工作。

The primary task of Mr Cheung was to liaise with and bring together all stakeholders, including the lifts, escalators and property management trades, professional organisations and public utility companies, to jointly explore the development of a system that benefits all parties. Then, he and the Digitalisation and Technology Division of the EMSD worked with a blockchain start-up to pool efforts for the development of the Digital Log-books.

經過多方的共同努力，該系統的開發工作在相對短的時間內完成，並在2022年11月正式開放予業界使用。數碼工作日誌推出後短短數個月，用戶數量已高達7 000多人，涉及的升降機及自動梯超過20 000部，佔全港升降機及自動梯總數逾兩成。持份者的熱烈反應令張先生倍感振奮。

With the concerted effort of various parties, the development of the system was completed within a relatively short period of time and the system was officially launched in November 2022 for use by the trade. Within just a few months after the launch, the number of users reached over 7 000, involving more than 20 000 lifts and escalators, which accounted for more than 20% of all the lifts and escalators in Hong Kong. Mr Cheung was heartened by such enthusiastic response from the stakeholders.

項目的成功有賴張先生和團隊的共同努力。他們多管齊下，不但製作教學短片、舉辦研討會、設立諮詢熱線，更主動接觸準用戶，鼓勵負責人及業界從紙本記錄過渡至數碼工作日誌，以盡早享用創科帶來的好處。

The success of the project is a result of the joint effort of Mr Cheung and his team. Adopting a multi-pronged approach, they produced tutorial videos, organised seminars, set up hotlines and even proactively reached out to potential users to encourage responsible persons and the trade to migrate from paper records to the Digital Log-books so as to enjoy the benefits brought about by I&T as soon as possible.

數碼工作日誌在2022年公務員優質服務獎勵計劃中榮獲卓越團隊協作獎(監管服務)金獎，肯定了開發團隊的辛勤付出和卓越成就，更彰顯了持份者之間的協作精神。

The Digital Log-books won the Gold Prize in the category of Excellence in Team Collaboration (Regulatory Service) in the Civil Service Outstanding Service Award Scheme 2022, affirming the hard work and outstanding achievements of the development team while underscoring the spirit of collaboration among the stakeholders.

張先生總結表示：「在開發數碼工作日誌的初期，我們曾擔心系統會否太破格、過於進取，對於業界的接受程度存疑。不過，當我們向業界介紹數碼工作日誌的設計概念後，由行業從業員、承辦商及負責人代表組成的工作小組紛紛表示支持，在後期系統試運階段，亦得到業界各方的通力配合。數碼工作日誌的推出獲得用戶一致好評，他們的積極反饋為我們帶來莫大鼓舞，我對團隊取得的成果感到無比高興。」

"In the early stage of developing the Digital Log-books, we had concern that the system might be too unconventional and ahead of its time, and worried about its acceptance by the trade. Nevertheless, after we introduced the design concept of the Digital Log-books to the trade, we received wide support from the working groups which comprised trade practitioners, contractors and representatives of responsible persons. During the trial run of the system at the later stage, different parties of the trade also collaborated fully with us. The introduction of the Digital Log-books won unanimous approval from users. Their positive feedback has been very encouraging to us, and I am chuffed about what has been achieved," Mr Cheung concluded.

鐵路安全

鐵路事故數目微升

港鐵於2022年的總載客量約為14.7億人次，較2021年的約15.7億人次減少約6%。同年共錄得882宗鐵路事故，較2021年略升，總體趨勢尚算平穩。

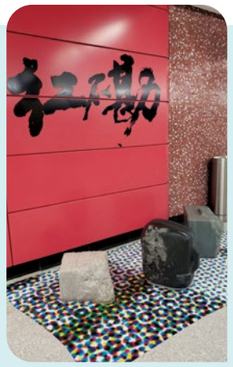
RAILWAY SAFETY

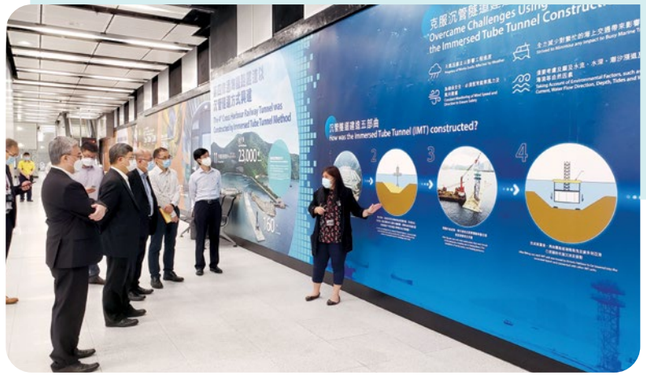
Slight Increase in Number of Railway Incidents

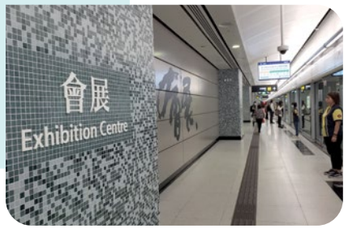
In 2022, the patronage of MTR services amounted to approximately 1.47 billion, representing a decrease of about 6% from approximately 1.57 billion in 2021. A total of 882 railway incidents were recorded in the same year, showing a slight increase from 2021. The overall trend remained generally stable.

鐵路科推行新的「工程項目安全檢討」程序，在較早階段對鐵路項目的安全性進行系統性評估，並參與隧道、車站和附屬建築、列車、架空電纜、路軌和信號系統等關鍵項目的測試。最後，東鐵線過海段在所有法定檢查及試營運完成後，於2022年5月15日正式通車。

The RB implemented a new Project Safety Review process, under which it conducted a structured assessment of the safety aspects of the railway project at an early stage, and took part in the testing of critical items such as tunnels, stations and ancillary buildings, rolling stocks, overhead lines, tracks and signalling systems. Eventually, the East Rail Line Cross-harbour Extension was officially commissioned on 15 May 2022 upon completion of all statutory inspections and trial operation.







東鐵線過海段通車 自動月台閘門安裝工程陸續展開

東鐵線過海段在所有法定檢查及試營運完成後，於2022年5月15日正式通車，並成為香港第四條過海鐵路，令全城市民「真的很興奮」。在東鐵線過海段的建造工程期間，鐵路科推行新的「工程項目安全檢討」程序，在項目周期的較早階段對鐵路項目的安全性進行系統性評估，並參與隧道、車站和附屬建築、列車、架空電纜、路軌和信號系統等關鍵項目的測試。鐵路科也參與了香港鐵路有限公司(港鐵公司)在夜間進行的全線行車壓力測試。

Installation of Automatic Platform Gates Successively Begun upon Commissioning of East Rail Line Cross-harbour Extension

Upon completion of all statutory inspections and trial operation, the cross-harbour extension of the East Rail Line (EAL) was officially commissioned on 15 May 2022 and has become the fourth cross-harbour railway line in Hong Kong, filling the city with excitement. During the construction of the EAL cross-harbour extension, the Railways Branch (RB) implemented a new Project Safety Review (PSR) process, under which it conducted a structured assessment of the safety aspects of the railway project at an early stage of the project cycle and took part in the testing of critical items, such as tunnels, stations and ancillary buildings, trains, overhead lines, tracks and signalling systems. The RB also participated in the night-time full-line stress tests conducted by the MTR Corporation Limited (MTRCL).

東鐵線過海段通車後，該線的列車車隊會由12卡列車全面改為9卡列車。因此，港鐵公司旋即展開安裝自動月台閘門工程，為沿線13個車站合共35個月台，陸續安裝近1 600對閘門。馬場站和大埔墟站已率先展開安裝工程，其他車站的工程亦會相繼展開。就此，鐵路科監察港鐵公司對自動月台閘門進行測試，檢視港鐵公司提交有關閘門設計的安全報告，並實地測試自動月台閘門的安全聯鎖裝置，確保自動月台閘門運作安全。

Following the commissioning of the EAL cross-harbour extension, the train fleet operating on the EAL would be fully converted from 12-car trains to 9-car trains. As such, the MTRCL immediately commenced the installation works of automatic platform gates (APGs) to install nearly 1 600 pairs of APGs at a total of 35 platforms in 13 EAL stations successively. The installation works first commenced at Racecourse and Tai Po Market stations, with other stations to follow. In this regard, the RB monitored the MTRCL's testing of APGs, reviewed safety reports on APG design submitted by the MTRCL, and carried out on-site tests of the safety interlocks of APGs to ensure the operational safety of the APGs.

港鐵市區線引入新列車

因應港鐵公司以內地製新八卡列車(俗稱Q車)逐步取代沿用40多年的英國製市區線現代化列車(俗稱M車)，機電工程署(機電署)聯同運輸署、消防處、警務處和環境保護署等其他政府部門監察新列車系統的測試工作，包括煞車測試、信號連結測試、轉向架動態測試、脫軌測試、復軌演習、緊急救援演習和可靠性運行等靜態和動態測試。經過一連串測試，港鐵市區線的新列車系統已經獲相關政府部門確認運作安全及良好，首列新列車已於2022年11月27日在觀塘線正式投入服務。截至2023年3月底，共有五列新列車通過測試並相繼投入服務。預料於2023年底，會共有13列新列車在觀塘線行走。

New Trains Introduced on MTR Urban Lines

In the light of the gradual replacement of UK-made Metro Cammell Electric Multiple Units (commonly known as M-Trains), which have been in use for more than 40 years, with the new Mainland-made eight-car trains (commonly known as Q-Trains), the Electrical and Mechanical Services Department (EMSD) worked with other government departments, such as the Transport Department, Fire Services Department, Police Force and Environmental Protection Department to monitor the testing of the new train system, including static and dynamic tests such as brake tests, signal interface tests, bogie dynamic tests, derailment tests, train rerailing drills, emergency and rescue exercises and reliability runs. After a series of tests, the new train system for MTR urban lines was confirmed by the relevant government departments to be safe and sound. The first new train was officially put into service on the Kwun Tong Line on 27 November 2022. As at the end of March 2023, five new trains passed the tests and were successively deployed. It is expected that a total of 13 new trains will operate on the Kwun Tong Line by the end of 2023.

新列車投入服務初期會先使用現有的SACEM信號系統，待新信號系統完成開發及安裝並通過安全及良好評估後，港鐵公司會作出相應調整，最終把現有信號系統切換為採用更先進「通訊為本列車控制」技術的新信號系統。機電署會繼續監察新列車和新信號系統的測試工作，確保鐵路運作安全，列車服務充足。

At the initial stage of commissioning, the new trains will operate with the existing SACEM signalling system. After the new signalling system is developed and installed, and passes the safe and sound assessment, the MTRCL will make corresponding adjustments and eventually switch from the existing signalling system to the new system which adopts the more advanced "Communication-based Train Control" technology. The EMSD will continue to monitor the testing of the new trains and the new signalling system to ensure safe railway operation and adequate train services.

機電署監察新列車和新信號系統的測試工作，包括初期使用的現有SACEM信號系統。

The EMSD monitors the testing of new trains and the new signalling system, including the existing SACEM signalling system used at the initial stage.

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預防鐵路安全事故

2022年11月和12月分別發生兩宗值得關注的港鐵事故。在2022年11月的事故中，涉事列車與路軌旁一個因嚴重銹蝕而向路軌傾斜的金屬護欄發生碰撞；在2022年12月的事故中，涉事列車一個車廂連接器的組件鬆脫，導致連接器移位。因應這兩宗事故，港鐵公司成立專家小組，就其資產管理及維修保養制度進行全面檢討，政府亦於2022年12月成立獨立監督小組(小組)，密切監督港鐵公司的檢討工作，包括審視其覆蓋範圍、檢視方法及程序、跟進建議及落實方案是否合適得宜，確保港鐵公司的維修保養以至營運管理工作與時並進，包括制定適當的檢查及維修保養措施，尤其是加強預防性的維修工作及科技應用。機電署署長是該小組的成員，機電署則擔任小組的秘書處。機電署會在港鐵公司於2023年6月完成檢討後，監督其落實各項建議。

Prevention of Safety-related Railway Incidents

Two notable MTR incidents occurred in November and December 2022. In the incident in November 2022, a train collided with a trackside metallic protection barrier that leaned over to the track due to serious corrosion; whereas in the incident in December 2022, a component of the inter-car coupler assembly of a train car loosened, resulting in dislodgement of the coupler. In response to the two incidents, the MTRCL established an expert panel to conduct a comprehensive review of its asset management and maintenance regime. The Government also established an independent monitoring panel (IMP) in December 2022 to closely monitor the MTRCL's review, including the appropriateness of its scope, review methodology and procedures, follow-up recommendations and implementation plans, so as to ensure that the maintenance and operation management work of the MTRCL keeps pace with the times, including developing appropriate inspection and maintenance measures, in particular the enhancement of preventive maintenance and the application of technology. The Director of Electrical and Mechanical Services was a member of the IMP and the EMSD served as the secretariat of the IMP. The EMSD will monitor the MTRCL's implementation of the recommendations after the MTRCL completes its review in June 2023.

籌備廣深港高鐵香港段復運

新冠疫情於2023年初開始緩和，香港與內地於2023年1月8日實施第一階段通關，鐵路科聯同港鐵公司於通關前檢查羅湖站和落馬洲站的各項設施，確保兩個出入境管制站已準備就緒重新投入服務。

廣深港高鐵(高鐵)香港段來往香港和廣州的客運服務亦由2023年1月15日開始恢復。由於西九龍站在過去三年疫情期間僅維持有限度運作，在高鐵香港段恢復通車前必須進行測試和演練，確保車站可以應付復運後的旅客流量。鐵路科自2022年11月起開展復運準備工作，要求港鐵公司籌備及進行復運前的測試及演練，包括測試西九龍站的列車安全系統、空調及通風系統、電力系統、月台緊急停車掣、入閘機系統及通訊系統，以及進行緊急/疏散演練等。所有測試及演練在2023年1月7日順利完成，結果令人滿意，顯示車站已就緒迎接高鐵香港段恢復通車。另外，隨着內地自2023年1月8日起撤銷往返香港和內地的檢疫要求，香港和內地的高鐵司機可把握時間練習駕駛高鐵列車，在恢復通車前重新熟習廣深港高鐵路段及高鐵列車的運作，鐵路科亦有派員到場監督高鐵司機的作業。

Preparing for Service Resumption of the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link

As the epidemic began to ease in early 2023, the first-phase resumption of normal travel between Hong Kong and the Mainland was implemented on 8 January 2023. The RB and MTRCL jointly inspected various facilities at Lo Wu and Lok Ma Chau Stations before the re-opening of border to ensure that the two control points were ready for service resumption.

The Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) also resumed passenger service between Hong Kong and Guangzhou from 15 January 2023. As the West Kowloon Station was operated on a limited scale during the epidemic in the past three years, tests and drills were conducted before the re-opening of the XRL Hong Kong Section, so as to ensure that the station could cope with passenger flow after the resumption of normal operation. In November 2022, the RB has commenced preparatory work for service resumption, and requested the MTRCL to arrange for and conduct pre-resumption tests and drills, including testing the train safety system, air-conditioning and ventilation system, power system, platform emergency train stops, turnstile system and communication system at West Kowloon Station, as well as conducting emergency/evacuation drills. All tests and drills were successfully completed by 7 January 2023 with satisfactory results, demonstrating that the station was ready for the re-commissioning of the XRL Hong Kong Section. In addition, with the lifting of quarantine requirements regarding travel between Hong Kong and the Mainland on 8 January 2023, XRL train drivers from Hong Kong and the Mainland could seize the time to practise driving XRL trains and re-familiarise themselves with the railway sections of the XRL and the operation of XRL trains before the re-commissioning. The RB also deployed personnel to monitor the operation of XRL train drivers.

第六代山頂纜車正式投入服務

山頂纜車升級工程已在2022年順利完成。整個升級工程包括更換纜車車廂、拖曳系統、控制系統、信號系統、纜索及路軌，以及翻新中環及山頂纜車總站。在2022年3月，升級工程踏入最後階段，鐵路科聯同委聘的德國纜車專家一連六日進行行車安全法定檢查，確認纜車系統安全及妥善。鐵路科在同年6月進行車務運行可靠性測試，確認所有運作系統及人員準備就緒，全新的第六代山頂纜車終於在2022年8月27日正式投入服務。山頂纜車有限公司(纜車公司)在2022年12月2日為新一代山頂纜車舉行開幕典禮，機電署署長和副署長/規管服務應邀出席。新纜車系統啟用後，鐵路科會繼續與纜車公司保持緊密聯繫，監督其維修保養工作並定期進行法定安全檢查，確保運作安全。

Sixth-generation Peak Tram Inaugurated

The upgrading project for the Peak Tram was successfully completed in 2022. The entire upgrading exercise included the replacement of the tramcars, haulage system, control system, signalling system, ropes and track rails, as well as the refurbishment of the Central Terminus and Peak Terminus of the Peak Tram. As the upgrading project entered the final stage in March 2022, the Railways Branch (RB) conducted statutory inspections with the appointed German ropeway specialist for six consecutive days and confirmed that the operation of the tram system was safe and sound. The RB conducted reliability tests of the tramway operation in June 2022 and confirmed that all operation systems and staff were ready for operation. Eventually, the new sixth-generation Peak Tram was officially launched on 27 August 2022. The Peak Tramways Company Limited (PTC) held an opening ceremony for the new generation of the Peak Tram on 2 December 2022. The Director of Electrical and Mechanical Services and Deputy Director/Regulatory Services attended the ceremony on invitation. After the new tram system was put into service, the RB will continue to maintain close communication with the PTC, monitor its repair and maintenance work and conduct statutory safety inspections on a regular basis, so as to ensure operational safety.

鐵路科於2022年3月與委聘的德國纜車專家進行山頂纜車行車安全法定檢查，檢查範圍亦包括拖曳系統、纜索及路軌等，確認纜車系統運行安全暢順。鐵路科並於同年6月進行車務運行可靠性測試，確認所有運作系統及人員準備就緒。

In March 2022, the RB, together with the appointed German ropeway specialist, conducted statutory inspections on the peak tramway system, which also covered the haulage system, ropes and track rails, and confirmed that its operation was safe and sound. In June 2022, the RB carried out operation reliability tests and confirmed the readiness of all operation systems and staff.

機電署署長和副署長/規管服務出席於2022年12月2日舉行的第六代山頂纜車開幕典禮。

The Director of Electrical and Mechanical Services and Deputy Director/Regulatory Services attended the Sixth Generation Peak Tram Grand Opening Ceremony held on 2 December 2022.

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山頂纜車是全球歷史最悠久的纜索鐵路之一，是次優化工程為傳承纜車的製造工藝提供一個千載難逢的機遇。在調試纜車系統期間，鐵路科人員特地拍攝了五部記錄測試和檢查工作的短片，並把短片上載至機電署的知識羣體平台，以分享寶貴的經驗。他們也積極參與新纜車系統供應商為纜車公司本地工程人員提供的技術培訓，以增進對新一代纜索鐵路系統的認識。

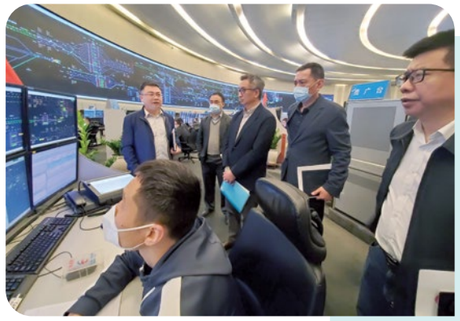
The Peak Tram is one of the oldest funicular railways in the world. This upgrading project offers an extremely rare opportunity for preserving the craftsmanship of the tramway. During the testing and commissioning of the tramway, the staff of the RB made a special effort to film five short videos documenting the testing and inspection work and upload the videos to the Knowledge Management Platform of the EMSD for sharing such valuable experience. They also actively participated in the technical training provided by the supplier of the new tram system for the local engineering staff of the PTC, with a view to enriching their knowledge about the new-generation funicular railway system.

深化與內地及國際的合作

鐵路科自2018年起就籌備啟用高鐵香港段的工作，與國家鐵路局及內地相關鐵路營運單位建立良好的工作關係，並展開長期合作，就各自管轄的廣深港高鐵路段緊密交流。過去三年疫情期間，雙方依賴定期線上溝通維持合作關係。隨着2023年年初香港和內地恢復通關，於2023年3月，由國家鐵路局副局長率領的高級別代表團到訪廣州及香港，與鐵路科就高鐵的安全監管機制交流意見及對香港的高鐵設施進行聯合檢測。到訪期間國家鐵路局亦與機電署舉行實體季度會議，會議由機電署署長主持，運輸及物流局亦有代表出席。機電署和國家鐵路局會繼續緊密聯繫，就高鐵「地鐵化」的相關議題，例如售賣「無座票」等事宜進行深度交流。

Deepening Mainland and International Cooperation

Since 2018, the RB had established good working relationships with the National Railway Administration (NRA) as well as relevant Mainland railway operators in respect of the preparatory work for the launch of the XRL Hong Kong Section, and the various parties had developed long-term cooperation and conducted close exchanges regarding the XRL sections under their respective jurisdictions. During the epidemic in the past three years, the NRA and EMSD relied on regular online communication to maintain cooperation. With the resumption of normal travel between Hong Kong and the Mainland in early 2023, in March 2023, the Deputy Administrator of the NRA led a high-level delegation to Guangzhou and Hong Kong to exchange views on the safety monitoring mechanism of the XRL and conduct a joint inspection of the XRL facilities in Hong Kong with the RB. During the visit, the NRA and the EMSD also held the quarterly meeting in physical mode. The meeting was chaired by the Director of Electrical and Mechanical Services and attended by representatives of the Transport and Logistics Bureau. The EMSD will continue to maintain close ties with the NRA and conduct in-depth exchanges on issues related to the "metroisation" of the XRL, such as the sale of "non-seat" tickets.



2023年3月，由國家鐵路局副局長率領的高級別代表團到訪廣州及香港，與鐵路科就高鐵的安全監管機制交流意見。

The Deputy Administrator of the NRA led a high-level delegation to Guangzhou and Hong Kong to exchange views on the safety monitoring mechanism of the XRL with the RB in March 2023.

作為國際鐵路安全議會（議會）核心小組的成員，鐵路科在去年參加了議會在西班牙舉行的2022年度會議。我們在會議上發表三份專題報告，與其他國家的鐵路機構代表分享機電署為提升鐵路安全促進及推動創新科技（創科）應用的經驗，並介紹了不同的創科方案，例如可同時監察軌道情況及司機狀態的「司機隨身寶」，以及利用語義人工智能及數據分析技術為鐵路軌道進行預測性維修工作的方案。該兩個方案在2022年日內瓦國際發明展分別獲得金獎和銀獎。

As a member of the Core Group of the International Railway Safety Council (IRSC), the Railways Branch (RB) attended the 2022 annual meeting held by the IRSC in Spain last year. At the meeting, we gave three presentations to share the experience of the EMSD in facilitating and promoting the applications of innovation and technology (I&T) for enhancing railway safety with the representatives of railway organisations from other countries, and introduced various I&T solutions, such as the Smart Driver Assistant for the Automated People Mover, which simultaneously monitored the track and driver condition, and a solution that uses semantic artificial intelligence (AI) and data analytics to initiate predictive maintenance works for railway track systems. The two solutions were awarded a gold medal and a silver medal respectively at the International Exhibition of Inventions of Geneva 2022.

機電署推動創科方案的應用，以提升鐵路安全。其中一項是可同時監察路面情況及司機狀態的「司機隨身寶」。

The EMSD promotes the application of I&T solutions for railway safety enhancement. One of them is the Smart Driver Assistant for the Automated People Mover, which simultaneously monitors the track and driver condition.

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以創科方案提升鐵路安全

創科應用對保障鐵路安全運行及乘客安全具甚具效用。因此，鐵路科繼續牽頭鼓勵業界引入創科方案，而多項由我們推動及與業界協作的創科發明榮獲多個國際獎項。

香港電車與其他車輛共用道路，在人多車多的路面行走，容易發生意外。近年因為路軌內有金屬異物而導致出軌的事故，有鑑於此，鐵路科聯同香港電車有限公司共同研發一套全新的「預防電車脫軌及碰撞系統」，該系統透過光學雷達和衞星定位技術，偵測路軌上有否異物並向電車車長發出警示。鐵路科在去年成功完成測試該系統，該系統不論晝夜或在任何天氣情況下均可準確偵測路軌上的異物。這項創科方案不僅在第48屆日內瓦國際發明展獲頒金獎，更榮獲泰國國家研究評議會國際最佳發明特別大獎。

另外，鐵路科與香港鐵路有限公司協作開發了「鐵路基建設施車載巡查系統」。該系統採用先進的光學雷達、三維點雲地圖構建、電腦立體視覺、人工智能及5G邊緣計算技術，並配備雙波段紅外線攝像儀，即使列車在高速行駛時亦能監測和偵測隧道內基礎設施的異常狀況，例如滲水、混凝土剝落、裂縫、軌旁設備移位等。該系統更可以在客運服務時間內精準地自動巡查隧道內的鐵路基礎設施，取代人工目測的方法，讓維修人員在非行車時段有更多時間進行維修工作。這個創新方案在2023年第48屆日內瓦國際發明展榮獲銀獎。

機電署亦開發了另一創新方案「鐵路軌道障礙物偵測系統」。該系統以人工智能和視頻分析技術實時偵測外物跌入路軌範圍的情況，並即時通報車務控制中心人員處理，從而提升列車運作安全。系統通過測試後，港鐵公司會陸續在80處鄰近公路或高架橋的露天路軌段安裝該系統。這個創新方案在2023年第48屆日內瓦國際發明展榮獲銅獎。

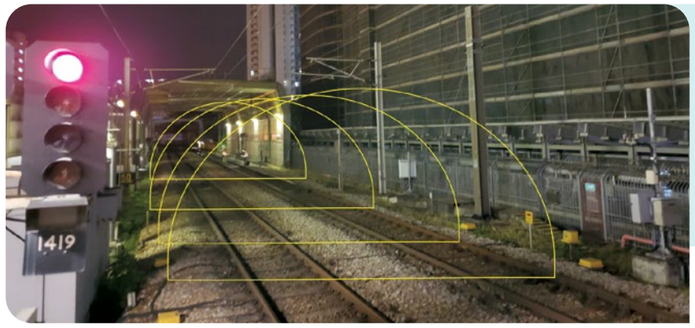
Enhancing Railway Safety with I&T Solutions

I&T applications are of positive significance for ensuring the safety of railway operation and passengers. Therefore, the Railways Branch (RB) continues to take the lead in encouraging the industry to introduce I&T solutions. A number of I&T inventions facilitated or developed by the RB in collaboration with the trade won various international awards during the year.

Trams in Hong Kong operate on busy roads shared with other vehicles and are prone to accidents. In recent years, there had been derailment incidents caused by metal objects on the tram track. In view of this, the RB and Hong Kong Tramways Limited jointly developed a new Tramway Derailment and Collision Prevention System, which leverages light detection and ranging (LiDAR) and global positioning technologies to detect the presence of foreign objects on the tracks and send alerts to the tram drivers accordingly. The system was successfully tested last year and was proved to be effective in accurately detecting foreign objects on the tracks day and night and in any weather conditions. The I&T solution won a gold medal at the 48th International Exhibition of Inventions of Geneva in 2023, as well as the Thailand Award for the Best International Invention of the National Research Council of Thailand.

Besides, the Train-borne Railway Infrastructure Inspection System developed by the RB in collaboration with Mass Transit Railway Corporation Limited (MTRCL). Making use of cutting-edge LiDAR, three-dimensional point cloud mapping, computer stereo vision, AI and 5G edge computing technologies, and equipped with dual-band infrared cameras, the system can monitor and detect anomalies such as water leakage, spalling of concrete, cracks and dislodgement of trackside equipment in tunnel infrastructure even when the trains are running at a high speed. The system can also automatically inspect the condition of railway infrastructure in the tunnels during passenger service hours with high precision, replacing manual visual inspections and thus allowing maintenance staff more time during non-traffic hours to carry out maintenance work. This I&T solution received a silver award at the 48th International Exhibition of Inventions of Geneva in 2023.

The RB also developed another I&T solution in collaboration with MTRCL, namely the Rail Track Collision Object Detection System. Leveraging AI and video analytics technologies, the system can detect in real-time any objects falling onto the railway track areas and promptly alert staff in the railway operation control centre for follow-up actions, thereby enhancing train operation safety. After tests, the MTRCL will install the system at 80 open-track sections near highways or flyovers in phases. This I&T solution received a bronze award at the 48th International Exhibition of Inventions of Geneva in 2023.



「鐵路軌道障礙物偵測系統」以人工智能和視頻分析技術實時偵測外物跌入路軌範圍的情況，並即時通報車務控制中心人員處理，從而提升列車運作安全。

Leveraging AI and video analytics technologies, the Rail Track Collision Object Detection System detects in real-time objects falling onto the railway track areas, and alert the railway operation control centre promptly, in order to enhance train safety.

機電署開發「預防電車脫軌及碰撞系統」、「鐵路基建設施車載巡查系統」和「鐵路軌道障礙物偵測系統」。這三項創新方案在2023年第48屆日內瓦國際發明展分別獲頒特別獎暨金獎、銀獎和銅獎。

The EMSD developed three I&T solutions, namely the Tramway Derailment and Collision Prevention System, the Train-borne Railway Infrastructure Inspection System and the Rail Track Collision Object Detection System, which won the special award & gold medal, silver medal and bronze medal respectively at the 48th International Exhibition of Inventions of Geneva in 2023.

機電署亦與港鐵公司合作，在彩虹站入閘機附近安裝「乘客安全提示系統」。該系統使用人工智能及光學雷達等技術，在偵測到乘客攜帶大型物品或嬰兒車入閘時，會發出廣播及向該乘客前面的地面投射特定的多媒體信息，提醒乘客使用升降機，以免在使用自動梯時發生意外。該系統亦可以識別禁止攜帶進入港鐵範圍的物品並向車站職員發出警示，方便他們跟進。

The EMSD also worked with the MTRCL to install the Passenger Misbehaviour Detection System near the turnstiles of Choi Hung Station. Using technologies such as AI and LiDAR, the system will broadcast and project multi-media messages to the ground in front of a passenger when it detects that the passenger is entering the turnstiles with bulky items or baby prams, reminding him/her to use the lift to avoid accidents when using the escalator. The system can also identify items prohibited in the MTR areas and issue alerts to station staff for their follow-up actions.

優化審批工作流程

港鐵公司在興建新鐵路設施或改裝現有路軌旁或車站的設施時，須要向跨部門組成的安全及保安統籌委員會及軌道安全及保安委員會提交審批文件。過往，文件會通過郵寄、電郵或傳真方式傳閱及記錄，因此，各部門難以追蹤文件的審批狀態和翻查過往記錄以作參考。有見及此，鐵路科在本年度設立了鐵路安全文件審批電子平台，並將文件的審批狀態及電子複本上載至該平台，供相關部門查閱及下載。該平台運用區塊鏈技術及引入「智方便」功能，能確保文件的真確性和提高登入系統的安全性，並可儲存建築信息模擬技術檔案及提供搜尋功能，可加快查閱速度並減省使用紙張，從而提升整個審批流程的效率，以及加強部門之間的溝通和合作。

Streamlining Approval Process

The MTRCL is required to submit approval documents to the inter-departmental Safety and Security Coordinating Committee (SSCC) and Trackside Safety and Security Committee (TSSC) for the construction of new railway facilities and modifications to existing trackside or station facilities. In the past, the documents were circulated and recorded by post, email or fax, making it difficult for departments to track the approval status of the documents or search the past records for reference. In view of the above, this year, the RB set up the SSCC and TSSC Submission Approval System (STSAS) electronic platform and uploaded the approval status and soft copies of the documents onto the platform for access and downloading by relevant departments. With the application of blockchain technology and the incorporation of "iAM Smart" functions, the STSAS platform can ensure the authenticity of the documents and enhance the security of logging on to the system. It also accommodates Building Information Modelling files and offers searching functions, which can accelerate the searching process while reducing paper usage, and thereby enhancing the efficiency of the entire approval process and strengthening inter-departmental communication and cooperation.

保障公眾安全
PROTECTING PUBLIC SAFETY

展望未來

來年，我們會繼續向持份者推動創科應用，例如鼓勵纜車公司裝設檢查纜索損耗的創科工具，加強預防事故措施的成效。

我們亦會繼續監督港鐵公司以Q車取代M車在市區線行駛的工作，並因應進度陸續審批Q車在港島線、荃灣線及將軍澳線投入服務。

為了提高鐵路工程的長遠安全，鐵路科自2020年11月起試行「工程項目安全檢討」程序，從項目周期的最初階段起對鐵路工程項目的安全方面進行評估及審核。我們已在小蠔灣車站和東涌線延線兩個工程項目的設計和施工階段採用「工程項目安全檢討」程序。該程序包括審核項目中與長遠鐵路安全有關的事項，確保關鍵測試及在系統啟用後無法重複進行的測試均按照國際標準和規格進行；檢視相關風險評估報告及應對措施以消減潛在的安全隱患；以及妥善備存與鐵路安全關鍵系統有關的記錄，令長遠鐵路運作安全得到保障。

鐵路科亦正就與《北部都會區發展策略》及交椅洲人工島等大型規劃和基建項目相關的長遠鐵路發展項目，為鐵路安全規管工作做準備。

國際鐵路安全議會每年都會舉辦年會，以促進各成員經濟體就鐵路安全和規管等事宜的交流和協作。香港曾於2017年主辦國際鐵路安全議會年度會議，與來自40個國家或地區超過300位政府和鐵路業界代表分享經驗及創科成果。我們正聯同國家鐵路局和港鐵公司向國際鐵路安全議會爭取主辦2025年的年度會議，並且再次在香港舉行以提升本地及國際間的鐵路服務水平與安全，同時透過與來自世界各地的鐵路業界代表和相關持份者分享中國內地及香港在鐵路發展及提升鐵路安全方面的經驗和成果，說好國家及香港故事。

The Way Forward

In the coming year, we will continue to promote I&T applications to stakeholders, such as encouraging the PTC to install I&T tools for monitoring the wear and tear of the hauling ropes, so as to strengthen the effectiveness of incident prevention measures.

We will also continue to monitor the MTRCL's work in replacing M-Trains with Q-Trains for the urban lines and approve the operation of Q-Trains on the Island Line, Tsuen Wan Line and Tseung Kwan O Line successively according to the progress.

To enhance the long-term operational safety of railway projects, the RB has piloted a PSR process since November 2020, to conduct assessments and reviews of the safety aspects of railway projects from the very beginning of the project cycle. The PSR process has been applied in the design and construction stages of the Oyster Bay Station and Tung Chung Line Extension projects. The process includes vetting of items of the project related to long-term railway safety to ensure that the critical tests and tests that cannot be repeated once the system is commissioned are conducted against international standards and specifications; review of associated risk assessment reports and mitigation measures to eliminate potential safety hazards; and proper keeping of records related to critical railway safety systems to safeguard long-term operational safety.

The RB is also making preparation for the railway safety regulatory work of long-term railway development projects related to major planning and infrastructure projects such as the Northern Metropolis Development Strategy and the Kau Yi Chau Artificial Islands.

The IRSC holds an annual conference every year to promote exchanges and collaboration on matters relating to railway safety and regulation among member economies. Hong Kong hosted the IRSC Annual Conference in 2017, sharing experience and I&T achievements with more than 300 government and railway industry representatives from 40 countries and regions. In collaboration with the NRA and the MTRCL, we are bidding to host the annual conference in Hong Kong again in 2025, with a view to elevating the standards and safety of railway services both locally and internationally, while telling good stories of the country and Hong Kong by sharing the experience and achievements of the Mainland and Hong Kong in railway development and railway safety enhancement with railway industry representatives and stakeholders around the world.

經驗的傳承：監督纜車優化展新篇
HERITAGE OF EXPERIENCE: MONITORING THE PEAK TRAM UPGRADING FOR OPENING A NEW CHAPTER

監督山頂纜車的優化工程對工程師而言無疑是難得的機遇，尤其是香港的山頂纜車是全球其中一個最獨特的纜車系統。鐵路科高級工程師梁興東先生和工程師周嘉健先生對於能參與這項別具歷史意義的工程，感到萬分榮幸和自豪。

Monitoring the upgrading project of the Peak Tram was undoubtedly a precious opportunity for engineers, particularly as the Peak Tram of Hong Kong is one of the most distinctive funicular systems in the world. Mr Leung Hing Tung, Gary, a senior engineer, and Mr Chow Ka Kin, an engineer, of the Railways Branch (RB) are privileged and proud to have been engaged in this historic project.

山頂纜車的升級工程於2018年展開，2022年8月完成，第六代纜車亦正式投入服務。這項龐大工程涉及大量更換工作，包括更換列車、拖曳系統、控制系統、信號系統、纜索和軌道等。同時，中環和山頂纜車總站亦進行大規模擴建和全面翻新工程。

梁先生指出：「香港的山頂纜車設計相當獨特。其他國家類似的纜車系統，路軌斜度通常一致，而且路線大多是直的。但是，香港的山頂纜車路軌不僅在不同路段斜度不同，甚至會隨着山勢而彎曲。此外，由於纜索本身具彈性，在纜車運行時其張力會改變，因而有所伸縮。故此，在設計運作系統時，必須考慮纜車的動態狀況。」

由於工程性質獨特，全球掌握相關專業技術的機構不多。工程期間，鐵路科團隊與來自德國的專家，一直透過視像會議保持溝通，務求各方面都盡善盡美。團隊除了向海外專家汲取這類專業工程技術，亦憑藉在其他鐵路工程項目累積的經驗，在安全運作方面做好把關工作，並且向海外專家汲取這類工程的經驗。

周先生表示：「我們擁有上一代山頂纜車的監管經驗，並且了解山頂纜車運作的獨特環境，這都有助我們審核系統設計。例如，我們根據上一代纜車的經驗，就修改新一代纜車特有的波浪形地板設計，向山頂纜車有限公司提出意見；在確定最終設計前，我們還在舊有纜車上臨時安裝新波浪形地板，並進行現場測試，確保乘客在不同斜度的路段都能舒適地站立，減低失去平衡跌倒的風險。在我們確定測試效果滿意後，地板才交由承辦商製作。」

為分享這次難能可貴的工程經驗，團隊在工程各關鍵階段錄製了一系列短片，記錄重要設計和測試詳情，包括制動系統測試、山頂纜車的運作原理、各個安全部件的操作等，供團隊內部參考，以及傳承經驗。

在第六代山頂纜車啟用當日，梁先生跟其他纜車迷一樣，急不及待訂購車票，與家人一起分享通車的喜悅，以及參與工程的驕傲。梁先生說：「平常甚少與家人談及工作，當日則在纜車上向家人講解新纜車設計和工程經歷，讓他們更加了解我的工作。」

新一代山頂纜車投入營運後，兩位鐵路科工程師及其團隊會繼續就山頂纜車的機電系統、電力系統、纜車、軌道、纜索等各方面，進行定期的安全檢查；並會參與山頂纜車有限公司及相關部門合辦的拯救演練，務求令山頂纜車系統時刻保持最佳安全運作狀態，讓大家放心搭乘。

Commenced in 2018, the upgrading project of the Peak Tram was completed and the six-generation tram was officially put into service in August 2022. This huge project involved extensive replacement of the tramcars, haulage system, controls, signalling system, ropes, track rails and more. At the same time, substantial expansion and comprehensive renovation works were carried out in the termini in Central and on the Peak.

"The design of the Hong Kong Peak Tram is quite unique," Mr Leung pointed out. "Similar funicular systems in other countries generally have a consistent gradient for the tracks, and the routes are mostly straight. However, in the case of the Peak Tram of Hong Kong, the track has varying gradients at different sections, and even bends according to the terrain. Moreover, since the rope is elastic itself and its tension changes when the tram runs, its elongation will also vary. Therefore, the dynamic condition of the tram should be taken into consideration in designing the operation system.

Due to the uniqueness of the project, there are few institutions in the world that have relevant expertise. In the course of the project, the RB team maintained communication with experts from Germany through video conferences to ensure perfection in all aspects. The team also applied their experience accumulated from other railway projects to act as the gatekeeper in ensuring safe operations, while acquiring experience in such projects from overseas experts.

"We had regulatory experience with the previous generation of the Peak Tram and knew the distinctive environment in which the Peak Tram operated. These helped us review the system design," Mr Chow said. "For example, based on our experience of the previous generation, we made recommendations to the Peak Tramways Company Limited on modifying the unique waved floor of the new-generation of tramcars. Before the design was finalised, we also conducted on-site testing by temporarily installing the new waved floor in an existing tramcar to make sure that passengers could comfortably stand at different gradient sections, thereby mitigating the risk of losing balance. The acceptance was not given to the contractor for manufacturing until we were satisfied with the test results."

In order to share this invaluable engineering experience, the team made a series of short videos at critical stages of the project, documenting important design and test details, including the brake system testing, operating principle of the Peak Tram and operation of various safety components, etc., for internal reference of the team and passing on of experience.

On the day the sixth-generation Peak Tram was launched, Mr Leung, like other Peak Tram fans, could not wait to order tickets, and shared with his family the joy of seeing the new Peak Tram commissioning and his pride in involving in the project. "I rarely told my family about my work, but that day I explained to them the new Peak Tram design and the project experience, so that they could better understand my work," Mr Leung said.

After the new generation of Peak Tram is put into operation, the two RB engineers and their team will continue to conduct regular safety inspections on various aspects of the Peak Tram, including the electrical and mechanical systems, power system, tramcars, tracks and ropes, etc. Also, they will partake in the rescue drills jointly organised by the Peak Tramways Company Limited and relevant departments to ensure that the Peak Tram systems always remain in the optimal and safe operating condition, so that everyone can ride with confidence.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

「強制性能源效益標籤計劃」第四階段的準備工作

「強制性能源效益標籤計劃」(強制性標籤計劃)首三階段全面實施以來，已涵蓋八類電氣產品。消費者現可參考產品上的能源標籤，精明地挑選具能源效益的器具，加強節約能源。強制性標籤計劃第四階段會擴大涵蓋範圍，延伸至LED燈、氣體煮食爐和即熱式氣體熱水爐等三類產品。相關修例和同步修訂《產品能源標籤實務守則》的工作已於年內完成。強制性標籤計劃第四階段會於2023年9月1日開始生效，並在15個月過渡期後全面實施。此階段覆蓋的三類產品，預料每年可為消費者節省約570太焦耳(約1.6億度電)，相當於每年減少排放約75 000公噸二氧化碳。在實施第四階段後，強制性標籤計劃所涵蓋產品的住宅總能源消耗量會由約五成大幅提升至約八成。

接下來，我們會為強制性標籤計劃進行第三次能源效益級別標準提升，涵蓋的電器包括冷凍器具、洗衣機和儲水式電熱水器。我們在2022年12月向相關產品的進口商講解初步計劃，並於2023年首季完成能源效益測試標準、評級要求和可節省能耗的研究，以及相關產品的測試。

PREPARATION FOR THE FOURTH PHASE OF THE MANDATORY ENERGY EFFICIENCY LABELLING SCHEME

Since the first three phases of the Mandatory Energy Efficiency Labelling Scheme (MEELS) were fully implemented, eight categories of electrical products have been covered. Consumers can now refer to the energy labels on products and select energy-efficient appliances smartly to enhance energy conservation. The fourth phase of the MEELS will cover three more categories of products, including LED lamps, gas cookers and gas instantaneous water heaters. The related legislative amendments and the simultaneous revision of the Code of Practice on Energy Labelling of Products were completed during the year. The fourth phase of the MEELS will come into effect on 1 September 2023 and be fully implemented after a 15-month grace period. The three categories of products covered in this phase will help consumers save about 570 terajoules (about 160 million kilowatt-hours in terms of electricity) per year, equivalent to an annual reduction of approximately 75 000 tonnes of CO_2 emissions. Upon the implementation of the fourth phase, the total residential energy consumption by products covered under the MEELS will significantly increase from about 50% to about 80%.

After that, we will carry out the third upgrading exercise for the energy efficiency grading standards under the MEELS, which will cover refrigerating appliances, washing machines and storage type electric water heaters. After outlining the preliminary plan to importers of these products in December 2022, we have completed a study on the energy efficiency test standards, grading criteria and potential energy savings, as well as testing of relevant products in the first quarter of 2023.

機電署會透過不同的宣傳渠道和平台，推廣能源效益、節能和可再生能源；並持續檢討和擴大強制性標籤計劃的範圍，以及探討涵蓋非家用及商用器具的可行性。

The EMSD will promote energy efficiency, energy saving and renewable energy through various promotion channels and platforms; continue to review and expand the scope of the MEELS, as well as exploring the feasibility of covering non-domestic and commercial appliances.

《建築物能源效益條例》生效十周年

《建築物能源效益條例》於本年度已踏入十周年。自該條例於2012年全面實施以來，已有超過2 000幢新建建築物符合指定的能源效益標準及規定，並有13 000多項為現有建築物進行節能改造的主要裝修工程採用了指定的能源效益標準及規定。此外，超過2 600幢商業樓宇已按法例提交能源審核報告，而註冊能源效益評核人人數亦逾1 100名。

BUILDINGS ENERGY EFFICIENCY ORDINANCE IN PLACE FOR TEN YEARS

This year marks the 10th anniversary of the Buildings Energy Efficiency Ordinance (BEEO). Since its full implementation in 2012, more than 2 000 new buildings have complied with the specified energy efficiency standards and requirements, and more than 13 000 major retrofitting works for improving energy efficiency in existing buildings have adopted the specified energy efficiency standards and requirements. Besides, more than 2 600 commercial buildings have submitted energy audit reports in compliance with the BEEO, whereas the number of Registered Energy Assessors has exceeded 1 100.

自《建築物能源效益條例》於2012年全面實施以來，超過2 000幢新建建築物符合指定的能源效益標準及規定，並有13 000多項為現有建築物進行節能改造的主要裝修工程採用了指定的能源效益標準及規定。

Since the full implementation of the BEEO in 2012, more than 2 000 new buildings have complied with the specified energy efficiency standards and requirements, and more than 13 000 major retrofitting works for improving energy efficiency in existing buildings have adopted the specified energy efficiency standards and requirements.

與《建築物能源效益條例》相關的兩份守則，即《建築物能源效益守則》和《能源審核守則》，每三年檢討一次，至今已進行三次主要修訂，務求與時並進，緊貼相關技術和國際普遍應用能源效益標準的最新發展。該兩份守則的修訂頻率在現行守則中相當罕見。2021年的最新版本，相比2015年首次修訂的版本，能源效益標準提高了15%。根據估計，新標準可以於2035年為全港建築物每年節省大約47億至53億度電，相當於大約150萬個家庭的全年用電量，有助香港於2050年前實現《香港氣候行動藍圖2050》所定下的碳中和目標。

The two codes relating to the BEEO, namely the Building Energy Code (BEC) and the Energy Audit Code (EAC), are reviewed once every three years and have undergone three major reviews to keep abreast of the times and in pace with the latest developments of relevant technologies and common energy efficiency standards in the international arena. The frequency of reviews is quite rare among existing codes. The latest edition in 2021 has uplifted the energy efficiency standards by 15% as compared with the first revision in 2015. It is estimated that with the new standards, around 4.7 billion to 5.3 billion kilowatt-hours of electricity can be saved per year for all buildings in Hong Kong, equivalent to the annual electricity consumption of about 1.5 million households by 2035. This will help Hong Kong achieve the carbon neutrality target before 2050, as set out in Hong Kong's Climate Action Plan 2050.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

為慶祝《建築物能源效益條例》十周年，我們於2023年2月至3月期間舉辦了關於該條例的網上問答比賽，以提升公眾人士（特別是年青人）對建築物能源效益和碳中和目標的關注。比賽吸引1 000名學生和公眾人士參加，其中近300名參加者更就如何實踐建築物能源效益和達致碳中和，提供了寶貴意見和創新意念。得獎作品提出的建議非常具創意，包括運用大數據分析和人工智能等優化建築物設備的運作，以及提高樓宇的能源效益；另外，有參賽者提倡公開樓宇使用能源的數據，讓公眾監測各自樓宇的能源消耗情況，並與其他樓宇進行比較，以互動模式攜手減碳和建立伙伴關係。這些建議與《香港氣候行動藍圖2050》的四項減碳策略其中的「節能綠建」不謀而合。由這些參賽方案，可見大家都有共同的理念和夢想，就是希望我們和下一代都可享有可持續發展的未來。公眾論壇暨頒獎典禮於2023年3月10日舉行，以表揚得獎者提出具創意和可行的方案。是次活動反應熱烈，共有200名學生和公開組的參加者出席。

To celebrate the 10th Anniversary of the BEEO, we organised an online quiz competition about the BEEO in February and March 2023 to raise public awareness of building energy efficiency and the carbon neutrality target, especially among young people. The competition attracted 1 000 students and members of the public, among whom nearly 300 participants provided valuable insights and creative ideas on the ways to achieve building energy efficiency and carbon neutrality. The winning entries put forward very ingenious proposals, such as using big data analytics and artificial intelligence to optimise the operation of building equipment and improve the energy efficiency of buildings. Moreover, some contestants advocated the disclosure of energy consumption data of buildings for the public to monitor the energy consumption of their own buildings and compare them with other buildings, so that they can join hands to reduce carbon emissions and forge partnerships in an interactive manner. These coincide with the "Energy Saving and Green Buildings" strategy among the four decarbonisation strategies in Hong Kong's Climate Action Plan 2050. It is evident from these participating proposals that everyone shared the same idea and dream of a sustainable future for all of us and our next generation. The public forum cum prize presentation ceremony was held on 10 March 2023 to commend the winners for their creative and practical solutions. The event received an overwhelming response, attended by 200 students and participants from the open category.

為慶祝《建築物能源效益條例》十周年，機電署於2023年2月至3月期間舉辦了關於該條例的網上問答比賽，以提升公眾人士對建築物能源效益和碳中和目標的關注。

To celebrate the 10th Anniversary of the BEEO, the EMSD organised an online quiz competition about the BEEO in February and March 2023 to raise public awareness of building energy efficiency and the carbon neutrality target.

區域供冷系統新發展

啟德發展區總規劃面積超過320公頃，為應對區內不斷增加的供冷需求，機電署規劃和建造了區域供冷系統，以提升能源效益、減少碳排放量和紓緩熱島效應。該系統目前共有兩座製冷廠房，總製冷量達284兆瓦，可滿足40座30層高商業大樓的供冷需求。截至2023年2月，兩座廠房已運作達10年。因應啟德發展區的發展規模擴大，而且啟德體育園等其他非住宅項目陸續增加，區域供冷系統第三座廠房的建造工程於2020年開展，預計於2024年分階段啟用。屆時，啟德區域供冷系統的總製冷量會提升至462兆瓦，足以供應65座30層高的商業大廈。我們在年內檢視了啟德發展區的最新發展規劃，以評估現有和發展中的區域供冷系統是否能夠滿足啟德發展區整體發展的供冷需要。評估結果顯示，目前已規劃的區域供冷系統足以應對啟德發展區的長遠整體供冷需求。

NEW DEVELOPMENT OF DISTRICT COOLING SYSTEMS

To meet the increasing cooling demand in the Kai Tak Development (KTD) spanning a total planning area of over 320 hectares, the EMSD had planned and constructed a district cooling system (DCS) to enhance energy efficiency, reduce carbon emissions and alleviate the urban heat island effect. The Kai Tak DCS currently has two chiller plants with a total cooling capacity of 284 megawatts, enough to meet the cooling needs of forty 30-storey commercial buildings. As at February 2023, the two plants have been in operation for 10 years. With the expansion of the KTD and the increasing number of other non-residential projects such as the Kai Tak Sports Park in the area, the construction of the third plant of the DCS commenced in 2020 and it is expected to be commissioned in phases in 2024. The new plant will boost the total cooling capacity of the Kai Tak DCS to 462 megawatts, enough to serve sixty-five 30-storey commercial buildings. During the year, we reviewed the latest development plan of the KTD to assess whether the existing and developing DCSs could meet the cooling needs of the overall development of the KTD. The assessment findings showed that the currently planned DCS would be sufficient to meet the KTD's overall cooling demand in the long term.

機電署在啟德發展區建造區域供冷系統，以提升能源效益，減少碳排放量和紓緩熱島效應。啟德區域供冷系統現時共有兩座製冷廠房，自2013年起投入運作。

The EMSD constructed a DCS in the KTD to enhance energy efficiency, reduce carbon emissions and alleviate the urban heat island effect. The Kai Tak DCS currently has two chiller plants, which have been in operation since 2013.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

區域供冷系統需要通過地下冷凍水配水管道，把冷凍水分配給區內的用戶樓宇作空調之用。因此，監控冷凍水配水管道是否完好無缺至關重要。年內，我們測試了一項新的創科方案，利用全球衞星導航系統監察地下冷凍水配水管道沉降情況。該方案於第三屆「Inno@E&M創新科技挑戰賽」獲得100萬元資金落實推行，並在實踐階段奪得亞軍。我們於啟德發展區中的三個地點測試該方案。我們預計於2024年3月總結方案的成效，並考慮在規劃和發展中的區域供冷系統策略性地應用該方案。

DCS utilises underground chilled water distribution piping network to distribute chilled water to user buildings in the districts for their air-conditioning needs. Therefore, monitoring the integrity of the chilled water distribution piping networks is critical. During the year, we tested a new innovation and technology (I&T) solution, using the Global Navigation Satellite System (GNSS) to monitor any settlement condition of the underground chilled water distribution piping network. The solution was awarded with $1 million of funding at 3rd Inno@E&M Challenge, was named the first runner-up at the implementation stage of the Challenge. We selected three locations at the KTD to test the solution, expecting to summarise its effectiveness by March 2024, and will consider strategically applying the solution to DCSs under planning and development.

我們測試新創科方案，利用全球衞星導航系統監察地下管道是否有沉降問題。這項方案於第三屆「Inno@E&M創新科技挑戰賽」中獲得100萬元資助，並在實踐階段奪得亞軍。

We tested a new I&T solution which uses the GNSS to monitor underground pipes for settlement. The solution received a grant of $1 million in the 3rd Inno@E&M Challenge and won the first runner-up at the implementation stage of the Challenge.

「新工程合約第四版－設計、建造及營運」合約模式推動以伙伴方式履行工務工程合約，從而提升整體施工質素，並更有效地控制工程管理的風險。年內，東涌新市鎮擴展(東)的區域供冷系統工程項目已採用此合約標準進行招標。我們會總結經驗，並進行內部分享，以優化未來類似合約模式的條款和內容。此外，我們在過去兩年繼續與英國土木工程師學會合作，為機電署人員提供「新工程合約」第四版的相關認證課程。截至本年度末，機電署能源效益C部已有七成專業職系人員完成課程並取得專業認證，為未來區域供冷系統的工程合約全面採用這種合約模式做好準備。

The "New Engineering Contract 4 (NEC4) – Design-Build-Operate" model contracts foster a partnership approach to honouring public works contracts, which helps improve the overall quality of works and control the risks of works management more effectively. During the year, the DCS works project of Tung Chung New Town Extension (East) adopted this contract standard for tendering. We will summarise our experience and share it internally to fine-tune the terms and contents of similar contracts in the future. In addition, we continued to collaborate with the UK Institution of Civil Engineers to provide NEC4 accreditation courses for the EMSD staff. As at the end of this year, 70% of professional grade staff in Energy Efficiency Division C of the EMSD had completed the course and obtained professional certification, preparing themselves for fully adopting this contract model for upcoming DCS works contracts.

政府於2023年推出新一輪政府綠色債券計劃，募集的資金會撥入基本工程儲備基金，為具環境效益和推動香港可持續發展的項目提供資金。政府於2023年1月3日和5月30日舉行網上路演，介紹綠色債券項目和獲融資項目的預期環境效益。我們積極參與該路演，以支援環境及生態局。路演介紹了債券募集的資金分配，以及撥歸該計劃的合資格工務工程項目；其中包括區域供冷系統，該等系統有助節約能源、推動香港綠色經濟發展和可持續發展的進程，以及實現碳中和目標。

The Government launched a new round of the Government Green Bond Programme (the programme) in 2023, with the proceeds going to the Capital Works Reserve Fund to provide funding for projects that bring environmental benefits and promote sustainable development in Hong Kong. The Government held online roadshows on 3 January and 30 May 2023 to introduce the programme and the expected environmental benefits of projects funded by the programme. We actively took part in the roadshows to support the Environment and Ecology Bureau (EEB). The roadshows outlined the allocation of funds raised through the bond and the eligible public works projects set aside under the programme, including DCSs that help save energy, promote Hong Kong's green economy development and sustainable development, as well as achieving the carbon neutrality target.

推廣可再生能源

為推廣採用可再生能源，我們更新了《可再生能源發電系統與電網接駁技術指引》和《太陽能光伏系統安裝指南》，並上載至機電署的「香港可再生能源網」。此外，我們製作了五段短片，分別介紹有關太陽能發電系統和太陽能熱水系統的設計、操作及維修的新小冊子，供業界和公眾參考。我們於2018年設立上網電價計劃的諮詢熱線，截至2023年7月底共接獲和處理3 156次查詢，反映公眾對上網電價計劃甚感興趣。自2018年6月，我們共舉辦了150場有關可再生能源的業界研討會和簡介會，其中包括五場與屋宇署和地政總署合辦關於上網電價計劃和太陽能發電系統的公眾研討會，共吸引逾19 000人參與。截至2023年6月，兩家電力公司的上網電價計劃共收到逾24 000份申請，發電量約404兆瓦。

PROMOTING RENEWABLE ENERGY

To promote the adoption of renewable energy, we have updated the Technical Guidelines on Grid Connection of Renewable Energy Power Systems and the Guidance Notes for Solar Photovoltaic (PV) System Installation, and uploaded them to the HK RE Net of the EMSD. Furthermore, we have produced five videos to introduce the new brochures about the design, operation and maintenance of solar PV systems and solar hot water systems and serve as reference for the industry and public. The enquiry hotline of the Feed-in Tariff (FiT) schemes, established in 2018, has received a total of 3 156 public enquiries by the end of July 2023, reflecting the public's keen interest in the FiT schemes. Since June 2018, we have organised 150 industry seminars and briefings on renewable energy, including five public seminars on the FiT schemes and solar PV systems, co-organised with the Buildings Department and the Lands Department, and they attracted more than 19 000 participants. As at June 2023, the two power companies had received more than 24 000 applications for their respective FiT schemes, generating approximately 404 megawatts of electricity.

為推廣採用可再生能源，自2018年6月起，我們共舉辦了150場有關可再生能源的業界研討會和簡介會，其中包括五場與屋宇署和地政總署合辦關於上網電價計劃和太陽能發電系統的公眾研討會，共吸引逾19 000人參與。

To promote the adoption of renewable energy, we have organised 150 industry seminars and briefings on renewable energy since June 2018, including five public seminars on the FiT schemes and solar PV systems co-organised with the Buildings Department and the Lands Department, and they attracted more than 19 000 participants.

機電署推行的「採電學社」五年計劃，旨在為合資格的學校和非政府福利機構安裝小型太陽能發電系統，讓他們能夠參與本地兩家電力公司推行的上網電價計劃。「採電學社」計劃會於2023/24年度進入最後階段，目標是為合資格的學校和機構安裝635套太陽能發電系統。年內，我們已完成超過八成安裝工程。

The five-year "Solar Harvest" scheme launched by the EMSD aims to help eligible schools and welfare non-governmental organisations (NGOs) install small-scale solar energy generation systems, so that they can join the FiT schemes operated by the two power companies. The "Solar Harvest" scheme will enter its final stage in 2023/24 to reach the target of installing a total of 635 solar energy generation systems for eligible schools and NGOs. More than 80% of the installation works were completed during the year.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

就此計劃，我們更建立名為「採電地圖」的創新科技平台，透過連結所有參加「採電學社」的太陽能發電系統，實時智能監測各系統的運作情況。這不僅有助我們掌握太陽能發電系統的運作數據，還讓參加「採電學社」的學校和機構能夠監測其裝置的效能。此外，「採電地圖」可用作互動教育平台，提升年青人的環保意識。該方案在2023年第四十八屆日內瓦國際發明展上榮獲銅獎。下一階段，「採電地圖」會加入人工智能分析，監測個別裝置的發電效能；在發現異常情況時，會向處所擁有人發出警示，以便安排預防性維修工作。我們預計可於2023年內落實這一階段。

To support the Solar Harvest initiative, we have also established an I&T platform named "Solar Harvest Map", which links all the solar energy generation systems under the Solar Harvest scheme to conduct real-time smart monitoring of the operation of each system. The platform not only helps us grasp the operational data of the solar energy generation systems, but also enables schools and NGOs to monitor the performance of their installations. Moreover, the "Solar Harvest Map" can be used as an interactive education platform to enhance young people's environmental awareness. This solution won the Bronze medal in the 48th International Exhibition of Inventions of Geneva. In the next stage, it will incorporate AI analytic function to monitor the power generation efficiency of individual devices and alert premises owners when abnormalities are detected, so that they can arrange for predictive maintenance. We expect that this stage will be implemented in 2023.

「採電學社」STEAM小學教材套已於2022/23學年正式推出，教材套以活潑互動的方式，例如自製太陽能驅動的玩具車，讓小學生了解可再生能源，以及加深對潔淨能源的興趣和認識。

The Solar Harvest STEAM educational kit for primary schools was officially rolled out in the 2022/23 academic year. Through lively and interactive approaches, such as solar-powered toy car DIY, this educational kit helps primary school students learn about renewable energy and deepens their interest in and understanding of clean energy.

除此之外，我們與環境局(時稱)和教育局合作編製的「採電學社」STEAM(即科學、科技、工程、藝術和數學)小學教材套已於2022/23學年正式推出，供全港小學使用。教材套以活潑互動的方式，例如自製太陽能驅動的玩具車，讓小學生了解可再生能源，以及加深對潔淨能源的興趣和認識，從而向他們推廣低碳生活。教材推出後，我們與一家小學合作，於2022年10月舉辦示範工作坊。

In addition, the Solar Harvest STEAM (Science, Technology, Engineering, Arts and Mathematics) educational kit for primary schools, which we compiled in collaboration with the then Environment Bureau (ENB) and Education Bureau, was officially rolled out in the 2022/23 academic year for use by all primary schools in Hong Kong. Through lively and interactive approaches, such as solar-powered toy car DIY, the educational kit for primary school helps students learn about renewable energy and deepens their interest in and understanding of clean energy, thereby promoting low-carbon living. Following the launch of the educational kit, we co-operated with a primary school and organised a demonstration workshop in October 2022.

在推出小學教材套後，我們隨即開始編制「採電學社」STEAM中學教材套。教材套包括初中和高中版本，並附有八段教學短片。這些短片配合初中科學科和高中物理科的課程內容，由大學講師講解有關太陽能的科學原理，並進行實驗和數據分析；以及由工程師介紹如何在不同類型的系統中應用太陽能。我們預計於2023/24學年推出該中學教材套。

After the educational kit for primary school was rolled out, we immediately embarked on compiling the Solar Harvest STEAM educational kit for secondary schools. The educational kit include separate versions for junior and senior secondary schools, and come with eight teaching videos that complement the curriculum contents of junior secondary science and senior secondary physics respectively. The videos feature university lecturers explaining the scientific principles of solar energy, as well as conducting experiments and data analysis; and engineers introducing how to apply solar energy to different types of systems. We expect to roll out the secondary school educational kit in the 2023/24 academic year.

與內地及國際合作
MAINLAND AND INTERNATIONAL COOPERATION

機電署秉持「傳承創新　同心惠民」的理念，於2022年11月3日聯同環境及生態局與廣東省科學技術協會合辦第三屆「綠色創科日」。這次活動在香港及東莞同步舉行，當日設有多場研討會，不但邀得中港兩地專家就「綠色轉型」及「低碳城市」分享利用創科減碳的經驗，更匯聚20家來自香港及內地的參展商展示他們的節能及可再生能源創科成果。機電署在活動期間與六所機構簽訂《粵港澳大灣區既有建築節能改造合作備忘錄》，以推動研發及推廣優良節能改造方案，提升建築物的能源效益。活動吸引了超過160名來自創新科技、機電業、大學、公營機構等界別的人士親臨參與，超過100 000人次在網上觀看直播。

Adhering to the ethos of "Serving the Community with Heart and Innovation", the EMSD jointly hosted the Third Green I&T Day with the EEB and the Guangdong Provincial Association for Science and Technology on 3 November 2022. Held simultaneously in Hong Kong and Dongguan, the event featured a range of seminars in which experts from the Mainland and Hong Kong were invited to share their experience in decarbonisation through I&T, under the themes of "green transformation" and "low-carbon city". The event also brought together 20 Hong Kong and Mainland exhibitors to showcase their I&T achievements in energy efficiency and renewable energy. During the event, the EMSD signed the Memorandum of Cooperation on Building Energy Saving Retrofit in Guangdong-Hong Kong-Macao Greater Bay Area with six organisations to drive research and development as well as promotion of good practices in energy saving retrofits, thereby enhancing building energy efficiency. The event attracted more than 160 participants from various sectors including I&T, the electrical and mechanical trade, universities and public organisations, as well as more than 100 000 views recorded for the live broadcast.

機電署於2022年11月3日聯同環境及生態局與廣東省科學技術協會合辦第三屆「綠色創科日」。

The EMSD jointly hosted the Third Green I&T Day with the EEB and the Guangdong Provincial Association for Science and Technology on 3 November 2022.

自2021年起，機電署共有兩名代表在亞太區經濟合作組織(亞太經合組織)能源工作組擔任領導工作，分別是擔任2021至2023年能源工作組副主席的助理署長/電力及能源效益，以及在2021至2023年續任亞太經合組織能源效益及節能專家小組主席的前助理署長。在2023年3月，機電署一名高級工程師亦獲選為2023至2025年能源效益及節能專家小組副主席。這標誌着機電署會繼續在能源效益及節能專家小組中扮演重要角色，與其他亞太經合組織成員經濟體及國際組織合作，共同推動能源效益及節能。

Since 2021, two representatives of the EMSD have been leading the Energy Working Group (EWG) of the Asia-Pacific Economic Cooperation (APEC), including the Assistant Director/Electricity and Energy Efficiency who has been serving as the Deputy Lead Shepherd of the EWG for session 2021/23, and a former Assistant Director who has continued his role as the Chairman of the Expert Group on Energy Efficiency and Conservation (EGEEC) under the EWG for session 2021/23. In March 2023, a senior engineer of the EMSD was also elected as the Vice-chairperson of the EGEEC for session 2023/25. This signifies that the EMSD will continue to play an important role in the EGEEC and work with other APEC member economies and international organisations to drive energy efficiency and energy conservation together.

機電署於2023年3月15日和16日以線上線下混合模式舉行能源效益及節能專家小組第60次會議，共有來自11個成員經濟體及四個國際組織逾50名專家親身出席，就降低能源強度的政策框架、相關法規、實踐經驗及技術發展等多方面進行交流。

The EMSD held the 60th meeting of the EGEEC in hybrid mode on 15 and 16 March 2023. More than 50 experts from 11 member economies and four international organisations attended in person to exchange views on various aspects such as policy frameworks, relevant regulations, practical experience and technological developments on energy intensity reduction.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

我們亦於年內舉辦了兩個獲亞太經合組織資助的研討會，其中之一是在2022年6月28日和29日舉行的「推動能源效益、抗禦力和綠色數據中心研討會」，研討會旨在鼓勵成員經濟體提高數據中心的能源效益和抗禦力，以及善用可再生能源為數據中心供電。研討會以視像模式進行，共有來自六個亞太經合組織成員經濟體逾100名專家和代表參與，就數據中心的優良作業模式、挑戰和創新技術應用進行討論。另一個獲資助的研討會是在2022年11月29日和30日舉行的「能源強度與可再生能源目標能力建設研討會」。該研討會亦以視像方式進行，來自15個亞太經合組織成員經濟體逾100名專家和代表雲集，就降低能源強度和發展可再生能源的議題，包括政策框架、相關法規、實踐經驗及技術發展等範疇交換意見。

We also organised two APEC-funded workshops during the year, one of which being the Workshop on Promoting Energy Efficient, Resilient and Green Data Centres, which was held on 28 and 29 June 2022 with the aim of encouraging member economies to improve the energy efficiency and resilience of data centres, and make better use of renewable energy to power their data centres. More than 100 experts and delegates from six APEC member economies joined the workshop held via video conferencing to discuss the best practices, challenges and I&T applications of data centres. Another funded workshop was the Capacity Building Workshop on APEC's Goals of Doubling the Renewable Energy Share in Energy Mix and Reducing Energy Intensity held on 29 and 30 November 2022. Also held via video conferencing, the workshop gathered more than 100 experts and delegates from 15 APEC member economies to exchange views on energy intensity reduction and the development of renewable energy, covering aspects such as policy frameworks, relevant regulations, practical experience and technological developments.

應用創科方案提升能源效益

2022年6月，我們就香港五類商業建築物推出建築物電力使用指數網上基準工具（網上基準工具）。新參考工具提供更清晰的數據和基準，讓各界比較及檢討相關商業建築物全年整體的電力使用表現，網上基準工具亦提供建築物節能建議供用戶參考，以加強建築物的能源效益。網上基準工具有助我們動員社會共同參與和配合節能。

機電署積極推行淡水冷卻塔計劃，提倡非住宅樓宇廣泛應用淡水冷卻塔的空調系統。此計劃適用於選定地區內所有以淡水作蒸發式冷卻之用的非住宅建築物及其他建築物。參與計劃的冷卻塔擁有人必須按照《淡水冷卻塔實務守則》及《預防退伍軍人病工作守則》的指引及規定，妥善操作及維修淡水冷卻塔。為減低退伍軍人病的傳播風險，冷卻塔擁有人現在可採用智能淡水冷卻塔水質監控系統，該系統運用物聯網實時監測冷卻塔冷卻水的狀態。系統能根據探測器收集的實時數據自動投藥，精準調節冷卻水水質。我們現已成功與八家參與計劃的淡水冷卻塔擁有人接洽，他們會採用這個創科方案。

APPLYING I&T SOLUTIONS TO ENHANCE ENERGY EFFICIENCY

In June 2022, we launched the Online Building Based Electricity Utilisation Index Benchmarking Tool (Online Benchmarking Tool) for five categories of commercial buildings in Hong Kong. The new reference tool provides clearer data and benchmarks for users from all sectors to compare and review the annual overall electricity utilisation performance of relevant commercial buildings, as well as energy saving advice for buildings for users' reference to enhance the energy efficiency of buildings. The Online Benchmarking Tool helps us mobilise the community to take collective action to conserve energy.

The EMSD actively promotes the Fresh Water Cooling Towers (FWCTs) Scheme to encourage wider use of fresh water-cooled air-conditioning systems in non-domestic buildings. The scheme is applicable to all non-domestic buildings and other buildings using fresh water for evaporative cooling in designated areas. FWCT owners participating in the scheme should follow the guidelines and requirements in the Code of Practice for FWCTs and the Code of Practice for Prevention of Legionnaires' Disease, for proper operation and maintenance of FWCTs. To reduce the risk of transmission of Legionnaires' disease, FWCT owners can now adopt the IoT-based Smart Water Quality Monitoring System for FWCTs for real-time monitoring of the water condition of FWCTs. The system carries out automatic dosing based on the real-time data collected by sensors, enabling precise adjustment of the cooling water quality. Currently we have successfully approached eight FWCT owners participating in the scheme and they would adopt this I&T solution.

在建造啟德區域供冷系統第三廠的過程中，我們採用機電裝備合成法以提高屋宇設備的安裝效率，並在啟德區域供冷系統應用人工智能技術，以優化空調系統制冷機組的能源表現。透過應用人工智能技術，我們可分析南廠和北廠的供冷數據，預測用戶在每天不同時段特定氣溫下的供冷需求，以預早安排向用戶輸送適當溫度的冷凍水，從而配合他們的供冷量需要。我們亦在年內製作宣傳短片，向公眾介紹在啟德區域供冷系統應用機電裝備合成法的情況，提高公眾對新技術的認識。

During the construction of the third plant of the Kai Tak DCS, we applied the Multi-trade Integrated Mechanical, Electrical and Plumbing (MiMEP) approach to improve the installation efficiency of building services installations, and adopted AI technology in the Kai Tak DCS to optimise the energy performance of the chillers of air-conditioning systems. Through the application of AI technology, we can analyse the cooling data of the South Plant and North Plant, and predict the cooling demand of users at specific temperatures at different times of the day to schedule the delivery of chilled water at appropriate temperatures to users in advance, so as to meet their cooling capacity needs. During the year, we also produced a promotional video to publicise the application of MiMEP technology at the Kai Tak DCS and raise public awareness of the new technology.

在建造古洞北區域供冷系統期間，我們首次試行採用「可供製造及裝配設計」技術，利用預製組件建造地底管道網路的閥室，這有助減低在密閉空間工作的風險。

During the construction of the Kwu Tung North DCS, we piloted for the first time the Design for Manufacturing and Assembly (DfMA), which used prefabricated components to construct valve chambers of underground pipe networks. Such initiative helped reduce the risks associated with working in confined spaces.

全民攜手邁向低碳社會

年內，環境局(時稱)聯同機電署推行「全民節能減碳2022」運動，並在2022年6月17日舉行啟動禮，作為香港特別行政區成立二十五周年的慶祝活動之一。這項活動旨在推動各界攜手節能減碳，實現低碳轉型，內容包括呼籲簽署《節能約章2022》和《4T約章》，以及分別為機構及學生舉辦「慳神大比拼」比賽。

WORKING TOWARDS LOW-CARBON SOCIETY WITH CONCERTED EFFORT OF THE COMMUNITY

During the year, the then ENB and the EMSD jointly launched the Energy Saving and Decarbonisation for All 2022 campaign and held the launching ceremony on 17 June 2022 as one of the celebration activities for the 25th anniversary of the establishment of the Hong Kong Special Administrative Region. The campaign aimed to encourage the community to achieve low-carbon transformation by energy saving and decarbonisation, and comprised the promotion of the Energy Saving Charter 2022 and the 4T Charter, as well as the competitions held for organisations and students respectively under the Energy Saving Championship Scheme.

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推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

逾3 000個參與者簽署《節能約章2022》，作出多個節能的承諾。另外，超過700個場所簽署《4T約章》，承諾訂立節能目標並制定相關時間表，同時確保建築物能源數據的透明度，亦會報告節能成效，以及鼓勵員工共同參與邁向節能目標。

2022年6月推出的「慳神大比拼」比賽以機構及學生為對象。機構組別的比賽鼓勵業界共同努力，通過重新校驗來提高建築物能源效益及加強節能；學生組別則鼓勵青少年發揮創意，推動節能和可再生能源發展。

Over 3 000 participants signed up to the Energy Saving Charter 2022 to make various energy-saving pledges. In addition, more than 700 premises joined the 4T Charter by pledging to set an energy saving target with an action timeline, while ensuring the transparency of building energy data. They would also report energy saving results and encourage their staff to work together towards the energy saving target.

Launched in June 2022, the Energy Saving Championship Scheme was open to organisations and students. The competition for organisations encouraged the trade to work together to enhance energy efficiency and conservation in buildings with the application of retro-commissioning; while the competition for students was aimed to inspire youngsters' creativity in promoting energy saving and wider adoption of renewable energy.

未來工作重點

機電署會繼續透過不同的宣傳渠道和平台，推廣能源效益、節能和可再生能源。我們會持續檢討和擴大強制性標籤計劃的範圍，並探討涵蓋非家用及商用器具的可行性。至於第三次提升能源效益評級標準方面，我們會在2023年第二季組成專責工作小組，並繼續與業界進行溝通和聯繫，期望新能源效益評級標準可於2024年生效，並在2025年全面實施。預料新能源效益評級標準實施後，每年可節省約2億至2.7億度電，相當於每年減少排放約14 000至18 900公噸二氧化碳。此外，我們計劃就特定產品訂立最低能源效益標準，並已在年內委託顧問草擬相關報告。我們正研究落實有關計劃的方式，預備在2024年就計劃展開業界諮詢。

在可再生能源發電設施方面，政府撥款30億元在公共處所安裝可再生能源發電設施。我們會為這項措施提供技術支援，並與康樂及文化事務署合作，共同研究在其管理的設施(例如露天停車場)安裝可再生能源發電設施的可行性。

FUTURE DIRECTION

The EMSD will continue to promote energy efficiency, energy saving and renewable energy through various promotion channels and platforms. We will continue to review and expand the scope of the MEELS, as well as exploring the feasibility of covering non-domestic and commercial appliances. For the third upgrading exercise for energy efficiency grading standards, we will form a dedicated task force in the second quarter of 2023 and continue communication and liaison with the trade, with a view to that the new energy efficiency grading standards taking effect in 2024 and being fully implemented in 2025. It is expected that the implementation of the new energy efficiency grading standards will help annually save about 200 million to 270 million kilowatt-hours in terms of electricity, which is equivalent to an annual reduction of about 14 000 to 18 900 metric tonnes of carbon dioxide emissions. Moreover, we plan to establish minimum energy efficiency standards for specific products. In this connection, we have commissioned consultants to draft the relevant reports during the year. We are now examining the ways to implement the plan and are preparing to launch trade consultation on the plan in 2024.

On renewable energy power generation facilities, the Government has allocated $3 billion for the installation of renewable energy power generation facilities at public premises. We will provide technical support for this initiative and work with the Leisure and Cultural Services Department to jointly study the feasibility of installing renewable energy power generation facilities within the premises managed by the LCSD, such as open-air car parks.

至於內地與香港兩地能源效益標籤計劃的協調互認，機電署與中國標準化研究院正研究簽署合作備忘錄，有關細節正由中國標準化研究院及國家市場監督管理總局審議。根據該合作備忘錄，內地與香港會針對在兩地具有對應能源效益標準、評級原則和測試程序的指定產品(包括自願性能源效益標籤計劃所涵蓋的產品種類)的能源標籤要求，設立互認機制，以便本地業界能夠以更少的資源，同時符合兩地能源效益標籤計劃的要求。

在區域合作方面，我們會更積極參與亞太經合組織能源工作組的工作，以及其他與能源、節能及可再生能源相關的國際活動；並與大灣區和內地其他城市的相關組織保持聯繫，了解更多與能源相關的創新技術。

《建築物能源效益守則》及《能源審核守則》每隔三年修訂一次，上次修訂在2021年完成。我們已開展2024年修訂版的工作，在2023年6月9日舉行首次專責小組會議，並邀得業界人士參與。我們預計新版本的修訂工作會在2024年第四季完成。此外，《建築物能源效益條例》已實施十年，我們正在進行顧問研究，探討擴大條例的監管範圍至更多類別的建築物，以及更頻繁地進行能源審核的可行性。我們也會考慮強制公開能源審核報告資料，讓公眾查閱，以促進改善建築物能源表現。我們會先定下修訂《建築物能源效益條例》的具體方向，隨後再向立法會提交條例修訂建議。

香港未來的新發展區會採用區域供冷系統為區內的非住宅物業供冷。我們已開始為東涌新市鎮擴展(東)、洪水橋和古洞北新發展區的區域供冷系統進行規劃，並就中部水域人工島及北部都會區的發展，籌備區域供冷系統的規劃工作。我們會繼續配合新發展區的規劃，為新落成的建築物提供區域供冷系統布局的技術意見。預料未來區域供冷系統的發展會令相關專業的工程人才及資源需求殷切。

As regards the coordination and mutual recognition of the energy efficiency labelling schemes of the Mainland and Hong Kong, the EMSD and the China National Institute of Standardisation (CNIS) are looking to sign a Memorandum of Cooperation (MoC), the details of which are under consideration by the CNIS and the State Administration for Market Regulation. Under the MoC, a mutual recognition mechanism will be established on the energy efficiency labelling requirements of specific products having corresponding energy efficiency standards, grading principles and test procedures (including the types of products covered in the Voluntary Energy Efficiency Labelling Scheme) in the Mainland and Hong Kong. This will enable the local trade to meet the requirements of the energy efficiency labelling schemes in both the Mainland and Hong Kong with fewer resources.

In terms of regional cooperation, we will participate more actively in the work of the APEC Energy Working Group as well as other international activities related to energy, energy conservation and renewable energy; and maintain liaison with relevant organisations in the Greater Bay Area and other Mainland cities to learn more about energy-related innovative technologies.

The BEC and EAC were revised once every three years and their last revisions were completed in 2021. We have commenced work on the 2024 revision and held the first task force meeting on 9 June 2023 with trade participation. We anticipated that the revision work will be completed in the fourth quarter of 2024. In addition, as the BEEO has been in force for ten years, we are conducting a consultancy study to explore the feasibility of expanding its coverage to more building types and conducting energy audits more frequently. We will also consider mandatory disclosure of energy audit reports for public inspection, so as to foster improvement in the energy performance of buildings. We will first formulate the specific direction for amending the BEEO and table the proposed amendments to the Legislative Council afterwards.

DCSs will be adopted in future new development areas in Hong Kong to supply cooling water to non-residential properties there. We have already begun the planning of DCSs in the new development areas in Tung Chung New Town Extension (East), Hung Shui Kiu and Kwu Tung North, as well as the preparatory work for the planning of DCSs in respect of the development of artificial islands in the Central Waters and the Northern Metropolis Development. We will continue to provide technical advice on DCS configuration for new buildings having regard to the planning of new development areas. It is anticipated that the future development of DCSs will generate a strong demand for engineering talent and resources in related professions.

推廣能源效益及節能
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我們也會加強有關區域供冷系統的公眾教育工作。啟德區域供冷系統第三廠於2024年起分階段啟用。該廠會設有教育中心，展示區域供冷系統對節能和達至碳中和目標的貢獻。我們期望透過教育中心接觸更多年青人，提高他們對區域供冷系統機電工程的興趣。另外，我們會繼續舉辦不同的推廣活動，例如為中學生舉辦STEM工作坊，介紹區域供冷系統的運作原理，舉辦比賽鼓勵年青人製作與區域供冷系統相關的作品，以及舉辦以區域供冷系統為主題的公眾研討會及技術論壇，鼓勵公眾了解和投入區域供冷系統的未來發展。

We will also step up public education on DCSs. The third plant of Kai Tak DCS will be commissioned in phases in 2024. An education centre will be set up in the plant to showcase the contribution of DCSs to saving energy and meeting the target of carbon neutrality. Through the education centre, we hope to reach out to more young people and stimulate their interest in the electrical and mechanical engineering of DCS. Moreover, we will continue to organise different promotional activities, such as STEM workshops for secondary school students to introduce the operation principles of DCS, competitions to encourage young people to create DCS-related works, and public seminars and technical forums on the theme of DCS to encourage members of the public to learn more about and participate in the future development of DCSs.

啟德區域供冷系統第三廠於2024年起分階段啟用。該廠會設有教育中心，展示區域供冷系統對節能和達至碳中和目標的貢獻。我們會加強有關區域供冷系統的公眾教育工作，提高年青人對區域供冷系統機電工程的興趣。

The third plant of Kai Tak DCS will be commissioned in phases in 2024. An education centre will be set up in the plant to showcase the contribution of DCSs to saving energy and meeting the target of carbon neutrality. We will step up public education on DCSs to stimulate the interest of young people in the electrical and mechanical engineering of DCS.

探索綠色潛力：推動市民廣泛應用可再生能源
EXPLORATION OF GREEN POTENTIAL: ENCOURAGING THE PUBLIC TO WIDELY ADOPT RENEWABLE ENERGY

可再生能源取之不盡，用之不竭，並有助環保。為了推廣其應用，機電署研發「可再生能源探索者」，為有意安裝可再生能源系統的公私營機構和個別建築物業主準確評估其處所的可再生能源發電潛力及回報；同時運用大數據、數碼分身及人工智能等新興技術收集和分析可再生能源系統數據，為已安裝可再生能源系統的機構和業主提供一站式平台，以供查看其系統的實時狀況，協助他們提升發電效能。負責這個項目的能源效益事務處高級工程師張敏婕女士和工程師李俊賢先生期望公眾廣泛應用「可再生能源探索者」，從而促進綠色經濟及協助邁向碳中和。

Renewable energy is inexhaustible and environmentally friendly. To promote its use, the EMSD has developed the Integrated Self-sustained Renewable Energy Explorer (iSEE), which accurately assesses the renewable energy power generation potential and return of the premises of public and private organisations and individual building owners intended to install renewable energy systems; while utilising cutting-edge technologies, including big data, digital twin and artificial intelligence (AI) to collect and analyse renewable energy system data, and providing a one-stop platform to check the real-time condition of their systems, thereby helping the owners and organisations improve their power generation efficiency. Ms Cheung Man-chit, Jovian, a senior engineer, and Mr Li Chun-yin, an engineer, of the Energy Efficiency Office, were in charge of the project. They hoped the iSEE would be widely adopted and help promote a green economy and advance towards carbon neutrality.

「可再生能源探索者」共有兩個模組，一個模組收集所在地的日照、溫度、風速等多種氣象資料，並即時評估發電潛力和回報，藉此增加機構和業主對安裝可再生能源系統的信心。另一個模組可安裝在現有可再生能源系統。「可再生能源探索者」的後台系統會利用人工智能技術進行分析。「可再生能源探索者」亦設有手機應用程式，用戶可遙距監察其系統，以及收取即時故障通知、預測性維修保養和系統優化建議等資訊。

The iSEE comprises two modules, one of which collects weather information, such as sunlight, temperature, wind speed, etc., at the place of installation and instantly assesses the energy generation potential and return, thus strengthening the confidence of owners and organisations in installing renewable energy systems. The other module can be installed on existing renewable energy systems to collect the power generation information. The back-end system of the iSEE will perform analysis using emerging technologies. The iSEE is also equipped with a mobile application, enabling users to monitor their systems remotely and receive information, for instance, real-time fault notifications, recommendations for predictive maintenance and system optimisation, etc.

「可再生能源探索者」採用便攜式設計，可在沒有電源的地方或現有可再生能源系統快速安裝，並配備太陽能板和電池，做到能源自給自足。

Adopting a portable design, the iSEE can be quickly installed at locations without a power supply or on existing renewable energy systems. It also has solar panels and batteries for a self-sufficient power supply.

離島、郊野或遠離人煙的地區，以及天橋頂和建築物天台，都是安裝可再生能源系統的合適地點。有意安裝可再生能源系統的機構和業主可輕易地在以上地點安裝「可再生能源探索者」，並根據裝置就收集所得的現場氣象數據進行的數據分析，確定安裝可再生能源系統的最佳位置和方向，以實現最高發電效能。

Outlying islands, the countryside and remote areas, as well as the top of footbridges and building rooftops, are suitable locations for installing renewable energy systems. Organisations and owners intended to install renewable energy systems can easily install the iSEE at the above locations and, based on the data analysis performed by the device on the on-site weather data collected, ascertain the optimal locations and orientations for installing renewable energy systems to achieve the highest power generation efficiency.

至於已安裝可再生能源系統的機構和業主，他們在安裝「可再生能源探索者」後，便可即時掌握其系統的發電情況、評估系統表現及監測天氣對系統的影響，及早預測保養維修需要，以增加發電量。他們更會收到特別天氣狀況通知，以便及早應對。「可再生能源探索者」現已在兩所本地學校試行，校方和負責保養維修的承辦商均表示這個裝置可讓他們清楚掌握可再生能源系統的運作狀況，效果理想。

As for owners and organisations who have installed renewable energy systems, as soon as the iSEE is installed, they can immediately grasp the power generation condition of their systems, gauge the system performance and monitor the impact of weather on the systems for early prediction of maintenance needs to increase the power generated. They will also receive notifications regarding special weather conditions for preparations in advance. The iSEE has been trialled at two local schools. The schools and the maintenance contractors concerned responded that the device had been effective in giving them a clear picture of the operational status of their renewable energy systems.

隨着社會日益重視環境、社會及管治議題，推出「可再生能源探索者」有助各大小機構更有效地規劃可再生能源發電設施，實現最佳效益和最高回報。

As society pays increasing attention to environmental, social and governance-related matters, the introduction of the iSEE will support organisations of various scales in carrying out more effective planning of renewable energy power generation facilities and achieving the best efficiency and highest return.

張女士說：「政府一直致力推廣使用可再生能源，以實現碳中和目標。『可再生能源探索者』為市民提供分析可再生能源系統表現和共享收集所得實時數據的平台。」

"The Government has committed to promoting the use of renewable energy to attain the carbon neutrality target. The iSEE furnishes members of the public with a platform for analysing the performance of renewable energy systems and sharing real-time data collected." Ms Cheung said.

「可再生能源探索者」在第四十八屆日內瓦國際發明展榮獲金獎，李先生對此感到鼓舞。他表示：「我希望這項發明能夠刺激可再生能源的創新、投資和發展，推動綠色經濟，為實現碳中和出一分力。」

The iSEE won a gold medal at the 48th International Exhibition of Inventions of Geneva. Mr Li was heartened by the achievement. "I hope this invention can stimulate innovation, investment and development in renewable energy, promote green economy and contribute to achieving carbon neutrality," he said.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

創建「採電地圖」加強教育和監察
BUILDING SOLAR HARVEST MAP FOR ENHANCING EDUCATION AND MONITORING

透過「採電學社」計劃，機電署為約600所合資格學校和非政府福利機構(機構)安裝太陽能發電系統，協助他們參加上網電價計劃。此外，機電署與環境及生態局和教育局合作編制教材套，配合學校內的太陽能發電系統使用，以提升學生對學習科學的興趣，並增進他們對可再生能源的認識和應對氣候變化的意識。最近，機電署還精心打造了名為「採電地圖」的平台，為參加「採電學社」計劃的學校和機構提供多項有關太陽能發電系統的功能。這個平台由能源效益事務處工程師張耀陽先生主力負責建立。

Through the Solar Harvest scheme, the EMSD installed solar energy generation systems for about 600 eligible schools and welfare non-governmental organisations (NGOs) and assisted them to join the Feed-in Tariff (FiT) scheme. Furthermore, the EMSD has collaborated with the Environment and Ecology Bureau and the Education Bureau in compiling educational kits, which can be used in conjunction with the solar energy generation systems in the schools, to arouse students' interest in learning science, as well as enhancing their knowledge about renewable energy and awareness of combating climate change. Recently, the EMSD has specially established a platform called the Solar Harvest Map, delivering additional multi-functions regarding the solar energy generation systems to the schools and NGOs joining the Solar Harvest scheme. Mr Cheung Yiu-yeung, Kelvin, an engineer of the Energy Efficiency Office, took the lead in establishing this platform.

「採電地圖」連接數百個參加「採電學社」計劃的學校和機構所安裝的太陽能發電系統，為用戶提供實時智能監控平台，讓他們掌握其太陽能發電設施的效能，方便進行預測性維修。同時，「採電地圖」亦是一個互動的教學平台，有助提升年輕一代的環保意識。

張先生解釋：「學校可以在顯眼位置擺放顯示平台資訊的電視，讓學生隨時了解學校太陽能發電設施的效能。老師亦可透過該平台與學生進行互動，例如舉辦校內活動和比賽，以分享相關資訊；以及利用實時數據，與學生探討日照對太陽能發電的影響等課題。」

開發「採電地圖」對於「採電學社」計劃甚具意義，因為平台綜合了計劃下所有太陽能發電系統的數據，不但用戶可以利用相關數據監察太陽能發電系統，機電署亦可實時掌握整個計劃下所有學校和機構在可再生能源方面的貢獻。

談到「採電地圖」的發展，張先生表示：「未來，平台會加入人工智能提示功能，萬一偵測到太陽能發電系統出現異常情況，會提示學校安排預防性維修，讓學校能持續獲取上網電價收入。我們亦會加設更多功能以推廣互動教學，讓年青人早日認識可再生能源對於發電和實現零碳生活的重大助益，共同為邁向碳中和目標努力。」

Connecting hundreds of solar energy generation systems in those schools and NGOs joining the Solar Harvest scheme, the Solar Harvest Map provides users with a real-time intelligent monitoring platform to grasp the performance of their solar power generation facilities and facilitate predictive maintenance. Meanwhile, the Solar Harvest Map also serves as an interactive learning platform that enhances the environmental awareness of younger generations.

"The schools can display a television showing information on the platform in a conspicuous position for students to check the performance of the solar energy generation facilities in their schools at any time. Teachers can also interact with students through the platform, such as organising in-school activities and competitions to share relevant information; and utilising the real-time data for discussion with students on topics such as the impact of sunlight on solar energy generation," Mr Cheung explained.

Developing the Solar Harvest Map is valuable for the Solar Harvest scheme as it consolidates the data of all solar energy generation systems under the Solar Harvest scheme. Not only can the users employ the data to monitor their solar energy generation systems, the EMSD can also grasp the renewable energy contributions of all schools and NGOs under the whole scheme in real time.

Talking about the development of the Solar Harvest Map, Mr Cheung said, "In the future, we will integrate an artificial intelligence-based alert function into the platform to notify the schools to arrange preventive maintenance in case of any abnormalities detected in the solar energy generation systems, so that the schools can receive the FiT income continually. We will also add more functions to promote interactive learning, which will enable young people to understand early the contribution of renewable energy to power generation and realisation of zero-carbon living, and thereby forging ahead together towards the target of carbon neutrality."

勇於創新 善用科技實時監測沉降風險
BOLD INNOVATION: LEVERAGING TECHNOLOGY FOR REAL-TIME SETTLEMENT RISK MONITORING

區域供冷系統通過地下冷凍水配水管道(地下管道)網絡，把中央供冷站的冷凍水輸送至區內的用戶樓宇，以供空調之用。若地下管道網絡附近出現異常的沉降，可能會損壞管道並影響冷凍水供應。傳統的沉降檢測方法不但費時，而且難以每天24小時進行實時監察。為了解決上述問題，能源效益事務處工程師葉碧欣女士及其團隊提出創新科技(創科)解決方案，利用全球衛星導航系統監察地下管道附近的沉降風險。該方案於第三屆「Inno@E&M創新科技挑戰賽」中獲得100萬元資助，並在實踐階段奪得亞軍。

Through an underground chilled water distribution piping network, a District Cooling System (DCS) distributes chilled water from the central chiller plant to user buildings in its district for air-conditioning purposes. If abnormal settlement occurs in the vicinity of the underground piping network, it can cause damage to the pipes and disrupt the supply of chilled water. Traditional settlement detection methods are time-consuming and difficult to be implemented for real-time monitoring around the clock. To address these issues, Ms Yip Pik Yan, Cherry, an engineer of the Energy Efficiency Office (EEO), and her team initiated an innovation and technology (I&T) solution utilising a global navigation satellite system (GNSS) to monitor the settlement risk in the vicinity of the underground pipes. The solution received a grant of $1 million in the third Inno@E&M Challenge, and won the first runner-up at the implementation stage.

葉女士指出：「儘管全球衛星導航系統已在香港不同的大型建築工程項目中使用，但這是首次用於監察地下管道是否有沉降問題。」

在地底應用有關技術並無先例可循，這對團隊而言是莫大挑戰。然而，團隊不畏困難，並以積極謹慎的態度應對挑戰。他們在設計階段仔細考慮有關裝設監測設備的各項因素，包括地下井道結構、防水措施、監測設備上方的井蓋、供電系統等；又特別在井蓋設計上費盡心思，通過進行不同測試確定最終設計，確保井蓋對訊號接收的影響減至最低，並符合硬度及防滑性能的要求。

由於現時啟德發展區內還有多個工程項目正在施工，團隊在區內選定了三個地點安裝全球衛星導航系統監測儀器，以監察附近地下管道的沉降風險。此外，團隊把儀器收集的數據與人手測量的數據進行比對，發現即使兩組數據偶爾存有稍微差異，儀器收集的整體數據仍可有效顯示沉降的趨勢，證實系統在探測沉降方面的準確度。

鑑於近期在香港工地發生的塔式起重機倒塌事故，團隊嘗試把監測儀器裝設在啟德發展區新增區域供冷系統廠房的工地所使用的塔式起重機，持續監察工地有否出現沉降，以致影響塔式起重機的穩定性。

相對於傳統的人手沉降檢測方法，利用全球衛星導航系統不但可減少人手測量所涉及的誤差和開支，更能讓能源效益事務處全天候透過網上平台監察地下管道網絡，以便在出現沉降時即時採取行動。

葉女士希望這次經驗能鼓勵其他同事更積極提出創科解決方案，為部門增值之餘，同時造福社會。

"Although the GNSS has been deployed at various large-scale construction projects in Hong Kong, this was the first time that it was employed to monitor underground pipes for settlement," Ms Yip said.

The lack of precedent cases of underground applications as reference posed a significant challenge for the team. Nevertheless, the team was undaunted and approached the challenge with a proactive and cautious attitude. At the design stage, they carefully considered various factors regarding the installation of the monitoring system, including the structure of underground wells, water-proofing measures, manhole covers above the monitoring system, and power supply systems. Much thought was given to the design of the manhole covers especially, and a range of tests were conducted to decide on the final design, with the goal of ensuring minimal interference with signal transmission while meeting the requirements for hardness and anti-skid performance.

Due to ongoing construction projects in the Kai Tak Development (KTD), the team selected three locations in the KTD to set up the GNSS monitoring system for monitoring the settlement risk of the underground pipes nearby. In addition, the team compared the data collected by the system with manual surveying results and found that even though there might be small discrepancies between the two sets of data, the overall data collected by the system could effectively indicate the tendency of settlement, proving its accuracy in detecting settlement.

In the light of recent incidents involving tower cranes collapsed at construction sites in Hong Kong, the team conducted a trial of installing the GNSS monitoring system on the tower cranes deployed at the site of the additional DCS at the KTD to continuously monitor if the site had settlement problems that could upset the stability of the tower cranes.

Compared to the traditional manual settlement detection method, using the GNSS not only reduces errors and the labour costs involved in manual surveying, but also enables the EEO to monitor the underground piping network through an online platform at all times, so that immediate action can be taken should settlement occur.

Ms Yip hopes that this experience will encourage other colleagues to actively propose I&T solutions, so as to add value to the Department and benefit our society.

提升公眾機電安全及節能意識
RAISING PUBLIC AWARENESS OF E&M SAFETY AND ENERGY CONSERVATION

提升公眾的機電安全和節能意識

機電署一直非常重視與業界及公眾的溝通。多年來，我們努力建立有效的溝通渠道，並舉辦各種活動，致力提升業界及公眾的機電安全和節能意識。在2022/23年度，我們在這個穩固基礎上，持續加強對業界及公眾的宣傳和推廣，同時深化與內地和區域組織的合作，以提升規管、推廣和教育的成效。

RAISING PUBLIC AWARENESS OF E&M SAFETY AND ENERGY CONSERVATION

Communication with the trade and the public has always been an important undertaking of the EMSD. Over the years, we have devoted great efforts to establishing effective communication channels and organising various activities to enhance the awareness of the trade and the public about electrical and mechanical (E&M) safety and energy conservation. In 2022/23, we built on this solid foundation and continued to strengthen publicity and promotion among the trade and the public, and meanwhile deepened our collaboration with the Mainland and regional organisations to enhance the effectiveness of regulation, promotion and education.

加強業界服務、溝通和支援

我們秉持「精明規管」的方針，積極應用新科技和持續推動數碼轉型，例如優化機電署網站和應用程式的業界服務功能，讓業界進行註冊續期、持續進修和遞交法定文件更方便，同時提高本署規管工作的效率。在疫情過後，我們有序地與業界恢復實體交流活動，包括年會、研討會和簡介會等，並就更新實務守則和指引，做好諮詢工作。我們亦會不斷檢討並優化業界比賽和認可計劃，務求更有效地提升業界的技術水平。

STRENGTHENING SERVICES, COMMUNICATION AND SUPPORT FOR THE TRADE

Adhering to the "Be the Smart Regulator" policy, we actively applied new technologies and continued to promote digital transformation. For instance, the optimisation of the trade services function on the EMSD website and app has facilitated registration renewal, continuing professional development (CPD) training and submission of statutory documents of the trade, and enhanced the efficiency of our regulatory work at the same time. After the epidemic, we have resumed in-person engagement with the trade in an orderly manner, including annual meetings, seminars and briefings, etc., as well as holding consultations with respect to updating the Codes of Practice (CoPs) and guidelines. We would also continuously review and optimise trade competitions and recognition programmes, in a bid to raise the technical standards of the trade more effectively.

規管服務電子化

為配合政府的「公共服務電子化計劃」，繼電力法例部於2021年推出與《電力條例》相關的一站式網上註冊申請服務後，我們已於2022年7月進一步把數碼化服務範圍擴大至多項註冊計劃，並同時推出註冊電業工程人員和已被認可作為確定地下電纜所在的合資格人士的數碼機電牌照。我們更於2022年11月起把網上註冊申請服務與網上持續進修訓練平台連結，以便業界人士在達成註冊續期的持續進修要求後，可即時透過平台的連結遞交續期申請。

年內，氣體標準事務處為註冊氣體裝置技工提供免費更換新版註冊卡的服務。除實體註冊卡外，註冊氣體裝置技工亦可使用「機電行業通」流動應用程式展示其數碼機電牌照。在更換牌照時所收集的聯絡資料，有助機電署日後與註冊氣體裝置技工保持聯繫，並鼓勵他們參與我們為氣體業界提供的活動和使用本署服務。

Digitalisation of Regulatory Services

To realise the Government's Electronic Service Delivery Scheme, we extended the scope of digital services to various registration schemes in July 2022 following the launch of one-stop online registration application services related to the Electricity Ordinance by the Electricity Legislation Division (ELD) in 2021, and meanwhile rolled out the digital E&M licences for Registered Electrical Workers (REWs) and Approved Competent Persons for Locating Underground Electricity Cables. We have further linked online registration application services with the online CPD training platform since November 2022, so that practitioners can immediately submit renewal applications via the link on the platform after fulfiling the CPD requirements for registration renewal.

During the year, the Gas Standards Office (GasSO) offered Registered Gas Installers (RGIs) free registration card replacement service. Apart from the physical registration cards, RGIs can also display their digital E&M licences by using the E&M Trade app. The contact information collected in the registration card replacement exercise can help the EMSD maintain contact with RGIs in the future and encourage them to participate in the activities and use the services we provide for the gas trade.

年內，多個供業界保存記錄和提交文件的電子平台相繼啟用。自2022年11月起，一般法例部的「升降機及自動梯數碼工作日誌」(數碼工作日誌)系統開放予升降機及自動梯業界和負責人使用，實現升降機及自動梯維修保養記錄數碼化，逐步取代紙本工作日誌。數碼工作日誌讓負責人、業界和機電署透過流動應用程式或線上平台，實時監察、記錄、管理和分析升降機及自動梯的維修保養數據，以便各方共同監察相關的維修保養工作，全面掌握升降機及自動梯的表現和狀態。

鐵路科設立了STSAS電子平台，相關部門可在該平台下載和傳閱港鐵公司提交予跨部門的安全及保安統籌委員會和軌道安全及保安委員會審批的文件。平台利用區塊鏈技術和引入「智方便」功能，以提升數據安全、審批效率及節省用紙。

氣體標準事務處則推出「註冊氣體供應公司網站」，供業界以標準格式上載所需遞交的文件，方便我們翻查和分析相關資料。此外，該部別啟用了自動電子通知系統，以電郵提醒石油氣瓶車和石油氣缸車許可證的持有人，在許可證到期前及時辦理續證手續。

能源效益事務處在機電署網站推出了新的參考工具，名為「建築物電力使用指數網上基準工具」，以便五類商業建築物的擁有人比較和檢討其建築物的整體電力使用表現，並參考該工具提供的建築物節能建議。

便利持續進修培訓

機電署網站新增的「VM加分站」便利車輛維修技工達至自願註冊的持續進修要求。在綜合業界的反饋並進行優化後，我們於2022年5月正式推出該持續進修平台。年內，車輛維修技工在平台共完成16 485小時的持續進修課程，可見業界反應踴躍。

註冊電業工程人員專用的網上持續進修訓練平台方便註冊人員在每三年註冊續期前，完成續期所須的持續進修訓練。近年平台的使用率持續增加，年內約85%註冊電業工程人員通過網上平台完成有關訓練。

During the year, a number of e-platforms for the trade to keep records and submit documents were successively launched. Since November 2022, the system of Digital Log-books for Lifts and Escalators (Digital Log-books) of the General Legislation Division (GLD) has been available for use by the lift and escalator trade as well as responsible persons, realising the digitalisation of lift and escalator maintenance records and gradually replacing paper records. The Digital Log-books enable the responsible persons, the trade and the EMSD to monitor, record, manage and analyse lift and escalator maintenance data in real time through a mobile app or online platform, so that all parties can jointly monitor the maintenance works and get the big picture of the performance and status of lifts and escalators.

The Railways Branch (RB) has set up the STSAS electronic platform, where relevant departments could download and circulate the documents submitted by the MTR Corporation Limited (MTRCL) to the inter-departmental Safety and Security Coordinating Committee and Trackside Safety and Security Committee for approval. The platform utilises blockchain technology and incorporates iAM Smart functions to enhance the data security, efficiency of the approval process and reduce paper consumption.

The GasSO has launched the Registered Gas Supply Companies (RGSCs) Online Portal, through which the trade could upload documents requiring submission in a standard format, facilitating our retrieval and analysis of relevant data. Besides, the GasSO has launched an automated electronic notification system to remind holders of LPG cylinder wagon and road tanker permits by email to timely renew the permits before they expire.

The Energy Efficiency Office (EEO) has launched on the EMSD website a new reference tool called the "Online Building Based Electricity Utilization Index Benchmarking Tool", with which owners of five categories of commercial buildings can compare and review the overall electricity utilisation performance of their buildings, as well as referring to recommendations of the tool for building energy savings.

Facilitating CPD Training

The newly added "VM Learning Station" on the EMSD website facilitates vehicle mechanics' fulfilment of CPD requirements for voluntary registration. After consolidating feedback from the trade and introducing improvements, we officially launched the CPD platform in May 2022. During the year, vehicle mechanics completed in total 16 485 hours of CPD courses on the platform, which showed an enthusiastic response from the trade.

The online CPD training platform designated for REWs makes it more convenient for them to complete the CPD training required for registration renewal every three years. The usage rate of the platform has been increasing in recent years, with about 85% of REWs completing their CPD training through the online platform during the year.

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機電署為註冊氣體裝置技工推出「自願持續專業進修計劃」，並舉辦氣體安全事項簡介會，以鼓勵業界人士持續自我增值。

The EMSD has launched the Voluntary CPD Scheme and organised gas safety briefings for RGIs to encourage practitioners to pursue continuous self-enhancement.

機電署為註冊氣體裝置技工推出「自願持續專業進修計劃」，並提供單元一有關法例及安全規定的內容；註冊氣體供應公司、註冊氣體工程承辦商、行業協會和職訓局則預備單元二有關技術知識和最新技術的培訓材料，並提交本署認可以納入持續專業進修計劃。我們期望「自願持續專業進修計劃」於2023年1月實施後，註冊氣體裝置技工每三年最少修畢一個單元一和一個單元二的課程，以持續自我增值。氣體標準事務處亦善用機電署網站和「機電行業通」流動應用程式，加入註冊氣體工程承辦商和註冊氣體裝置技工學習專區，提供氣體安全事項簡介會的內容簡報、學習教材、訓練課程，以及與業界息息相關的最新資訊等，方便業界人士登入使用，並且實現無紙化通訊。

The EMSD has launched the Voluntary Continuing Professional Development Scheme for Registered Gas Installers (Voluntary CPD Scheme), and provided the contents of Module 1 about statutory and safety requirements. RGSCs, registered gas contractors (RGCs), trade associations and the Vocational Training Council prepared training materials for Module 2 about technical knowledge and the latest technology, and submitted them to the EMSD for approval and inclusion in the CPD scheme. We hope that RGIs will complete at least one Module 1 course and one Module 2 course every three years for continuous self-enhancement after the implementation of the Voluntary CPD Scheme in January 2023. The GasSO also made good use of the EMSD website and E&M Trade app to add a learning zone for RGCs and RGIs to provide the notes of gas safety briefings, learning materials, training courses and the latest information closely related to the trade. With this new endeavour, the GasSO offers an easy access for practitioners and achieves paperless communication.

與業界保持聯繫

疫情期間，機電署善用線上線下渠道與業界維持聯繫。隨着疫後社會漸漸復常，我們逐步與業界恢復實體交流活動；同時亦充分利用疫情期間建立的線上渠道，擴大與業界的線上線下互動。

年內，氣體標準事務處舉辦了多項業界活動，包括2022年9月與家用氣體用具進口商舉行的年會，與業界交流意見，並鼓勵他們使用電子平台提交產品審批申請。另外，強制性能源效益標籤計劃(強制性標籤計劃)第四階段將於2023年9月1日生效，設有15個月寬限期。第四階段會加入三類新產品，包括氣體煮食爐和即熱式氣體熱水爐。我們就此與業界保持溝通，提醒他們強制性標籤計劃的規定，並促請他們盡早優化產品的能源效益。業界反應積極，氣體標準事務處在六個月內收到多款新型號氣體產品的改良資料。氣體標準事務處亦舉辦了多場年度簡介會，對象包括第一、二類勝任人士，石油氣儲存裝置擁有人等，以分享氣體安全的最新資訊和最佳作業模式。以往業界定期年會的焦點一般落在家用氣體產品的品質和安全檢討，本年度的焦點則擴大至氣體產品的能源效益。在本年度的石油氣儲存設施擁有人聯絡會議上，氣體標準事務處更首度邀請一些或會儲存大量石油氣的民間機構，例如長者院舍、學校等的負責人，向他們深入講解相關氣體安全工作守則的內容和規定，並提供工作守則的檢查清單，以便他們多了解相關的法律責任和進行定期氣體安全檢測的規定。活動得到與會者的正面迴響。此外，在處理輕度易燃環保雪種的安全知識方面，氣體標準事務處在年內舉行了12場業界網上講座，並分別為職業安全健康局、香港保險業聯會和香港空調製冷業職工總會舉辦三場網上研討會。

Ongoing Engagement with the Trade

The EMSD made good use of online and offline channels to maintain contact with the trade during the epidemic. As society slowly returned to normality after the epidemic, we have gradually resumed in-person exchange activities with the trade, while leveraging the online channels established during the epidemic to expand online and offline interaction with the trade.

During the year, the GasSO organised a number of trade events, including an annual meeting with importers of domestic gas appliances in September 2022 to exchange views with the trade and encourage them to use the e-platform for submitting product approval applications. Besides, in the fourth phase of the Mandatory Energy Efficiency Labelling Scheme (MEELS) that will come into effect on 1 September 2023, with a 15-month grace period, three types of products including gas cookers and gas instantaneous water heaters will be newly included. In this connection, we were in constant communication with the trade, reminding them of the MEELS requirements and urging them to optimise the energy efficiency of their products as early as possible. The trade responded positively, and the GasSO received information on the improvement of multiple new models of gas products within six months. The GasSO also held several annual briefings for Class 1 and Class 2 Competent Persons, LPG storage installation owners and others to share the latest information on gas safety and best practices. While past regular annual meetings of the trade focused on the quality and safety review of domestic gas products, the focus of this year expanded to the energy efficiency of gas products. At the liaison meeting with LPG storage installation owners this year, the GasSO invited for the first time representatives from civil organisations that might store a large amount of LPG, such as elderly homes and schools, explained to them in detail the contents and requirements specified in the relevant CoP for gas safety and provided a checklist of the CoP to them, so that they could better understand the legal responsibilities and the requirements for conducting regular gas safety inspections. Feedback from the attendees was positive. Apart from that, during the year, the GasSO organised 12 online talks about the safe handling of mildly flammable and eco-friendly refrigerants for the trade and organised three webinars specifically for the Occupational Safety and Health Council, the Hong Kong Federation of Insurers and the Hong Kong Air-Conditioning and Refrigerating Trades Workers General Union.

年內，一般法例部加強巡查建築工地升降機及塔式工作台。除突擊巡查外，該部別更舉行網上研討會，向業界講解建築工地升降機及塔式工作台的安全訊息；亦與建築工地升降機及塔式工作台的註冊承辦商舉行聯絡會議，提升業界對有關設施的安全意識。

In the year, the GLD stepped up inspections of builders' lifts and tower working platforms (BLTWPs). In addition to blitz inspections, webinars were organised to bring safety messages about BLTWPs to the trade, and liaison meetings with registered contractors of BLTWPs were also held to enhance their safety awareness of such facilities.

電力法例部聯同港九電器工程電業器材職工會和香港電器工程商會有限公司舉辦本年度的電力規例研討會，活動以線上線下模式舉行，約1 000名業界人士參與。研討會內容其後上載至網上持續進修訓練平台，供註冊電業工程人員在網上收看，以完成所需的持續進修訓練。

The Annual Technical Seminar jointly organised by the ELD, Hong Kong & Kowloon Electrical Engineering & Appliances Trade Workers Union and Hong Kong Electrical Contractors' Association Limited was held online and offline, with about 1 000 members of the trade taking part in it. The seminar content was then uploaded to the CPD platform for REWs to watch online and complete the required CPD training.

鐵路科與各鐵路營運機構定期舉行創新科技(創科)論壇，交流技術和分享創科應用心得。其中，該科與港鐵公司持續舉行季度創科論壇，分享創科新知和技術，務求締造更安全、更有效率和可持續的鐵路系統。鐵路科亦聯同一般法例部與港鐵公司交流創科成果，鼓勵港鐵公司採用由三維掃描和打印技術製成的尼龍梳齒板，該梳齒板可有效彈開跌落在梳齒間的外物，從而減低風險。另外，鐵路科亦鼓勵港鐵公司繼續廣泛應用「自動梯梯梳外物識別系統」，及早偵測梳齒板範圍內的外物。現時已在54部自動梯上安裝了該系統，日後會繼續在新的自動梯上加裝，以提升自動梯安全。

The RB regularly holds innovation and technology (I&T) forums with railway operators to exchange technology and share I&T application insights. Among them, the RB and MTRCL continuously hold a quarterly I&T Forum to share new I&T knowledge and technologies, in a bid to create a safer, more efficient and sustainable railways system. The RB, together with the GLD, also exchanged I&T achievements with the MTRCL, encouraging it to adopt nylon comb plates made with 3D scanning and printing technology. The nylon comb plates can effectively bounce away foreign objects falling onto the comb section, and thereby reducing risk. Besides, the RB also encouraged the MTRCL in the continued wide adoption of the Escalator Comb Object Identification System for early detection of foreign objects within the comb plate areas. Currently, this system has been installed on 54 escalators, and will continue to be installed on new escalators in the future to enhance their safety.

機電署各部別透過外展和宣傳工作，與業界保持緊密聯繫。一般法例部年內推出了七部關於安全使用自動梯的宣傳片，包括「自動梯炒梯事故的成因及預防方法」、「自動梯梯級震動的成因及應對方法」和「緊握扶手企兩邊」等。該部別除了把影片上載至機電署網站和社交平台外，還直接發送給物業管理業組織和業界代表，鼓勵他們在商場播放，與其持份者分享安

Through outreach and publicity work, various divisions of the EMSD maintained close liaison with the trade. During the year, the GLD launched seven promotional videos about the safe use of escalators, including "Escalator Step Collision: The Causes and How to Prevent the Issues", "Escalator Step Vibration: The Causes and How to Mitigate the Issues", and "Stand on Either Side and Hold the Handrail". Apart from uploading the videos to the EMSD website and social media platforms, the GLD also directly sent the videos to property management organisations and trade

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全使用自動梯的資訊。採用這做法可接觸更多受眾，提高成本效益。在推動優化升降機的工作方面，一般法例部繼續與市區重建局合作，協助參與「優化升降機資助計劃」的大廈業主盡快開展升降機優化工程。該部別並推出宣傳計劃，宣揚優化升降機的優點，包括令使用者更安全舒適，以及節省能源等。此外，他們積極接觸一些未能參與資助計劃的升降機負責人，鼓勵他們自資優化舊式升降機。

representatives, and encouraged them to broadcast the videos in shopping malls to share information on the safe use of escalators with their stakeholders. By such practice, we could reach a larger audience and increase cost-effectiveness. In promoting lift modernisation, the GLD continued to collaborate with the Urban Renewal Authority to assist building owners participating in the Lift Modernisation Subsidy Scheme (LIMSS) to commence the modernisation works of their lifts as soon as possible. The GLD also launched publicity programmes to advocate the advantages of lift modernisation, such as providing users with safer and more comfortable rides, as well as saving energy. Furthermore, the GLD has proactively contacted some responsible persons of lifts who did not participate in the LIMSS, and encouraged them to modernise their aged lifs by self-financing.

一般法例部與市區重建局合作，協助參與「優化升降機資助計劃」的大廈業主盡快開展升降機優化工程，並透過電車廣告等不同渠道，宣揚優化升降機的優點。

The GLD collaborated with the Urban Renewal Authority to assist building owners participating in the LIMSS to commence the modernisation works of their lifts as soon as possible, and advocated the advantages of lift modernisation through various channels such as tram advertisements.

鑑於部分泳池電力裝置擁有人沒有按法例要求進行固定電力裝置的定期檢測工作，電力法例部因此舉辦業界講座，向註冊電業承辦商、註冊電業工程人員和物業管理公司代表，講解有關泳池電力裝置的安全要求和定期檢測工作的必要。此外，售賣全新或二手電氣產品的店舖仍然是電力安全外展宣傳的重點對象。年內，電力法例部派員走訪約4 000家店舖和電商公司，講解有關電氣產品安全的法例要求，提醒業界所出售的電氣產品必須符合香港法例的安全要求。

Since some owners of electrical installations in swimming pools failed to conduct the legally required periodic test for fixed electrical installations, the ELD held a trade talk to explain to Registered Electrical Contractors, REWs and representatives of property management companies the safety requirements for electrical installations in swimming pools and the necessity of periodic tests. Additionally, shops selling new or used electrical products continued to be the key targets for outreach promotion of electricity safety. During the year, the ELD dispatched staff to visit about 4 000 shops and e-commerce companies to explain the legal requirements regarding the safety of electrical products and remind the trade that all electrical products they sold had to meet the safety requirements of the Hong Kong legislation.

能源效益事務處一如以往定期舉辦有關可再生能源的業界研討會和簡介會。由2018年6月起至今，共舉辦了157場此類活動，其中包括四場與屋宇署和環境及生態局合辦有關上網電價計劃及太陽能發電系統的公眾研討會，共有逾20 500人參與。

The EEO organised trade seminars and briefings on renewable energy regularly as previously. A total of 157 events of this kind have been organised since June 2018 to date, including four public seminars on Feed-in Tariff schemes and solar power generation systems jointly organised with the Buildings Department and the Environment and Ecology Bureau, with more than 20 500 participants in total.

能源效益事務處繼續為業界舉辦淡水冷卻塔年度研討會，並於2022年12月在網上舉行一年一度的「淡水冷卻塔和建築物能源效益的規管及實務技術研討會」。會上，該部別向業界人士講述淡水冷卻塔規管的最新發展，以及推廣淡水冷卻塔的新技術。該技術為實時水質監測系統，可更準確和有效地控制水質。

The EEO continued to organise for the trade annual seminars on fresh water cooling towers (FWCTs). The annual Technical Forum on Control and Practice of Fresh Water Cooling Towers and Buildings Energy Efficiency was held online in December 2022. At the forum, the EEO introduced the latest developments in the regulation of FWCTs to practitioners, and promoted a new FWCT technology, which was a real-time water quality monitoring system to more precisely and effectively control water quality.

推廣實務守則和指引

機電署定期更新和發布多份實務守則及指引，事前必定先諮詢業界及公眾，發出後並會致力向他們推廣實務守則及指引。

Promotion of CoPs and Guidelines

As part of the regular exercises to update and issue a number of CoPs and guidelines, the EMSD always consults with the trade and the public beforehand, and is committed to promoting the CoPs and guidelines to them after issuance.

氣體標準事務處在年內展開《香港石油氣業工作守則，第一單元：石油氣庫及石油氣瓶儲存間》的更新工作，加入有關石油氣業安全、健康、環境、供應穩定和可靠、技術以及成本等多方面的條文。在2022年第三季全面諮詢石油氣業界所有持份者和廣納業界意見後，更新工作已完成，新版守則亦於2023年5月生效。

During the year, the GasSO embarked on updating the Code of Practice for Hong Kong LPG Industry, Module 1 – LPG Compounds and Cylinder Stores, and added provisions on the safety, health, environment, supply stability and reliability, technology and cost of the LPG industry. After a comprehensive consultation with all LPG trade stakeholders in the third quarter of 2022, the updating work was completed with the trade's comments incorporated. The new version of the CoP came into effect in May 2023.

氣體標準事務處在2022年第三季全面諮詢石油氣業界所有持份者和廣納業界意見後，已完成更新《香港石油氣業工作守則》工作。

After the GasSO conducted a comprehensive consultation with all LPG trade stakeholders in the third quarter of 2022, the updating work of the Code of Practice for Hong Kong LPG Industry was completed with the trade's comments incorporated.

為推動在村屋安裝中央石油氣供氣系統，氣體標準事務處於2023年4月推出《氣體應用指南：新建村屋的瓶裝石油氣裝置》，為村屋業主和建造商就建造村屋中央石油氣供氣系統提供技術建議。另外，該部別邀請了石油氣車業界出席於2022年9月舉行的《優良作業指引－石油氣車輛燃料系統維修》發布典禮，並以短片向業界廣泛宣傳該指引。該指引為石油氣車輛維修技工說明石油氣車輛燃料系統維修的基本要求和最佳做法。

To promote the installation of centralised LPG supply systems in village houses, the GasSO published the Guidance Note on LPG Supply Installations for New Village Houses in April 2023, providing technical advice on the construction of centralised LPG supply systems for owners and developers of village houses. Apart from that, the GasSO also invited the LPG vehicle trade to attend a launch ceremony for the Best Practices for Maintenance of Fuel System of LPG Vehicles in September 2022, and widely publicise the guidelines to the trade with a short video. The guidelines outline the basic requirements and best practices for maintaining the fuel system of LPG vehicles to LPG vehicle mechanics.

一般法例部參與了由廣東省特種設備檢測研究院牽頭的《在用電梯風險評價規範 — 曳引驅動電梯》的研究和草擬工作；該文件訂明大灣區的標準，並於2023年4月正式公布。一般法例部會繼續審視該標準在香港的應用，未來並會廣泛諮詢升降機和物業管理業界等持份者，以編制適用於香港的指引。

The GLD participated in the research and drafting of Specifications for Risk Assessment of Traction Lifts, spearheaded by the Guangdong Institute of Special Equipment Inspection and Research. This document, which set the standards for the Greater Bay Area, was formally published in April 2023. The GLD will continue to review the application of such standards in Hong Kong, and extensively consult with stakeholders in the lift and property management sectors in the future to formulate a guideline applicable to Hong Kong.

提升公眾機電安全及節能意識
RAISING PUBLIC AWARENESS OF E&M SAFETY AND ENERGY CONSERVATION

推進業界比賽和認可計劃

機電署一直推行多個業界比賽和認可計劃，透過獎勵和認可，鼓勵機電業界提升技術水平。機電署亦不斷檢視這類計劃的內容，務求精益求精。

「傑出註冊電業工程人員選舉」旨在提供平台，讓電業界人士互相切磋學習，持續提升技術水平，推動工作安全文化，以及樹立行業典範。參選者需通過實務測試和面試，其中須檢查電力裝置，找出電路的錯處，並回答有關《電力條例》安全規定和技術知識的問題，以展示其專業水平。選舉因疫情關係已停辦了兩年，於2022年度復辦，因此備受業界重視，並獲媒體報道。

「瓶裝石油氣分銷商安全表現評級計劃」已實行七年，把參與計劃的瓶裝石油氣分銷商按表現分為金、銀、銅三個級別。氣體標準事務處正檢討該計劃，考慮加入更多評級元素，務求令計劃與時並進，提高其認受程度。

「優質升降機服務認可計劃」已實行多年，一般法例部正就計劃的成效、評分標準、行政安排等方向進行檢討，研究如何優化計劃，以鼓勵更多升降機負責人參與。

Advancing Industry Competitions and Recognition Schemes

The EMSD has been running various trade competitions and recognition schemes to encourage the E&M trade to raise their technical standards through awards and recognition. The EMSD also keeps reviewing the content of these schemes to strive for excellence.

The Outstanding Registered Electrical Worker Awards Scheme aims to provide a platform for practitioners of the electrical trade to learn from each other, continuously improve their technical standards, promote work safety culture and set models for the trade. Contestants have to undergo a hands-on test and an interview, in which they are required to examine an electrical installation to identify faults in the circuits, and answer questions about safety requirements under the Electricity Ordinance as well as technical know-how to demonstrate their professional standards. The competition resumed in 2022, after a two-year suspension due to the epidemic, and therefore attracted much attention from the trade and received media coverage.

The LPG Cylinder Distributor Safety Performance Recognition Scheme, which has been implemented for seven years, classifies distributors of LPG cylinders under the scheme into gold, silver and bronze ratings based on their performance. The GasSO is reviewing the scheme and considering adding more rating elements to keep the scheme up to date and enhance its recognition.

The Quality Lift Service Recognition Scheme has been in place for many years. The GLD is reviewing its efzicacy, evaluation methods and administrative arrangements, as well as studying how to optimise the scheme to encourage more responsible persons for lifts to join it.

加強公眾教育及宣傳

機電署一直致力以全方位及多管齊下的方式進行公眾教育和宣傳，向不同的目標羣體推廣機電安全和節能。年內，我們引入新思維和做法，包括在新建的設施增設教育中心；透過大眾傳媒和社交平台接觸更多目標羣體；舉辦比賽吸引公眾參與；特別為兒童、年青人及少數族裔訂立宣傳推廣策略等，務求提升公眾教育及宣傳的成效。

增設公眾教育設施

為提升公眾的節能意識，我們會就區域供冷系統設立專題教育中心。區域供冷系統是具能源效益的大型中央空調系統，與傳統氣冷式空調系統和獨立使用冷卻塔的水冷式空調系統相比，其能源效益表現較高。鑑於區域供冷系統節約能源的優點，政府在啟德發展區建設了這類系統，未來亦會加快在新發展區(包括北部都會區)建設區域供冷系統。

STEPPING UP PUBLIC EDUCATION AND PUBLICITY

The EMSD has always been committed to adopting a holistic and multi-pronged approach in conducting public education and promotion of E&M safety and energy conservation to different target groups. During the year, we introduced new thinking and practices, including establishing an education centre in a new facility, reaching out to more target groups through mass media and social media platforms, organising competitions to engage the public, tailoring promotional strategies for children, young people and ethnic minorities, etc., with a view to enhancing the effectiveness of public education and promotion.

Providing Public Education Facilities

To raise public awareness of energy conservation, we will establish an education centre to promote the district cooling system (DCS), which is a large-scale centralised energy-efficient air-conditioning system with energy performance higher than that of traditional air-cooled air-conditioning systems and individual water-cooled air-conditioning systems using cooling towers. In view of the merits of DCS in reducing energy consumption, the Government has constructed a DCS in the Kai Tak Development Area, and will accelerate the construction of DCSs in new development areas (including the Northern Metropolis) in the future.

能源效益事務處正在啟德區域供冷系統第三廠籌建一個面積約350平方米的教育中心，期望以新穎的教育方式，展示機電工程署就區域供冷系統的規劃、可持續發展的理念、推動低碳發展的目標，以及多年來對節能和達致碳中和的貢獻；並通過益智又有趣的互動展品，讓參觀者了解區域供冷系統的基本原理和優點、啟德區域供冷系統的使用情況，以及香港區域供冷系統的未來發展方向。

我們也會加強有關區域供冷系統的公眾教育工作，尤其是透過教育中心接觸更多年青人，提高他們對區域供冷系統機電工程的興趣。另外，我們會繼續舉辦不同的推廣活動，例如為中學生舉辦STEM工作坊，介紹區域供冷系統的運作原理、舉辦比賽鼓勵年青人製作區域供冷系統相關的作品，以及舉辦以區域供冷系統為主題的公眾研討會及技術論壇，鼓勵更多人了解和投入區域供冷系統的未來發展。

改善宣傳策略

機電署各部別深明創意和趣味性對傳達機電安全和節能的訊息十分重要，因此在年內繼續推出多部引人注目的短片。舉例而言，一般法例部製作了一部短片，鼓勵公眾使用自動梯時站在兩側並緊握扶手，以助平衡自動梯上的重量，減少損耗。為了宣傳這部短片，一般法例部與鐵路科和港鐵公司合作，港鐵公司更派員在自動梯旁呼籲乘客「握扶手，左右兩邊企定定」，以加大宣傳效果。能源效益事務處也製作了多部短片，其中一部短片介紹在啟德區域供冷系統應用新技術機電裝備合成法的優點，包括提升整體工程的效率、質素、工地管理及安全。另一部短片則介紹實施《建築物能源效益條例》如何有助提升建築物的能源效益，

The EEO is setting up an education centre of about 350 square metres in the third plant of Kai Tak DCS to demonstrate in a novel and educational manner the EMSD's planning of DCSs, principles of sustainable development, goals of promoting low-carbon development and contribution to energy conservation and achieving carbon neutrality over the years. Through educational and interesting interactive exhibits, visitors would get to know the basic principles and merits of DCS, the implementation of the Kai Tak DCS, as well as the future development direction of DCSs in Hong Kong.

We will also step up public education on DCSs, especially reaching out to more young people through the education centre and stimulating their interest in E&M engineering of DCS. Moreover, we will continue to organise different promotional activities, such as STEM workshops for secondary school students to introduce the operation principles of DCS, competitions to encourage young people to create DCS-related works, as well as public seminars and technical forums on the theme of DCS to encourage more people to learn more about and participate in the future development of DCSs.

Enhancing Our Promotion Strategies

Recognising the importance of creativity and fun in driving home the messages of E&M safety and energy conservation, various divisions of the EMSD continued to launch a range of compelling videos during the year. For instance, the GLD produced a video encouraging the public to stand on both sides of the escalator and hold the handrail when using an escalator, as this helps to distribute the weight on the escalator evenly and can reduce wear and tear. The GLD collaborated with the RB and the MTRCL to promote the video. The MTRCL even deployed staff near escalators to call on passengers to "hold the handrail and stand firm when using escalators" for greater publicity effect. The EEO also produced a number of videos. One of the videos publicised the merits of applying the innovative Multi-trade integrated Mechanical, Electrical and Plumbing technology at the Kai Tak DCS, including enhancing the efficiency, quality, worksite management and safety of the works in general. Another video introduced how the

一般法例部與鐵路科和港鐵公司合作，向公眾推廣安全使用自動梯的訊息，呼籲乘客「握扶手，左右兩邊企定定」，更透過生動的宣傳方法提升宣傳效果。

The GLD collaborated with the RB and the MTRCL to promote the message of using escalators safely to the public and call on passengers to "hold the handrail and stand firm when using escalators". Lively promotional approaches were even adopted to achieve greater publicity effect.

提升公眾機電安全及節能意識
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讓香港有效應對氣候變化，並在2050年前實現《香港氣候行動藍圖2050》所定下的碳中和目標。短片的目的是提升市民的節能意識和增加他們對綠色建築的認知，並鼓勵全民參與深度低碳轉型。還有一部短片介紹「採電學社」小學教材套，並鼓勵全港小學使用這套教材授課，以增進小學生對可再生能源及氣候變化的認識。此外，氣體標準事務處製作了兩部短片，分別介紹更換配置橫頭閥門的石油氣瓶的正確步驟，以及石油氣車輛燃料系統維修的優良作業指引。這些公眾教育短片均上載至機電署網站以及影片分享平台，方便公眾隨時觀看。

implementation of the Buildings Energy Efficiency Ordinance (BEEO) helps to enhance the energy efficiency of buildings, and thereby enabling Hong Kong to combat climate change effectively and achieve the carbon neutrality target set out in Hong Kong's Climate Action Plan 2050 before 2050. The video aimed to promote public awareness of energy saving and green buildings, as well as community-wide participation in in-depth low-carbon transformation. There was also a video focusing on the Solar Harvest educational kit for primary schools and encouraging all primary schools in the territory to use the kit for teaching, in order to deepen the primary students' knowledge of renewable energy and climate change. Apart from the above, the GasSO produced two videos on the proper procedures for replacing LPG cylinders with Prest-O-Lite valves and the best practices for maintenance of LPG vehicle fuel systems respectively. These public education videos have been uploaded to the EMSD website and video sharing platforms for easy viewing of the public anytime.

能源效益事務處編製及推出「採電學社」小學教材套，鼓勵全港小學使用這套教材授課，透過科學、科技、工程、藝術和數學(STEAM)增進小學生對可再生能源及氣候變化的認識。

The EEO compiled and launched the Solar Harvest educational kit for primary schools, encouraging all primary schools in the territory to use the kit for teaching, in order to deepen the primary students' knowledge of renewable energy and climate change through Science, Technology, Engineering, Arts and Mathematics (STEAM).

氣體標準事務處安排機電工程師在香港電台的《凝聚香港》節目接受直播訪問，講解為氣體裝置定期安全檢查的重要性，並介紹用作偵測漏氣的激光甲烷檢測儀。

The GasSO arranged for an E&M engineer to explain the importance of regular safety inspections of gas installations and introduce the laser methane detector adopted for gas leak inspection in a live interview on the RTHK programme "Hong Kong United".

除了製作宣傳短片外，機電署亦通過電視和電台節目發放機電資訊。電力法例部首次在電視廣播有限公司收視率高的資訊節目投放植入式廣告，宣傳為村屋固定電力裝置安裝電流式漏電斷路器的重要性。該段兩分鐘的宣傳廣告播出時，錄得超過130萬人次收看。氣體標準事務處則安排機電工程師在香港電台的《凝聚香港》節目接受直播訪問，講解為氣體裝置定期安全檢查的重要性，並介紹機電署採用的激光甲烷檢測儀。工程師在訪問中指出該儀器可遙距檢測室外氣體喉管，偵測漏氣情況，在疫情期間減少了檢查人員進入住宅單位檢測氣體喉管的需要，避免病毒傳播。工程師又表示該儀器在過去兩年出動超過100次，為氣體標準事務處的氣體安全規管工作帶來莫大方便。除了派員出席訪問外，氣體標準事務處亦安排繼續播放有關安全使用輕度易燃雪種家用式冷氣機的電視宣傳短片，使公眾更關注這類冷氣機的安全。

In addition to producing promotional videos, the EMSD also disseminated E&M information through television and radio programmes. For the first time, the ELD placed a product placement in an information programme of the Television Broadcasts Limited with high viewing ratings to promote the importance of installing residual current devices for fixed electrical installations in village houses. More than 1.3 million views were recorded when the two-minute advertisement was broadcast. The GasSO also arranged for an E&M engineer to explain the importance of regular safety inspections of gas installations and introduce the laser methane detector adopted by the EMSD in a live interview on the RTHK programme "Hong Kong United". In the interview, the engineer remarked that the device could detect potential gas leaks through remote inspection of external gas pipes, thus reducing the need for inspection staff to enter residential units for gas pipe inspections and preventing the spread of virus during the epidemic. The engineer also said that the device had been deployed more than 100 times in the past two years and greatly facilitated the gas safety regulation work of the GasSO. In addition to interviews, the GasSO also arranged for the continued broadcast of a TV announcement in the public interest on the safe use of mildly flammable refrigerant household air-conditioners, so as to raise public awareness of the safety of this type of air-conditioners.

推進外展宣傳和教育工作

機電署也舉辦了多項外展活動，直接接觸市民和社區組織，宣傳機電安全及節能資訊。具體而言，能源效益事務處在年內主動接觸超過30家非政府福利機構，向他們介紹「採電學社」計劃，並鼓勵合資格機構透過該計劃安裝小型太陽能發電系統，以便他們參與本地兩家電力公司推行的上網電價計劃。能源效益事務處亦為非政府福利機構舉辦了三場分享會，推廣加強建築物能源效益的優點。此外，能源效益事務處參與了政府綠色債券計劃的網上路演，介紹區域供冷系統的環保效益，為吸引投資者支持新一輪綠色債券計劃出一分力。

Taking Forward Outreach Publicity and Education Work

The EMSD also organised various outreach programmes to directly engage members of the public and organisations in the community to publicise information about E&M safety and energy conservation. Specifically, during the year, the EEO proactively engaged more than 30 welfare non-government organisations (NGOs) to introduce to them the Solar Harvest scheme and encourage eligible organisations to install small-scale solar energy generation systems through the scheme in order to join the FiT schemes operated by the two local power companies. Moreover, the EEO held three sharing sessions for welfare NGOs to promote the benefits of enhancing building energy efficiency. The EEO also participated in the online roadshows for the Government Green Bond Programme to introduce the environmental benefits of DCSs and help attract investors to support the new round of the Government Green Bond Programme.

能源效益事務處為非政府福利機構舉辦了三場分享會，推廣加強建築物能源效益的好處。

The EEO held three sharing sessions for welfare NGOs to promote the benefits of enhancing building energy efficiency.

車輛維修業需要大量年輕人才入行，以支撐行業未來的持續發展。為了吸引年青人投身這個行業，車輛維修註冊組與車輛維修業界合作，專為中學生舉辦一連串的主題活動，包括職業生涯分享會、參觀車輛維修工場等，讓學生走出課室，了解車輛維修業的未來發展和潛力。

The vehicle maintenance trade needs a large number of young talent to join in to support its sustainable growth in the future. To attract young people to join the trade, the Vehicle Maintenance Registration Unit, in collaboration with the vehicle maintenance trade, organised a series of thematic activities targeting secondary school students, including career sharing sessions, visits to vehicle maintenance workshops, etc., so that students could learn beyond the classroom and understand the future development and potential of the vehicle maintenance trade.

機電署於2022年11月4日至6日在九龍灣機電署總部大樓舉行為期三日的「機電創科開放日2022」，向市民展示機電工程服務和智慧城市發展中的創科應用。開放日是香港特別行政區成立二十五周年的慶祝活動之一，並特別着重吸引年青人參與。活動特設多個吸引青年人的項目，啟發他們對機電工程和創科的興趣，包括展示創科方案的展覽和虛擬攤位、講座、STEM工作坊、創科項目導賞、虛擬實境體驗及「智在GWIN」物聯網機電應用挑戰賽頒獎禮。活動期間還播放了由鐵路科製作的短片，介紹有助提升鐵路安全的創科工具，加強年青人對鐵路安全的關注和對創科的興趣。

The EMSD organised the three-day Inno@E&M Open Day 2022 from 4 to 6 November 2022 at the EMSD Headquarters in Kowloon Bay to demonstrate to the public I&T applications in E&M engineering services and smart city development. The open day was one of the celebration activities for the 25th anniversary of the establishment of the Hong Kong Special Administrative Region and focused on engaging the youth. The event featured a wide range of activities that appealed to young people to inspire their interest in E&M engineering and I&T, including exhibition booths and virtual booths showcasing I&T solutions, seminars, STEM workshops, guided tours of I&T projects, virtual reality experience and the awards ceremony of the "Smart@GWIN" E&M IoT Application Challenge. A video produced by the RB was also broadcast during the event to introduce the I&T tools for enhancing railway safety, stimulating young people's awareness of railway safety and their interest in I&T.

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區域供冷系統的未來發展需要大量的技術人才。能源效益事務處會持續為高小及中學生、工程系大學生、業界伙伴、專業協會和其他政府部門舉行啟德區域供冷系統廠房導賞參觀及技術交流活動，提升他們對區域供冷系統的認識，同時吸引新血入行，以持續推動節能減碳工作。

The future development of DCSs requires an enormous pool of technical talent. The EEO will continue to organise guided tours to the plants of the Kai Tak DCS and technical exchange activities for senior primary and secondary school students, university students in engineering, trade partners, professional bodies and other government departments to enhance their understanding of the DCS, and at the same time attract new blood to the industry, thereby continuing the efforts in promoting energy saving and carbon reduction.

電力法例部於2022年5月舉辦兩場網上STEM工作坊，並參與了分別在西灣河和沙田舉行的防火嘉年華以及「機電創科開放日2022」，以宣傳電力安全。此外，該部別派員出席在2022年12月舉行的樓宇機電安全及能源效益講座，傳遞電力安全訊息。在培訓年青人方面，電力法例部安排非華裔學生參加該部別的實習計劃，並持續為大專學生和香港專業教育學院的學生提供實習機會。

The ELD held two online STEM workshops in May 2022 and participated in the fire safety carnivals held respectively in Sai Wan Ho and Sha Tin, as well as the Inno@E&M Open Day 2022, to promote electrical safety. The division also deployed staff to attend the Property Management Seminar held in December 2022 to disseminate electrical safety messages. On training of young people, the ELD has arranged for non-ethnic Chinese students to participate in the internship programme of the division and continued to provide internship opportunities for tertiary students as well as students of the Hong Kong Institute of Vocational Education.

另外，能源效益事務處就《建築物能源效益條例》進行定期宣傳。我們在2023年第一季展開外展宣傳工作，向約1 500幢建築物的業主、物業管理公司及租戶講解該條例的規定，並鼓勵他們在其建築物實施節能措施，以節約用電。年內，我們繼續進行新一輪外展宣傳活動，鼓勵市民採取節能減碳措施，積極投入低碳轉型，共同努力邁向碳中和。

Separately, the EEO has launched regular publicity campaigns on the BEEO. We have commenced an outreach publicity campaign in the first quarter of 2023 to explain the BEEO requirements to the owners, property management companies and tenants of about 1 500 buildings and encourage them to implement energy saving measures in their buildings to reduce electricity consumption. During the year, we continued to conduct a new round of outreach publicity activities to encourage the public to actively pursue low-carbon transformation by adopting energy saving and carbon reduction measures, so as to strive towards carbon neutrality in a concerted effort.

舉辦公眾比賽及認可計劃

年內，環境局(時稱)聯同機電署推行「全民節能減碳2022」運動，並在2022年6月17日舉行啟動禮，作為香港特別行政區成立二十五周年的慶祝活動之一。這項活動旨在推動各界攜手節能減碳，實現低碳轉型，內容包括呼籲簽署《節能約章2022》和《4T約章》，以及分別為機構及學生舉辦「慳神大比拼」比賽。

Holding Public Competitions and Recognition Schemes

During the year, the then Environment Bureau and the EMSD jointly launched the Energy Saving and Decarbonisation for All 2022 campaign and held the launching ceremony on 17 June 2022 as one of the celebration activities for the 25th anniversary of the establishment of the Hong Kong Special Administrative Region. Aimed to encourage the community to achieve low-carbon transformation by energy saving and decarbonisation, the campaign comprised the promotion of the Energy Saving Charter 2022 and the 4T Charter, as well as the competitions held for organisations and students respectively under the Energy Saving Championship Scheme.

逾3 000個參與者簽署《節能約章2022》，作出多個節能的承諾。另外，超過700個場所的負責機構及公司簽署《4T約章》，承諾訂立節能目標並制定相關時間表，同時確保建築物能源數據的透明度，亦會報告節能成效，以及鼓勵員工共同參與邁向節能目標。

Over 3 000 participants signed up to the Energy Saving Charter 2022 to make various energy-saving pledges. In addition, the responsible organisations and companies of more than 700 premises joined the 4T Charter by pledging to set an energy saving target with an action timeline, while ensuring the transparency of building energy data. They would also report energy saving results and encourage their staff to work together towards the energy saving target.

2022年6月推出的「慳神大比拼」比賽以機構及學生為對象。機構組別的比賽鼓勵業界共同努力，通過重新校驗來提高建築物能源效益及加強節能；學生組別的比賽則鼓勵青少年發揮創意，推動節能和可再生能源發展。

Launched in June 2022, the Energy Saving Championship Scheme was open to organisations and students. The competition for organisations encouraged the trade to work together to enhance energy efficiency and conservation in buildings with the application of retro-commissioning, while the competition for students was staged to inspire youngsters' creativity in promoting energy saving and the development of renewable energy.

適逢2022年是《建築物能源效益條例》實施十周年，能源效益事務處以「十載節能綠建創能效，全民『築』動邁向碳中和」為主題舉辦網上問答比賽，以提升公眾人士(尤其是年青人)對建築物能源效益和碳中和目標的關注，培養他們在日常生活中省電節能的良好習慣，讓全港市民一起參與和配合節能，支持提升建築物的能源效益，務求在2050年前邁向碳中和。比賽吸引近1 000名學生和公眾人士參加，其中近300名參加者更就如何實踐提升建築物能源效益和達致碳中和，提供了寶貴意見和創新意念。

As the year 2022 marked the 10th anniversary of the implementation of the BEEO, the EEO organised an online quiz competition under the theme of "Ten-year Achievements in Energy Saving in Green Buildings, Full Public Engagement for Striving Towards Carbon Neutrality" to raise public awareness of building energy efficiency and the carbon neutrality target, especially among young people, and cultivate in them good habits of energy-saving in their daily lives, so that all citizens in Hong Kong would participate and cooperate in energy conservation and support the enhancement of energy efficiency in buildings, with a view to achieving carbon neutrality before 2050. The competition attracted nearly 1 000 students and members of the public, among whom nearly 300 participants provided valuable insights and creative ideas on the ways to achieve building energy efficiency and carbon neutrality.

能源效益事務處舉辦以「十載節能綠建創能效，全民『築』動邁向碳中和」為主題的網上問答比賽，吸引近1 000名學生和公眾人士參加。該比賽提升了年青人對建築物能源效益和碳中和目標的關注，並培養他們在日常生活中節能省電的良好習慣。

The EEO organised an online quiz competition under the theme of "Ten-year Achievements in Energy Saving in Green Buildings, Full Public Engagement for Striving Towards Carbon Neutrality", which attracted nearly 1 000 students and members of the public to participate. The competition raised youngsters' awareness of building energy efficiency and the carbon neutrality target, cultivating in them good habits of energy-saving in their daily lives.

另外，能源效益事務處在2022年年底舉辦區域供冷系統STEM工作坊和比賽，讓中學生加深對區域供冷系統的環保作用的認識，了解綠色基建對實現碳中和的貢獻以及在應對氣候變化方面的重要作用。能源效益事務處不但為參賽者提供包括組裝硬件的STEM開發工具包等資源及舉辦互動工作坊增進他們的知識，更為入圍參賽者提供導修課。工作坊和比賽反應熱烈，共吸引過百名中學生參加。比賽的頒獎典禮在2023年3月舉行，並邀得機電署署長及業界代表擔任頒獎嘉賓。

Moreover, the EEO organised the STEM Workshops and Competition for DCS in late 2022 to deepen the understanding of secondary school students on the environmental benefits of DCS, the contribution of green infrastructure to achieving carbon neutrality and its important role in combating climate change. Apart from providing participants with resources such as STEM development kits that included hardware components, as well as holding interactive workshops to enhance their knowledge, the EEO also provided tutorials for shortlisted participants. The workshops and competition received an overwhelming response, with more than 100 secondary school students participated. The awards ceremony for the competition was held in March 2023, and the Director of Electrical and Mechanical Services and trade representatives were invited as award presentation guests.

提升公眾機電安全及節能意識
RAISING PUBLIC AWARENESS OF E&M SAFETY AND ENERGY CONSERVATION

採用以目標為本的宣傳方式

機電署繼續因應不同的目標羣體採取合適的宣傳手法和方式，以提升宣傳教育的成效。舉例而言，氣體標準事務處自2022年12月至今走訪200多家幼稚園，更帶同機電署的吉祥物進行部分探訪活動，以輕鬆有趣的形式帶出氣體安全的訊息。探訪活動大受幼童歡迎，因此，氣體標準事務處會在未來持續採用這種方式，從小培養兒童對氣體安全的意識。氣體標準事務處亦在疫情後加強針對少數族裔及外傭的宣傳工作，與融匯—少數族裔人士支援服務中心、明愛亞洲外地勞工社會服務計劃及外勞事工中心等服務機構合作舉辦講座及設置街站，為不同種族的人士提供氣體安全資訊。

Adopting a Target-oriented Promotional Approach

The EMSD continued to tailor its promotional tactics and approaches for different target groups to enhance the effectiveness of publicity and education. For example, the GasSO has visited more than 200 kindergartens since December 2022 to date, and even brought along the EMSD mascots in some of the visits to convey gas safety messages in a fun and lighthearted manner. As the visits were well-received by toddlers, the GasSO will continue to adopt this approach in the future to help instill gas safety awareness in children from a young age. The GasSO also stepped up its promotional efforts targeting ethnic minorities and foreign domestic helpers after the epidemic by collaborating with service organisations, such as the Centre for Harmony and Enhancement of Ethnic Minority Residents, Caritas Asia Migrant Workers Social Service Project and Mission for Migrant Workers, to organise seminars and set up street booths, so as to disseminate gas safety information to people of different ethnicities.

機電署因應不同的目標羣體採取合適的宣傳手法和方式，以提升宣傳教育的成效。自2022年12月至今，氣體標準事務處已走訪200多家幼稚園，更帶同機電署的吉祥物進行部分探訪活動；在疫情後亦加強針對少數族裔及外傭的宣傳工作，舉辦講座及設置街站，為不同種族的人士提供氣體安全資訊。

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鞏固跨境合作聯繫

加強與內地伙伴合作

機電署各部別與內地的對口單位繼續緊密合作。機電署與國家海關總署(海關總署)的《機電產品安全及能源效益合作安排》(《合作安排》)於2023年已實施第20個年頭。2023年2月，機電署與海關總署續簽為期四年的《合作安排》，繼續就機電產品的安全及能效事宜保持聯繫和合作，並按既定機制互相通報懷疑不合規格的機電產品。此外，電力法例部與代表中國內地參與國際電工委員會的中國電器科學研究院和中國家用電器研究院進行交流，討論電氣產品相關國際安全標準的最新發展。同時，我們透過兩所研究院向國際電工委員會匯報和反映香港對電氣產品相關安全標準的關注和意見，以供更新標準時考慮。電力法例部亦與國家市場監督管理總局及其屬下的廣東省市場監督管理局交流兩地在回收不安全電氣產品方面的規管要求和管理機制。

REINFORCING CROSS-BOUNDARY CO-OPERATION

Strengthening Cooperation with the Mainland Counterparts

Various divisions of the EMSD continued to work closely with their Mainland counterparts. The Cooperation Arrangement on Electrical and Mechanical Products Safety and Energy Efficiency (Cooperation Agreement) between the EMSD and the General Administration of Customs of the People's Republic of China (GACC) has taken effect for the 20th year in 2023. The EMSD and the GACC renewed the Cooperation Agreement for a term of four years in February 2023, continuing to maintain communication and cooperation on E&M product safety and energy efficiency, as well as maintaining reciprocal reporting of suspected non-compliant E&M products according to the established mechanism. In addition, the ELD engaged in exchanges with the China National Electric Apparatus Research Institute and the China Household Electric Appliance Research Institute, which are the Mainland members of the International Electrotechnical Commission (IEC), discussing the latest developments in the international safety standards for electrical products. Meanwhile, Hong Kong's concerns and opinions regarding safety standards for electrical products were reported and conveyed through the two Institutes to the IEC for consideration when the standards were to be updated. The ELD also exchanged views with the State Administration for Market Regulation and its subsidiary Guangdong Administration for Market Regulation regarding the regulatory requirements and management mechanisms for the recall of unsafe electrical products.

在節能方面，機電署聯同環境及生態局與廣東省科學技術協會合辦第三屆「綠色創科日」，吸引了超過160名來自創科和機電業、大學及公營機構等界別的人士親臨參與，以及超過100 000人次觀看網上直播。活動期間，機電署與大灣區及內地其他城市的六所專業機構簽署《粵港澳大灣區既有建築節能改造合作備忘錄》，以推動研發及推廣優良節能改造方案，提升建築物的能源效益。

For energy conservation, the EMSD, the Environment and Ecology Bureau and the Guangdong Provincial Association for Science and Technology jointly hosted the third Green I&T Day, which attracted more than 160 participants from various sectors including the I&T and E&M trades, universities and public organisations, as well as more than 100 000 views for its live broadcast. During the event, the EMSD signed the Memorandum of Cooperation on Building Energy Saving Retrofit in Guangdong-Hong Kong-Macao Greater Bay Area with six professional organisations of the Greater Bay Area and other Mainland cities to drive research and development as well as promotion of good practices in energy saving retrofits, and thereby enhancing building energy efficiency.

在氣體安全方面，氣體標準事務處就氫能發展、輸港家用氣體爐具安全、電動車維修培訓等，積極與多個內地對口單位和業界組織建立緊密聯繫和溝通渠道。我們與海關總署能效小組會面，探討設立綠色通道運送氫氣到港的可行性；就香港建設、安裝和營運加氫站的第三方認證，諮詢中國質量認證中心；又到北京和大灣區進行考察，與當地政府及氫能業界探討氫燃料發展及相關技術等。此外，氣體標準事務處促成香港電燈有限公司與廣東省科學院合作，使用無人機在空中進行視察，檢查連接南丫發電廠及廣東大鵬液化天然氣接收站的海底管道有否漏氣跡象。

In the area of gas safety, the GasSO established close ties and communication channels with several Mainland counterparts and industry organisations regarding the development of hydrogen energy, the safety of domestic gas appliances supplied to Hong Kong, and training in electric vehicle maintenance. Meetings were held with the energy efficiency unit of the GACC to discuss the feasibility of setting up a green channel for delivering hydrogen to Hong Kong. Moreover, the GasSO consulted the China Quality Certification Centre about third-party certification for the construction, installation and operation of hydrogen refilling stations in Hong Kong. The GasSO also dispatched staff to visit Beijing and the Greater Bay Area to explore the development of hydrogen fuel and relevant technologies with the local governments and hydrogen industry. In addition, the GasSO facilitated the collaboration between the Hongkong Electric Company Limited and the Guangdong Academy of Sciences to use drones for aerial inspection to check for any signs of gas leakage in the subsea pipeline connecting the Lamma Power Station and the Guangdong Dapeng Liquefied Natural Gas Terminal.

在鐵路安全的合作方面，在香港和內地恢復通關後，於2023年3月，國家鐵路局副局長率領高級別代表團到訪廣州及香港，與鐵路科就廣深港高速鐵路(高鐵)的安全監管機制交流意見，對香港的高鐵設施進行聯合檢測，並舉行了季度會議。

In the cooperation on railway safety, upon resumption of normal travel between Hong Kong and the Mainland, in March 2023, the Deputy Administrator of the National Railway Administration (NRA) led a high-level delegation to Guangzhou and Hong Kong. During the visit, they shared views on the safety monitoring and regulatory mechanism of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL), conducted a joint inspection of XRL facilities in Hong Kong, and held the quarterly meeting with the RB.

提升公眾機電安全及節能意識
RAISING PUBLIC AWARENESS OF E&M SAFETY AND ENERGY CONSERVATION

區域及國際合作

氣體標準事務處的代表參加了西太平洋地區燃氣用具認證會議，介紹香港的強制性標籤計劃，並講解氣體煮食爐及即熱式氣體熱水爐也會納入強制性標籤計劃。

鐵路科參加了在西班牙舉行的國際鐵路安全議會(議會)2022年度會議，並在會上發表三份報告，分享以創科解決方案提升鐵路安全的經驗。鐵路科正聯同國家鐵路局和港鐵公司，向議會爭取主辦2025年或2026年的年度會議，冀能透過會議分享中國內地及香港在提升鐵路安全方面的成果，並加強國際交流和協作，以提升本地及國際的鐵路服務水平與安全。

電力法例部參加了亞太區經濟合作組織第29次電氣及電子設備聯合規管諮詢委員會會議暨研討會，在會上發表兩份有關一般家用電氣產品以及電子商貿平台供應家用電氣產品的規管機制的報告。

一般法例部在年內積極籌備將於2023年9月舉行的第71屆國際纜車監管機構會議，屆時會與各成員地區的監管人員、專家、專業人士和學術界人士，交流有關纜車系統安全的行政管理和規管方式。

機電青少年大使計劃推動青少年發展

過去一年，機電署透過機電青少年大使計劃舉辦多項活動，向青少年提供機電安全、能源效益及機電工程的知識，讓他們以機電青少年大使的身分推廣相關的正確信息和良好習慣。我們舉辦的活動包括：多個「設計思維工作坊」，以激發年青新一代在創新科技和可再生能源等方面的創意潛能；「機電知識鬥一番」網上問答比賽，以鼓勵會員增進有關機電安全的知識；以及每月網上STEM工作坊，讓會員可以親手建造不同的機電設備模型，將所學知識付諸實踐。此外，我們更於疫情過後復辦實體導賞團，讓會員參觀啟德區域供冷系統及教育徑，學習各項機電知識和應用。

Regional and International Cooperation

The GasSO representatives attended the Western Pacific Gas Appliance Certification Meeting, at which the MEELS of Hong Kong was introduced. The representatives also supplemented that gas cookers and gas instantaneous water heaters were to be included in the MEELS.

The RB attended the 2022 annual meeting of the International Railway Safety Council (IRSC) held in Spain. At the meeting, the RB gave three presentations to share its experience in using I&T solutions to enhance railway safety. The RB, together with the NRA and the MTRCL, is bidding to host the IRSC annual meeting in 2025 or 2026, with a view to sharing the achievements of the Mainland and Hong Kong in railway safety, as well as enhancing international exchange and collaboration through the meeting, and thereby elevating the standards and safety of railway services both locally and internationally.

The ELD attended the 29th Meeting cum Workshop of the Joint Regulatory Advisory Committee on Electrical and Electronic Equipment of the Asia-Pacific Economic Cooperation and made two presentations about the regulatory regimes governing general household electrical products and the household electrical products supplied on e-commerce platforms.

During the year, the GLD had been actively preparing for the 71st International Meeting of Technical Authorities for Cableways to be held in September 2023. In the meeting, it will exchange views with regulators, experts, professionals and academia from member jurisdictions regarding the administration and regulation of the safety of cableways.

Promoting Youth Development through E&M Young Ambassador Programme

The EMSD held various activities through the E&M Young Ambassador (EMYA) Programme over the past year to provide young people with knowledge about E&M safety, energy efficiency and E&M engineering, so that they, being E&M young ambassadors, could promote the related correct messages and good habits. The activities that we organised included a number of Design Thinking Workshops to stimulate the creative potential of the younger generation in areas such as innovative technology and renewable energy, the EMYA Online Quiz Competition to encourage members to enhance their knowledge of E&M safety, and monthly online STEM workshops for members to construct different models of E&M facilities by applying their knowledge practically. In addition, after the epidemic, we resumed physical guided tours for members to visit the Kai Tak DCS and the Education Path, so that they could learn various E&M knowledge and applications.

機電署透過機電青少年大使計劃舉辦多項活動，例如STEM工作坊，並在社交媒體平台上發放宣傳訊息，向青少年提供機電安全、能源效益及機電工程的知識，讓他們以機電青少年大使的身分推廣相關的正確信息和良好習慣，將所學知識付諸實踐。

The EMSD held various activities through the EMYA Programme, such as STEM workshops, and propagated promotional messages on social media platforms, to provide young people with knowledge about E&M safety, energy efficiency and E&M engineering, so that they, being E&M young ambassadors, could promote the related correct messages and good habits, as well as applying the knowledge they have acquired into practice.

加強傳媒關係

機電署十分重視傳媒關係。我們積極與傳媒聯繫並主動發放部門資訊。最近一次的傳媒聚會於3月29日舉行，主題為「節能減碳　邁向碳中和」。署長聯同高層管理人員主持聚會，介紹強制性標籤計劃，以及講述我們如何教育公眾節能省錢並實踐節能減碳的生活模式。在聚會中，高層管理人員向20多家傳媒機構講解三類產品(包括獨立式空調機、抽濕機及慳電膽)的能源效益級別標準提升和即將推行的第四階段強制性標籤計劃，並提到將定期及持續檢討強制性標籤計劃以及收緊的能效評級標準。除提升評級標準外，機電署亦會研究制訂最低能源效益要求，讓指定的器具必須達至最低能源效益標準，才可在香港供應。此外，我們安排了多場傳媒簡報會，以互動方式向傳媒及公眾介紹機電署最新的科技應用項目及成果。

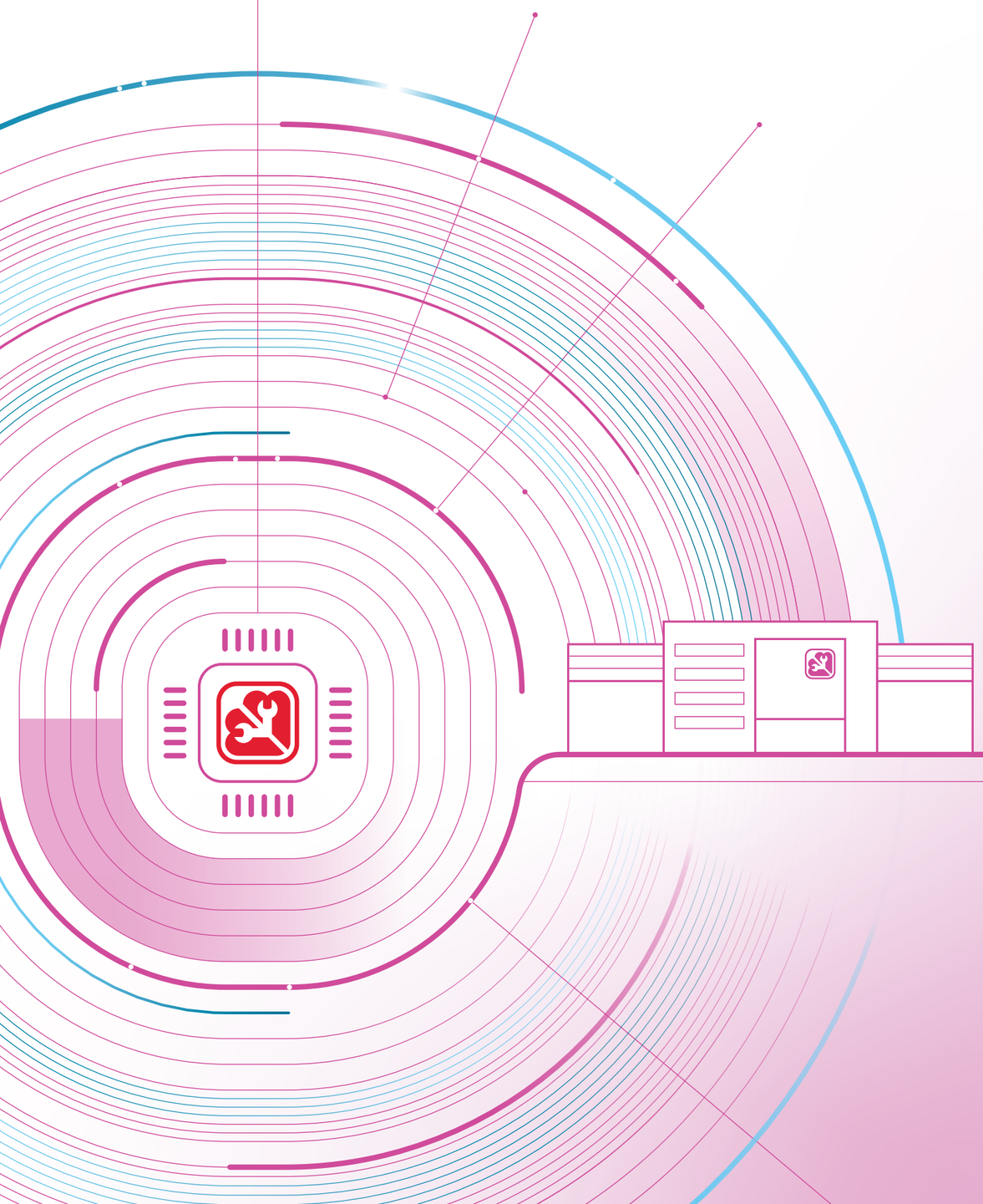
Strengthening Media Relations

The EMSD highly values media relations. We proactively engaged with the media and disseminated departmental information to them. The latest media gathering was held on March 29, with the theme of "Energy Saving and Carbon Reduction – Towards Carbon Neutrality". The Director of Electrical and Mechanical Services, along with the senior management, hosted the gathering in which they introduced the MEELS and illustrated how we educated the public on saving energy and money as well as practising an energy-saving and carbon-reduction lifestyle. At the gathering, the senior management explained to over 20 media organisations the upgrading of energy efficiency grading standards for three types of products, namely single package type room air-conditioners, dehumidifiers and compact fluorescent lamps, and the upcoming fourth phase of the MEELS. They also mentioned the review of the MEELS and the tightening of the energy efficiency grading standards would be in a regular and continuous manner. Apart from upgrading the grading standards, the EMSD will consider setting a minimum energy efficiency requirement for specified appliances before they can be supplied in Hong Kong. In addition, we arranged multiple media briefings to introduce the EMSD's latest technological application projects and achievements to the media and the public in an interactive manner.

機電署最近一次的傳媒聚會於3月29日舉行，主題為「節能減碳　邁向碳中和」。署長聯同高層管理人員主持聚會，介紹強制性標籤計劃，並講解三類產品的能源效益級別標準提升。聚會內容獲得多間傳媒廣泛報導。

The latest media gathering of the EMSD was held on March 29, with the theme of "Energy Saving and Carbon Reduction – Towards Carbon Neutrality". The Director of Electrical and Mechanical Services, along with the senior management, hosted the gathering, in which they introduced the MEELS and explained the upgrading of energy efficiency grading standards of three types of products. The content of the gathering received wide media coverage.

代代傳承　砥礪精進
Time-tested Expertise and Experience



抱負 VISION

致力提供優質機電工程服務，精益求精，以提升市民的生活質素。
To improve the quality of life for our community through continuous enhancement of our electrical and mechanical engineering services.

使命 MISSION

客戶 CUSTOMER
提供優質的工程方案，以滿足客戶的需要。
Providing quality engineering solutions to satisfy our customers' needs.

員工 STAFF
建立一支卓越的員工隊伍，並維持和諧的工作環境。
Developing a competent workforce and maintaining a harmonious environment.

部門 ORGANISATION
擁抱創新及科技提供更佳服務。
Embracing innovation and technology for service enhancement.

信念 VALUES

誠信 INTEGRITY
我們秉持誠信，維持良好道德操守。
We uphold honesty and integrity to embrace an ethical culture.

出色服務 SERVICE EXCELLENCE
我們提供安全可靠、高效率、具成本效益及利惠環保的全面優質服務。
We provide comprehensive quality services that are safe, reliable, efficient, cost-effective and environment-friendly.

關懷 CARING
我們關懷員工、客戶和市民大眾，並重視環保。
We care for our staff, customers, community and the environment.

以客為本 CUSTOMER FOCUS
為滿足客戶的各種需要，我們盡心竭力，積極提供工程方案，以贏取客戶的信任和支持。
We focus on the needs of our customers and provide engineering solutions in a proactive and responsible manner to win their trust and support.

靈活創新 AGILITY AND INNOVATION
我們重視靈活及創新的企業文化。
We treasure our agile and innovative corporate culture.

承擔 COMMITMENT
我們言行一致，信守承諾。
We do what we promise.

機電工程營運基金報告
ELECTRICAL AND MECHANICAL SERVICES TRADING FUND REPORT

常務委員會
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劉俊傑太平紳士
Mr Lau Chun-kit, Ricky, JP

發展局常任秘書長(工務)
Permanent Secretary for Development (Works)

成員 MEMBERS

周紹喜太平紳士
Mr Chau Siu-hei, Francis, JP

發展局副秘書長(工務)3
Deputy Secretary for Development (Works) 3

彭耀雄太平紳士
Mr Pang Yiu-hung, JP

機電工程營運基金總經理(機電工程署署長)
General Manager, EMSTF
(Director of Electrical and Mechanical Services)

陳志偉太平紳士
Mr Chan Chi-wai, Richard, JP

機電工程署副署長 / 營運服務
Deputy Director/Trading Services, EMSD

秘書 SECRETARY

韋美珠女士
Ms Wai Mei-chu, Jenny

機電工程署署理主任秘書
Departmental Secretary (Acting), EMSD

* 張遠芳太平紳士出任機電工程署副署長 / 營運服務至2022年11月27日
Mr Cheung Yuen-fong, JP was Deputy Director/Trading Services, EMSD up to 27 November 2022

管理委員會
MANAGEMENT BOARD

主席 CHAIRMAN

彭耀雄太平紳士
Mr Pang Yiu-hung, JP
機電工程營運基金總經理
（機電工程署署長）
General Manager, EMSTF
(Director of Electrical and
Mechanical Services)

成員 MEMBERS

02 **陳志偉太平紳士**
Mr Chan Chi-wai, Richard, JP
機電工程署副署長 / 營運服務
Deputy Director/Trading Services, EMSD

03 **陳嘉聰先生**
Mr Chan Ka-chung
機電工程署助理署長 /1
Assistant Director/1, EMSD

04 **楊秀權先生**
Mr Yeung Sau-kuen, Sammy
機電工程署助理署長 /2
Assistant Director/2, EMSD

05 **李學賢先生**
Mr Lee Hok-yin, Arthur
機電工程署助理署長 /3
Assistant Director/3, EMSD

06 **李慧儀女士**
Ms Lee Wai-yee
機電工程署總庫務會計師 / 財政管理
Chief Treasury Accountant/
Financial Management, EMSD

07 **劉志偉先生**
Mr Lau Chi-wai, Wilfred
機電工程署員工關係主任
Staff Relations Officer, EMSD

08 **韋美珠女士**
Ms Wai Mei-chu, Jenny
機電工程署署理主任秘書
Departmental Secretary (Acting), EMSD

秘書 SECRETARY

09 **王瑩瑩女士**
Ms Wong Ying-ying, Regina
機電工程署高級機電工程師 / 技術服務
Senior Engineer/Technical Services, EMSD

* 張遠芳太平紳士出任機電工程署副署長 / 營運服務至2022年11月27日
Mr Cheung Yuen-fong, JP was Deputy Director/Trading Services, EMSD up to 27 November 2022
* 黃偉光先生出任機電工程署助理署長 /2至2022年10月31日
Mr Wong Wai-kwong was Assistant Director/2, EMSD up to 31 October 2022
* 馮子峯先生出任機電工程署助理署長 /2至2023年4月16日
Mr Fung Chi-fung was Assistant Director/2, EMSD up to 16 April 2023
* 陳志偉太平紳士出任機電工程署助理署長 /3至2022年11月27日
Mr Chan Chi-wai, Richard, JP was Assistant Director/3, EMSD up to 27 November 2022
* 朱雲楓先生出任管理委員會秘書至2022年11月27日
Mr Chu Wan-fung, Ryan was the Secretary of Management Board up to 27 November 2022

業務回顧與前瞻
OPERATIONS REVIEW AND OUTLOOK

陳志偉太平紳士
Mr Chan Chi-wai, Richard, JP
機電工程署副署長 / 營運服務
Deputy Director/Trading Services, EMSD

機電工程營運基金於2022/23年度的業務維持穩健增長，總收入由2021/22年度的87.19億港元增加至2022/23年度的89.11億港元，增幅約為2.2%。收入回報率稍微下降至2.6%，符合我們收回成本的營運原則。收入減少主要由於去年，特別在2019冠狀病毒病疫情期間，我們為客戶提供的增值服務大幅增加，務求與客戶部門共渡難關，讓他們保留資金提供公共服務。

The operations of the Electrical and Mechanical Services Trading Fund sustained steady growth in the year 2022/23. The total revenue increased from HK$8,719 million in 2021/22 to HK$8,911 million in 2022/23, representing a growth of approximately 2.2%. The return on revenue slightly decreased to 2.6%, which was aligned with our cost recovery principle. The decrease could be attributed to a significant increase in the amount of value-added services provided to our customers last year, particularly during the Coronavirus Disease 2019 (COVID-19) epidemic, which were our endeavours to ride out difficult times with our client departments and help them retain funding for delivery of public services.

豐碩成果

2022/23年度可說是營運基金的豐收年。我們所說的「豐收」，並不是指收入或員工人數大幅增加，而是指三方面的重大成就。

首先，我們在2022年10月至12月進行的最新客戶意見調查中，獲得客戶熱烈回應並取得優異成績。客戶滿意指數和整體服務競爭力指數分別為7.03分及7.06分，回覆率為58.7%，三者均創歷史新高。

其次，我們的優質服務以及在推動創新科技(創科)方面的努力，在本地和國際比賽中備受肯定。機電署在2022年公務員優質服務獎勵計劃取得前所未有的佳績，共贏得13個獎項。再者，作為政府的「創新促成者」，我們致力推行不同創科項目，年內亦獲得多個獎項，例如在享負盛名的2023年日內瓦國際發明展中獲得二十三個獎項，包括一項特別獎、三項金獎、七項銀獎及十二項銅獎，成績尤其令人鼓舞。

此外，我們一直積極推廣知識管理，以提升工作效率和質素。我們在這方面的工作獲得多項殊榮，例如2022年香港最具創新力知識型機構大獎及2022年全球最具創新力知識型機構大獎。鑑於我們在第二個五年策略計劃推行期間對數碼化、培養創科文化及人才發展等方面投入資源，讓我們迎來碩果纍纍的豐收期。

BUMPER HARVEST

2022/23 could be seen as a year of good harvest for the EMSTF. By "harvest", we do not mean substantial increases in revenue or headcount, but rather key achievements in three aspects.

To begin with, our latest Customer Opinion Survey conducted between October and December 2022 received enthusiastic customer responses and excellent results. The Customer Satisfaction Index recorded 7.03 and the Overall Service Competitiveness Index reached 7.06, while the response rate was 58.7%, marking record highs for all three indicators.

In addition, our commitment to quality services and efforts in promoting innovation and technology (I&T) garnered significant recognition in both local and international competitions. Of note, the EMSD surpassed previous achievements in the Civil Service Outstanding Service Award Scheme by winning an impressive total of 13 awards in 2022. As the Innovation Facilitator of the Government, we spearheaded various I&T projects that won multiple awards during the year. Particularly remarkable was our performance at the prestigious International Exhibition of Inventions of Geneva 2023 where we clinched a total of twenty-three awards, including one special award, three gold, seven silver and twelve bronze medals.

Furthermore, we have always been proactive in promoting knowledge management to enhance work efficiency and quality. Our initiatives in this regard were recognised with notable accolades such as the Hong Kong Most Innovative Knowledge Enterprise (MIKE) Award 2022 and the Global MIKE Award 2022. Thanks to the investments we have made in digitalisation, fostering an I&T culture, and talent development during the implementation of the second Five-year Strategic Plan, we are now entering the harvest stage of fruitful achievements.

業務回顧與前瞻
OPERATIONS REVIEW AND OUTLOOK

業務亮點

過去一年，我們的同事在處理突發事件和應對挑戰時表現出色，並展現靈活變通的特質。舉例而言，在2022年6月一座電纜橋起火導致新界西地區大停電的事故中，同事齊心協力，迅速應變，全力支援處理這次區域性緊急事故，協助醫院及其他客戶設施順利渡過難關。

年內，我們與客戶部門在多個基建工程項目上緊密合作。我們為多個政府部門設計、建造及校驗香港國際機場三跑道系統的機電系統，包括海關、出入境及港口衞生管制設施。我們也在將軍澳－藍田隧道(將藍隧道)和將軍澳跨灣連接路通車前，提供機電支援及技術評估，包括系統設計的建議、測試及校驗、廠內和現場驗收測試等。

隨着這些基建工程項目展開，新商機也開始出現。我們獲委託為新北跑道及滑行道助航燈系統提供維修保養服務，以及監督將藍隧道營辦商的營運和監察將藍隧道的交通燈系統。

除此之外，我們投得三份標書，為五間醫院的機電、空調和屋宇裝備系統設備提供維修保養服務。隨着兩個十年醫院發展計劃推進，我們預期業務會進一步增長。

抗疫啟示和經驗

2019冠狀病毒病疫情為我們的團隊帶來前所未有的挑戰，但同時也造就了龐大的合作和創新機遇，對我們日後的工作大有裨益。我們從抗疫工作中汲取的寶貴經驗，是創新科技方案可在應對各種挑戰時發揮重要作用。有見及此，我們的同事更積極推動創科應用及研發，例如運用機械人進行清潔消毒或運送工作，以及在病房安裝「流動組合式 — 高效能空氣微粒子過濾器」，以把普通病房改裝成二線隔離病房。

OPERATION HIGHLIGHTS

In the past year, our colleagues demonstrated excellent performance, agility and flexibility in handling unexpected incidents and challenges. For example, when New Territories West was hit by a major power outage after a fire broke out at a cable bridge in June 2022, our colleagues' concerted effort enabled a swift response and full support in managing the territory-wide emergency, helping hospitals and other client facilities overcome the situation smoothly.

During the year, we closely collaborated with our client departments on several infrastructure projects. We supported various government departments in designing, constructing and commissioning electrical and mechanical (E&M) systems for the Three-runway System, including customs, immigration and port health control facilities, at the Hong Kong International Airport. We also provided E&M support and technical assessment, including advice for system design, testing and commissioning, factory and site acceptance tests, for the Tseung Kwan O-Lam Tin Tunnel (TKO-LT Tunnel) and the Cross Bay Link, Tseung Kwan O prior to their commissioning.

As these infrastructure projects unfold, new business opportunities emerge. We were entrusted with the maintenance services for the Airfield Ground Lighting System of the new North Runway and taxiways, as well as overseeing the operation of the tunnel operator and monitoring the traffic signal system of the TKO-LT Tunnel.

Besides, while we secured three tenders to provide maintenance services for the E&M, air-conditioning, and building services equipment of five hospitals, we anticipate further growth in our business as the two Ten-year Hospital Development Plans progress.

INSIGHTS AND EXPERIENCE GAINED FROM FIGHTING THE EPIDEMIC

Despite the unprecedented challenges posed to our team, the COVID-19 crisis has given rise to enormous opportunities for collaboration and innovation that benefitted our future work. One of the valuable lessons we learned from battling the epidemic is the significant role of innovative technology solutions in addressing various challenges. With this in mind, our colleagues became more engaged in advancing I&T application as well as research and development (R&D). Examples included the use of robots for cleaning and disinfection or delivery, and the installation of Mobile Modular High Efficiency Particulate Air Filter Units for converting general wards into second-tier isolation wards.

疫情亦為部門帶來重大改變，尤其是團隊更能發揮合作精神和靈活應變。為應付不同大型抗疫工作的營運需求，包括「圍封強檢」行動，以及為逾700間安老及殘疾人士院舍進行通風評估，我們需要跨部別緊密合作和靈活調配人手。這些經驗令我們的團隊變得更靈活更堅毅。

此外，疫情徹底改變了我們的工作方式，包括更廣泛應用資訊科技，以及採用線上線下混合模式舉行活動。這轉變不僅提升了我們的工作效率，亦在創新方面開闢了新路徑。

致力節能減碳

節能減碳是我們2022/23年度其中一項重點工作。為配合政府在這方面的目標，我們一直為客戶提供綠色方案，致力透過應用各項創新技術實現零碳排放及碳中和的願景，為香港的可持續城市發展出一分力。

我們的其中一項工作是優化空調系統。我們與醫院管理局(醫管局)及本地大學合作，為醫管局轄下多所建築物及醫院建立人工智能製冷機組優化系統，並為民航處總部的製冷機組系統實施人工智能能源優化方案。

此外，我們為17座醫院大樓進行重新校驗，找出可節能之處。我們的終極目標是擴展人工智能及大數據的應用，使上述能源優化系統能自動就能源管理和預測性維修作出指示，在提高能源效益及減少碳排放之餘，同時提升設備可靠性，最終達致比重新校驗更顯著的節能效果。

在發展可再生能源方面，我們積極研究在港珠澳大橋香港口岸安裝太陽能發電系統的可行性，以提升能源效益。未來，我們會開展更多可再生能源項目。

The epidemic has also brought about significant changes within our Department, with a stronger sense of unity and flexibility fostered within our team in particular. To meet the operational needs of various large-scale anti-epidemic efforts, including "restriction-testing declaration" operations and ventilation assessments for over 700 residential care homes for the elderly and persons with disabilities, seamless cross-divisional co-ordination and flexible manpower deployment were required. These experiences have made our team more agile and resilient.

Moreover, the epidemic has revolutionised our approach to work, including wider application of information technology as well as adoption of a hybrid mode that enables both physical and virtual participation for events. This shift has not only enhanced our efficiency but also opened up new avenues for innovation.

COMMITTED TO ENERGY SAVING AND CARBON REDUCTION

Energy saving and carbon reduction were among our key focus areas in 2022/23. In line with the Government's goals in this regard, we have been providing green solutions to our clients. Through the application of various innovative technologies, we strived to achieve the vision of zero carbon emission and carbon neutrality, contributing to the development of Hong Kong as a sustainable city.

One of the areas we worked on was the optimisation of air-conditioning systems. We collaborated with the Hospital Authority (HA) and local universities to establish the artificial intelligence (AI) chiller plant optimisation systems for various HA buildings and hospitals, and implemented the AI Energy Optimisation Solution for the chiller plant system of the Civil Aviation Department Headquarters.

Moreover, we conducted retro-commissioning for 17 hospital buildings to identify energy-saving potential, with the ultimate goal of broadening the adoption of AI and big data, so that the aforementioned energy optimisation system can automatically provide instructions on energy management and predictive maintenance, thereby raising energy efficiency and reducing carbon emissions while enhancing equipment reliability, eventually achieving more significant energy savings than retro-commissioning.

In terms of renewable energy, we actively examined the feasibility of installing a solar photovoltaic system at the Hong Kong-Zhuhai-Macao Bridge Hong Kong Port to enhance its energy efficiency. We will undertake more renewable energy projects in the future.

業務回顧與前瞻
OPERATIONS REVIEW AND OUTLOOK

培育年輕人才

為吸引新血加入機電署及機電行業，我們與業界保持緊密合作，舉辦和參與多項活動，例如機電業博覽2022，介紹行業發展；以及「機電．啟航2022」迎新典禮，歡迎最近加入機電行業的年輕見習技術員。

此外，我們不但縮短技術員訓練計劃的培訓期，還加入最新的數碼元素和利用創新的訓練設備(例如虛擬實境技術)，以增加課程的吸引力。我們亦加強與內地及海外伙伴在人才發展和創科研發方面的合作。

NURTURING YOUNG TALENT

To attract new talent to our Department and the industry, we have maintained close collaboration with the E&M trade by organising and participating in various events, such as the E&M Expo 2022 to introduce the development of the industry, and the "E&M GO!" Orientation Ceremony 2022 to welcome on board young technician trainees who recently joined the E&M industry.

Furthermore, in addition to shortening the training period, we have enhanced our Technician Training Scheme by incorporating the latest digitisation elements and utilising innovative training facilities, such as virtual reality technology, to make our courses more appealing. Additionally, we have strengthened our co-operation with the Mainland and overseas partners in talent development and I&T R&D.

邁向新里程

2022年年底，我們把創新和環境可持續發展納入營運基金的「抱負、使命和信念」，進一步鞏固我們對提供優質服務的承諾；展示我們決心透過創科提升服務，並且重視培養靈活和創新的企業文化。

2022/23年度，營運基金第二個五年策略計劃圓滿結束。我們很高興透過「機電數碼化」、「培育卓越團隊」和「科技．創新」三大策略，達成「機電2.0」的目標。

在第二個五年策略計劃的堅實基礎上，第三個五年策略計劃將於2023/24年度展開，並以「機電3.0 — 智能機電」為主題，透過四個創新策略，即「提供以客為本創新服務」、「建構創新卓越團隊」、「創新業務流程」和「加強多方創新協作」，實現計劃目標。

2023/24年度，營運基金會繼續加強與初創企業、大學和研究機構的研發協作。我們會發揮政府「創新促成者」的角色，並擔任創科方案融合者，促進各方與客戶部門的協作，讓有價值的研發成果得以商品化和廣泛應用。

MOVING ON TO THE NEXT MILESTONE

At the end of 2022, we have incorporated innovation and environmental sustainability into the Vision, Mission and Values of the EMSTF to further solidify our commitment to providing excellent services, demonstrating our determination to provide I&T-driven enhancement while putting emphasis on fostering an agile and innovative corporate culture.

The year 2022/23 marked the conclusion of the EMSTF's second Five-year Strategic Plan, and we are delighted to have achieved "E&M 2.0" through implementing three strategies: "digitisation of E&M assets", "establishing an excellent work team", and "adoption of I&T".

Built upon the solid foundation laid down by the second Five-year Strategic Plan, the third Five-year Strategic Plan will be launched in 2023/24 under the theme of "E&M 3.0 – Intelligent E&M". The plan will be driven by four innovative strategies, namely "providing customer-oriented innovative services", "building an innovative and excellent work team", "innovating business processes", and "strengthening innovative collaboration between stakeholders".

In 2023/24, we expect the EMSTF to continue strengthening collaboration with start-ups, universities and research institutions on R&D. We will leverage the role of the Government's Innovation Facilitator and serve as an integrator of I&T solutions to facilitate collaboration among multiple parties and client departments, enabling the commercialisation and wide application of valuable R&D outcomes.

總括而言，第二個五年策略計劃取得空前成功，歸功於同事的盡心服務和客戶的信任。營運基金的穩健表現有賴常務委員會與各決策局的指導，以及各商會、業界伙伴、大學及學者、專業團體、培訓及研究機構等的鼎力支持。我們謹此向每一位深表謝意，並衷心感謝營運基金在本港、內地及海外的合作伙伴。

我們期盼營運基金來年在各方面百尺竿頭更進一步，共同努力再創佳績。

All in all, the resounding success of the second Five-year Strategic Plan is attributed to the dedication of our colleagues and the trust of our clients. The steady performance of the EMSTF would not have been attainable without the guidance of the Executive Board and policy bureaux, as well as the support of various trade associations, industry partners, universities and scholars, professional bodies, training and research institutions, and many others. We express our heartfelt gratitude to every one of them, and also our sincere appreciation to EMSTF's partners in Hong Kong, the Mainland, and overseas.

In the coming year, we look forward to making further progress in various aspects of the EMSTF, and achieving greater accomplishments together.

陳志偉
機電工程署副署長 / 營運服務

Chan Chi-wai, Richard
Deputy Director/Trading Services, EMSD

營運服務
TRADING SERVICES

科技與數碼化引領新時代

回顧2022/23年度，機電工程營運基金成功實踐第二個五年策略計劃所訂立的策略目標。我們不但推動機電資產數碼化，並協助客戶部門及機構在日常運作中廣泛應用智能方案。在發展創新科技(創科)的大趨勢下，我們鼓勵員工積極參與創科項目及比賽，優化現有的創科應用並開發更多新技術，充分發揮我們作為政府「創新促成者」的角色。

為了實現第二個五年策略計劃的「機電2.0」願景，營運基金繼續堅持不懈，致力推動「機電數碼化」。其中一個重要的里程碑，是我們五個策略業務單位所建立的各個部別區域數碼監控中心已全面投入運作，這對於機電署因應客戶需求管理日漸增多的機電設備而言，可謂至關重要。年內，我們還建立了儀表板，實時顯示多個場地的數據。

除了區域數碼監控中心外，我們還有七個分部區域數碼監控中心，利用綜合樓宇管理系統，全天候監察衞生署轄下26個場地和政府化驗所的機電設施。為配合不同場地的運作需要，醫院及診所的淡水冷卻塔水質、火警警報系統直線電話的數據，以及醫院內醫療儲存設備的溫度及供電狀態，均由區域數碼監控中心進行遙距監察。此外，區域數碼監控中心連接自動警報/故障報告系統，當偵測到機電設備有異常情況時，會實時向相關員工發送警報通知。

TECHNOLOGY AND DIGITALISATION USHER IN THE NEW ERA

Looking back on the year 2022/23, the Electrical and Mechanical Services Trading Fund successfully achieved the strategic goals set forth in the second Five-year Strategic Plan. In addition to driving the digitalisation of electrical and mechanical (E&M) assets, we assisted client departments and organisations in widely applying smart solutions in their daily operations. With the momentum of developing innovation and technology (I&T), we encouraged staff to actively participate in I&T projects and competitions for optimising existing I&T applications as well as developing new technologies to strengthen our role as the Innovation Facilitator of the Government.

The EMSTF remained steadfast in promoting "E&M digitisation" to achieve the vision of "E&M 2.0" under the second Five-year Strategic Plan. One of the important milestones was the full operation of the divisional Regional Digital Control Centres (RDCCs) set up by the five Strategic Business Units, which is of utmost importance to the management of increasing E&M equipment to meet our clients' needs. During the year, dashboards were also established to provide real-time data displays for multiple venues.

In addition to the divisional RDCCs, we have seven sub-divisional RDCCs monitoring the E&M facilities round-the-clock at 26 venues under the Department of Health and those at the Government Laboratory by using the integrated Building Management System. To meet the operational needs of different venues, the water quality of the fresh water cooling towers serving hospitals and clinics, the data of the fire alarm direct link as well as the temperature and power supply status of hospitals' medical storage equipment, are all remotely monitored inside the RDCCs. Furthermore, the RDCCs have been connected with an automated alarm/fault reporting system which would send alerts to relevant staff in real time when any abnormality of the E&M equipment is detected.

我們的區域數碼監控中心實時監察客戶設施的機電數據和能源表現，從而提升客戶機電資產的運作效率和能源效益。

Our RDCCs monitored the E&M data and energy performance of client facilities in real time, in order to enhance the operational and energy efficiency of E&M assets of clients.

營運基金在設立區域數碼監控中心方面的成果備受國際肯定。我們憑藉「智慧城市管理 — 區域數碼監控中心及人工智能平台」項目，在2022年亞太資訊及通訊科技大獎中贏得「科技類別 — 大數據分析」大獎。我們會着手把所有區域數碼監控中心整合成一個機電署中央數碼監控中心，24小時集中監控所有重要政府場地內機電設備的運作狀況，務求達致預防性維修。

落實機電資產數碼化的另一項重要措施，是發展「建築信息模擬 — 資產管理」系統。年內，我們為超過450個場地的機電資產數據進行整合和數碼化，並在其中逾90個場地採用建築信息模擬技術，更把「建築信息模擬 — 資產管理」系統的應用擴展至公共衞生檢測中心和天水圍醫院。此外，我們在2022年9月發布《建築信息模擬 — 資產管理標準及指引》第三版後，開展先導計劃，根據最新版本的標準及指引，為醫院管理局(醫管局)轄下南昌家庭醫學診所的建築信息模擬模型進行升級，務求推廣更廣泛應用建築信息模擬技術，並善用建築信息模擬模型的信息，優化整個資產生命周期的資產管理。

機電署在提倡應用建築信息模擬技術方面不遺餘力，成果廣受業界認同。例如，在2022建築信息模擬成就嘉許禮上，機電署榮膺「2022建築信息模擬機構」及「2022建築信息模擬培訓及研發機構」，而我們的「政府資產數碼化與建築信息模擬 — 資產管理系統的應用」項目則獲得「2022建築信息模擬項目」的榮譽。2022年12月，我們在發展局與建造業議會合辦的首屆香港建造業CDE — 綜合數碼共用平台大獎中榮獲機構類別銅獎。此外，我們的「機電2.0 — 數碼化旅程」項目在2022年公務員優質服務獎勵計劃中獲頒「創新及科技獎(科技應用)」銀獎。

Our effort in setting up RDCCs was well recognised by the international community. Of note, our project titled "Smart City Management – The Regional Digital Control Centre (RDCC) & Artificial Intelligence (AI) Platform" won in the Technology – Big Data Analytics Category at the Asia Pacific Information and Communications Technology Alliance (APICTA) Awards 2022. Forging ahead, we will integrate all divisional RDCCs into an EMSD Departmental Digital Control Centre, enabling centralised and round-the-clock monitoring of the operation status of E&M systems within all critical government venues, so as to facilitate predictive maintenance.

Another key initiative in the digitisation of E&M assets is the development of the Building Information Modelling – Asset Management (BIM-AM) system. During the year, we integrated and digitised E&M asset data for over 450 venues, and adopted BIM technology in over 90 of them. Application of the BIM-AM system was extended to the Public Health Laboratory Centre and Tin Shui Wai Hospital. Furthermore, following the release of the BIM-AM Standards and Guidelines Version 3.0 in September 2022, we conducted a pilot project to upgrade the BIM model of the Nam Cheong Family Medicine Clinic under the Hospital Authority (HA), according to the latest version of BIM-AM Standards and Guidelines, with a view to promoting wider adoption of BIM technology and utilising the information contained in the BIM models to facilitate asset management throughout the entire asset lifecycle.

Our advocacy of the application of BIM technology has been widely recognised by the industry. For example, at the Celebration of BIM Achievement 2022, the EMSD was named the "BIM Organisation 2022" and the "BIM Training and R&D Organisation 2022"; the project titled "Government-wide Asset Digitalisation with the Building Information Model – Asset Management (BIM-AM) System" was awarded the "BIM Project 2022". In December 2022, the EMSD won the Bronze award (Organisation Category) in the first Hong Kong Construction Common Data Environment Award jointly organised by the Development Bureau and the Construction Industry Council. In addition, we attained the Silver Prize in Innovation and Technology Awards (Best Use of Technology) in the Civil Service Outstanding Service Award Scheme 2022 for the Digitalisation Journey – E&M 2.0 project.

年內，我們為醫管局轄下南昌家庭醫學診所的建築信息模擬模型升級至第三版，以提高維修保養的效率及服務質素。

During the year, we upgraded the BIM model to version 3.0 for the Nam Cheong Family Medicine Clinic under the HA, with the aim of improving maintenance efficiency and service quality.

在2022建築信息模擬成就嘉許禮上，機電署榮膺「2022建築信息模擬機構」及「2022建築信息模擬培訓及研發機構」，肯定了我們在應用建築信息模擬技術方面的成果。

The EMSD was named the "BIM Organisation 2022" and the "BIM Training and R&D Organisation 2022" at the Celebration of BIM Achievement 2022, affirming our achievements in the application of BIM technology.

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近期建築信息模擬技術和其他創新技術的發展，促進了「機電裝備合成法」在屋宇裝備裝置上的應用。營運基金首次採用「機電裝備合成法」、建築信息模擬技術及多項數碼技術，為漁農自然護理署轄下的大龍獸醫化驗所更換製冷機組，工程中結合機械人切割技術及預製保溫技術，不但有助縮短建築期和節約所需工料，更可減低工程對客戶日常運作的影響。

The recent developments in BIM technology and other innovative technologies facilitate the adoption of Multi-trade integrated Mechanical, Electrical, and Plumbing (MiMEP) technology for building services installations. The EMSTF adopted MiMEP, BIM and multiple digital technologies for the first time in the replacement of the chillers at the Tai Lung Veterinary Laboratory under the Agriculture, Fisheries and Conservation Department. Also incorporating robotic welding technology and pre-insulated pipe technology in the works, not only was the construction period shortened and material usage saved, but the impact of the works on the client's daily operations was also minimised.

這個創新項目在歐特克香港建築信息模擬設計大獎2022中獲得榮譽獎，而項目團隊在工程及科技學會香港分會青年會員部主辦的青年科技專才展覽及比賽2022中奪得公開組冠軍。這些成就令我們更有信心在其他項目應用「機電裝備合成法」，包括為多家醫院更換鮮風機組、製冷機組和熱水系統。我們會繼續尋找更多場地和項目，推行「機電裝備合成法」。

This groundbreaking project received an Honourable Mention in the Autodesk Hong Kong BIM Awards 2022, while the project team won the Championship in the Open Section at the Young Professionals Exhibition and Competition 2022 organised by the Younger Members Section of the Institution of Engineering and Technology Hong Kong. These achievements greatly boost our confidence in adopting MiMEP technology in other projects, including the replacement of air handling units, chillers and hot water systems at various hospitals. We will continue to identify more potential venues and projects for implementing MiMEP technology in the future.

大龍獸醫化驗所更換製冷機組項目採用多種先進技術，例如運用「機電裝備合成法」技術預製機電組件，是行業發展的里程碑。圖為項目完成後的場地鳥瞰圖。

The Chiller Plant Replacement project at Tai Lung Veterinary Laboratory involved the adoption of multiple advanced technologies, such as prefabricating E&M components with the application of MiMEP technology, marking a milestone in the industry development. Pictured is the aerial view of the venue after completion of the project.

機電署首個採用「機電裝備合成法」的先導項目 — 大龍獸醫化驗所更換製冷機組，於2022年歐特克香港建築信息模擬設計大獎中獲得榮譽獎。

The Chiller Plant Replacement at Tai Lung Veterinary Laboratory, which was the EMSD's pioneering MiMEP pilot project, received an Honourable Mention at the Autodesk Hong Kong BIM Awards 2022.

屋宇裝備工程師李愷晴女士代表機電署團隊，於青年科技專才展覽及比賽2022中展示我們首個「機電裝備合成法」先導項目。團隊憑藉該項目獲得公開組冠軍。

Ms Li Hoi-ching, a building services engineer, represented the EMSD team to present our first MiMEP pilot project at the Young Professionals Exhibition and Competition 2022. The team won the Championship in the Open Section with the project.

第二代物聯網智能馬桶清潔系統由經改良的清潔機械人和衛生監察平台組成，具備自動清潔、實時數據分析及人工智能潔淨評估的功能，可確保公共設施乾淨整潔。

Consisting of an improved cleaning robot and a sanitation monitoring platform, the second generation IoT-enabled Smart Toilet Bowl Cleaning System features autonomous cleaning, real-time data analysis and AI cleanliness assessment functions to ensure the cleanliness and tidiness of public facilities.

為達成「機電2.0」的願景，除了機電數碼化外，機電署亦非常重視創新技術的開發，特別是機械人技術的研發。舉例而言，我們與香港生產力促進局合作開發第二代智能馬桶清潔系統。該系統配備物聯網監控功能，利用人工智能對馬桶內壁進行實時圖像分析，以判斷所需的清潔模式、水量、洗刷步驟和清洗頻率。我們已於機電署總部大樓的男廁測試該系統，成效令人滿意。稍後，我們會與客戶部門探討在公共廁所使用該系統。

To achieve the vision of "E&M 2.0", apart from E&M digitisation, the EMSD attaches great importance to developing innovative technologies, especially in the research and development (R&D) of robotics. For example, we collaborated with the Hong Kong Productivity Council to develop the second generation of the Smart Toilet Bowl Cleaning System equipped with Internet of Things(IoT)-enabled monitoring functions. AI is used for real-time image analysis of the inner wall of toilet bowls to determine the required cleaning mode, amount of water, scrubbing procedures and cleaning frequency. The system was tested satisfactory at a male toilet of the EMSD Headquarters Building and we will explore with client departments the application of the system in public toilets.

2022年12月，我們派遣四足機械人，參與警務處於鑽石山地鐵站舉行的反恐演習。該機械人設有顯示器和通訊系統，在警察談判組進行談判時提供支援。

In December 2022, we deployed quadruped robots equipped with video displays and inter-communication systems to assist the Police Negotiation Cadre in negotiations during an anti-terrorism exercise at Diamond Hill MTR Station.

另一個值得一提的例子，是由我們自主研發的智能路軌維護機械人。這款多功能機械人目前在醫管局轄下的蝴蝶灣洗衣房試行，可自動清潔和檢查高架鐵軌，減少工人進行高空工作的需要，從而提高運作安全性和系統可靠度。此外，我們已展開初步可行性研究，探討在香港國際機場試用地面機械人協助清潔和維修助航燈，並計劃在2023/24年度進行原型測試。

Another noteworthy example is our self-invented Smart Overhead Rail Servicing Robot. This all-in-one robot, currently under trial at the Butterfly Beach Laundry under the HA, automates cleaning and inspection of overhead rails, reducing the need for workers to work at height, and thus enhancing operational safety and system reliability. Additionally, we initiated a preliminary feasibility study on the trial of ground robots in assisting in the cleaning and maintenance of airfield ground lighting at the Hong Kong International Airport. We plan to conduct prototype testing in the year 2023/24.

機電署人員在屯門蝴蝶灣洗衣房利用智能路軌維護機械人進行路軌清潔和檢查。

The EMSD staff used the Smart Overhead Rail Servicing Robot for track cleaning and inspection at the Butterfly Beach Laundry in Tuen Mun.

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機電署在2022年公務員優質服務獎勵計劃中榮獲四個金獎、四個銀獎及五個優異獎，數目為歷年之冠，優質卓越的服務備受充分肯定。

The EMSD was honoured to be bestowed with a record number of awards, including four gold, four silver and five meritorious awards in the Civil Service Outstanding Service Award Scheme 2022, which were great recognition of our excellent services.

機電署在第48屆日內瓦國際發明展中共獲得二十三個獎項，包括一項特別獎、三項金獎、七項銀獎和十二項銅獎，這是我們參展以來奪得最多獎項的一屆。

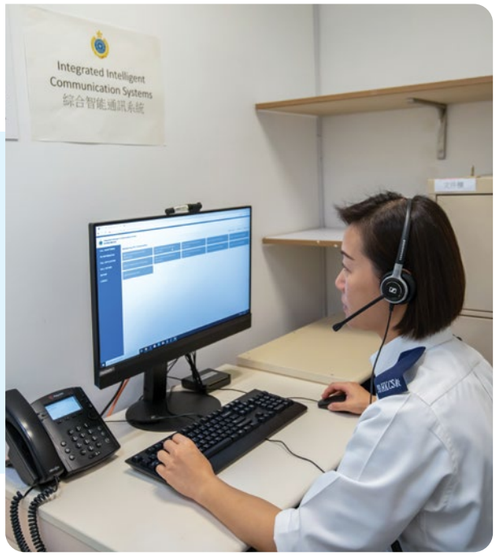
The EMSD won a total of twenty-three awards at the 48th International Exhibition of Inventions of Geneva, including a special award, three gold, seven silver, and twelve bronze medals, marking the most awards we have received since our first participation in the event.

我們的創新意念和創科應用在本地和國際上都獲得讚譽，當中專為香港醫療系統開發的智能鍋爐清潔及檢測機械人，在香港工程師學會創意獎(青年會員組)2022榮獲組別I — 發明大獎。撰文之際，機電署在2023年日內瓦國際發明展上取得佳績，榮獲二十三個獎項，包括一項特別獎、三項金獎、七項銀獎和十二項銅獎。

為了支援並推廣在各政府部門和公營機構應用創新科技，以及推動智慧城市發展，機電署一直致力透過「機電創科網上平台」，因應客戶部門的需求，為他們配對合適的初創企業、大學以至科研機構的創科方案。「機電創科網上平台」更在2022年公務員優質服務獎勵計劃中，榮獲「創新及科技獎(持份者協作)」金獎。

Our pioneering ideas and I&T applications were well recognised both locally and internationally. A highlight is the Smart Boiler Cleaning and Inspection Robot for Healthcare System in Hong Kong which won the Grand Prize in Category I – An Invention in the Hong Kong Institution of Engineers Innovation Awards (Young Member Group) 2022. At the time of writing, the EMSD achieved excellent results at the International Exhibition of Inventions of Geneva 2023, bagging a total of twenty-three awards, including a special award, three gold, seven silver and twelve bronze medals.

To support and promote the application of innovative technologies in various government departments and public organisations as well as driving smart city development, the EMSD has been matching client departments' needs with suitable I&T solutions from start-ups, universities and R&D institutions via the E&M InnoPortal, which garnered the Gold Prize in Innovation and Technology Awards (Best Stakeholder Collaboration) in the Civil Service Outstanding Service Award Scheme 2022.



為了協助懲教署提升懲教院所的運作效率及推動在囚人士更生，我們在院所安裝配備自助電話亭、顯示屏、語音辨識技術及關鍵詞分析功能的「在囚人士綜合智能通訊系統」。

To assist the Correctional Services Department in enhancing the operational efficiency of correctional institutions and facilitating the rehabilitation of PICs, we have installed the Integrated Intelligent Communication System, which is equipped with self-service telephone kiosks, display screens, voice recognition technology and keyword analysis function, at the institutions.

年內，我們為客戶部門提供多個創科方案，例如在懲教署的羅湖懲教所及大潭峽懲教所裝設專為在囚人士而設的自助電話通訊系統 —「在囚人士綜合智能通訊系統」。該系統配備自助電話亭、顯示屏、語音辨識技術和四種語言的關鍵詞識別功能，讓在囚人士可以自助方式撥打電話，而懲教人員可遙距監察通話內容，有效提高院所運作效率及推動在囚人士更生。

During the year, various I&T solutions were offered to our client departments. To cite an example, the Integrated Intelligent Communication System, a self-service telephone communication system tailored for persons in custody (PICs), was implemented at the Lo Wu Correctional Institution and the Tai Tam Gap Correctional Institution for the Correctional Services Department. Equipped with self-service telephone kiosks, display screens, voice recognition technology and keyword spotting functions in four languages, the system enables PICs to make phone calls in a self-service manner and correctional officers to remotely monitor the calls, effectively enhancing the operation efficiency of the institutions and the rehabilitation of PICs.

此外，我們利用「政府物聯通」在多所醫療及臨牀設施建立各種實時監察系統，例如在瑪麗醫院和伊利沙伯醫院安裝人工智能升降機監察系統，透過分析升降機運作數據以預測未來的維修需要。另外，為應對極端天氣引起的水浸風險，我們以瑪麗醫院作為試點，安裝了防洪監察系統，監察水浸和地下管道泄漏。系統設有超聲波水位傳感器，並連接到遠程網絡，實時監測水位的異常變動並作出通報，確保相關部門能迅速處理有關情況。

Moreover, various real-time monitoring systems were established at medical and clinical facilities by using the Government-Wide IoT Network (GWIN). For example, the AI-based lift monitoring system was installed at Queen Mary Hospital (QMH) and Queen Elizabeth Hospital to analyse lift operation data and predict future maintenance needs. In response to the flooding risk induced by extreme weather, a pilot flood monitoring system was installed at QMH for monitoring floods and underground pipeline leaks. With ultrasonic water level sensors connected to the Long Range (LoRa) network, the system detected and reported abnormal water level changes in real time, ensuring quick response by relevant parties.

營運服務
TRADING SERVICES

機電署利用創科方案加強工地安全，包括在東涌新市鎮擴展 — 填海及前期工程地盤應用安全智慧工地系統，透過「政府物聯通」基站及物聯網傳感器，遙距監察泥頭車的位置及其剎車器的操作狀況，為工人提供更安全的工作環境。

The EMSD leverages I&T solutions to enhance safety at construction sites. Such solutions included the implementation of the Smart Site Safety System at the Tung Chung New Town Extension – Reclamation and Advance Works site, where GWIN gateway and IoT sensors were used to remotely monitor the locations and hand-brake operation of dump trucks, providing a safer working environment for workers.

機電署與食環署合作引入創新科技，包括「智能火化」及其他新措施，以優化處理身後事的流程。我們獲頒2022年公務員優質服務獎勵計劃的「卓越部門合作獎」銀獎，表揚我們提升火葬場服務。

The EMSD collaborated with the FEHD to introduce innovative technologies, including "i-Cremation" and other new initiatives, to optimise the workflow for handling after-death arrangements. We were awarded the Silver Prize in Excellence in Partnership in the Civil Service Outstanding Service Award Scheme 2022, in recognition of our enhancement to crematoria services.

機電署亦在建築地盤採用「政府物聯通」，以提升工地安全。我們已為七個建築地盤建立安全智慧工地系統，包括在東涌新市鎮擴展 — 填海及前期工程地盤，利用「政府物聯通」監察泥頭車的位置及其剎車器的操作狀況。

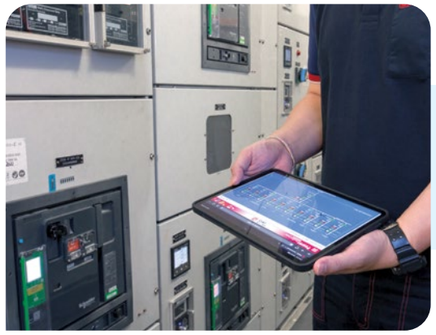
The EMSD also implemented GWIN at construction sites to enhance workplace safety. The Smart Site Safety System was established at seven construction sites, including the Tung Chung New Town Extension – Reclamation and Advance Works site, where GWIN was used for monitoring the locations and hand-brake operation of dump trucks.

為應付日益增加的火化服務需求，我們在和合石火葬場試驗人工智能優化火化流程系統（又稱「智能火化」），系統預計於2023年年底正式啟用。這個「智能火化」項目，連同食物環境衞生署（食環署）與機電署合力推行其他提升公共服務的新措施，贏得2022年公務員優質服務獎勵計劃的「卓越部門合作獎」銀獎。

To cope with the increasing demand for cremation services, the AI Based Image Analytic and Control System for Cremation Process, also known as "i-Cremation", has been piloted at the Wo Hop Shek Crematorium and is expected to be officially launched by the end of 2023. The "i-Cremation", together with other new initiatives in enhancing public services jointly implemented by the Food and Environmental Hygiene Department (FEHD) and the EMSD, won the Silver Prize in Excellence in Partnership in the Civil Service Outstanding Service Award Scheme 2022.

其他項目包括在消防處總部、將軍澳醫院、醫管局大樓及瑪麗醫院等客戶場地，推行製冷機組優化計劃。我們開發了一個人工智能模型，根據室外溫度、濕度和場地使用情況，預測機組製冷負荷需求，以決定需要啟動的機組數量和操作參數。我們又在康樂及文化事務署轄下的香港海防博物館和香港文化博物館試用智能電掣櫃，透過無線物聯網傳感器和大數據分析技術，實時分析及遙距監察電力裝置的狀況，確保電力供應穩定。

Other projects such as optimisation of chiller plants were introduced at client venues, including the Fire Services Headquarters, Tseung Kwan O Hospital, HA Building office and QMH. AI models were developed to predict the required cooling load of the chiller plants based on outdoor temperature, humidity and site usage, so as to decide the number of chiller units and operational parameters to be activated. Also, the Smart Switchboard was piloted at the Hong Kong Museum of Coastal Defence and the Hong Kong Heritage Museum under the Leisure and Cultural Services Department. Wireless IoT sensors and big-data analytic technology were used for real-time analysis and remote monitoring of the condition of electrical installations to ensure the stability of power supply.



機電署為香港文化博物館裝設智能電掣櫃，讓職員實時分析電力裝置的運作數據，並透過物聯網平台進行遙距監察。

The EMSD installed a Smart Switchboard for the Hong Kong Heritage Museum, allowing its staff to conduct real-time analysis of the operational data of electrical installations and perform remote monitoring via an IoT platform.

「國際建築機電人工智能大挑戰」頒獎典禮於2022年9月順利舉行，活動旨在表揚在人工智能大賽中表現出色的參賽隊伍；當日本地及國際專家雲集，共襄盛舉。

The Awards Ceremony of the Global AI Challenge for Building E&M Facilities was held in September 2022 to honour participating teams who staged excellent performance in the AI Competition. This grand event gathered together local and international experts.

機電署與廣東省科學技術協會合辦的「國際建築機電人工智能大挑戰」於年內圓滿結束。活動的頒獎典禮暨機電人工智能實驗室啟動禮於2022年9月舉行。該實驗室是由機電署設立，並與來自政府、業界、學術界和研究機構等各持份者共同協作的平台，旨在促成彼此建立合作伙伴關係，以支援開發建造機電設施的大數據及人工智能技術。此外，我們成立了人工智能工作小組，與其他機構探討人工智能的應用及推廣。

Our milestone event, the Global AI Challenge for Building E&M Facilities, jointly organised by the Guangdong Provincial Association for Science and Technology and the EMSD, was concluded successfully during the year. Held in September 2022, the awards ceremony of the event also marked the commissioning of the E&M AI Lab, a platform initiated by the EMSD in collaboration with stakeholders from the Government, industry, academia and research institutes, aiming to forge effective partnerships in support of the development of big data and AI on building E&M facilities. Additionally, we have established an AI Working Group to collaborate with other organisations on potential applications and promotion of AI.

機電署近年在應用創新科技方面的努力漸見成果。在第二個五年策略計劃奠定的堅實基礎上，我們已制訂主題為「機電3.0 — 智能機電」的第三個五年策略計劃，該計劃將於2023年4月展開。我們會繼續協助客戶落實各種創科方案，並與各機構合作研發創新技術。另外，我們會致力培育新血，增強團隊的創新實力，以保持競爭力和把握新機遇。

The EMSD's endeavours to apply innovative technologies have shown good results in recent years. Riding on the solid foundation laid down by the second Five-year Strategic Plan, we have formulated the third Five-year Strategic Plan, with the theme of "E&M 3.0 – Intelligent E&M", to be commenced in April 2023. We will continue to help customers adopt I&T solutions and collaborate with organisations for innovation whilst efforts will also be devoted to cultivating new talent and strengthen our teams' innovation capabilities to stay competitive and embrace new opportunities.

促進數碼化發展：推動業界應用「建築信息模擬　資產管理」

DIGITALISATION ENHANCEMENT: PROMOTING THE APPLICATION OF THE BIM-AM SYSTEM IN THE INDUSTRY

高級工程師陳賀賢先生(前排左三)與其團隊負責監督「建築信息模擬 — 資產管理」系統和部門綜合數碼共用平台的研發，以及採用物聯網技術實現「數碼分身」，從而促進智慧城市的發展。

Mr Chan Hor-yin, Steve, a senior engineer (3rd left, front row) and his team have been responsible for overseeing the development of the BIM-AM system and departmental Common Data Environment, as well as adopting IoT technologies to realise digital twins, in order to promote smart city development.

自2014年開始，機電署致力推動「建築信息模擬 — 資產管理」系統的應用，並於2018年成立建築信息模擬分部。數碼科技部高級工程師陳賀賢先生憶述：「在建造業中，建築信息模擬技術在設計和施工階段成效顯著，所以在國際上廣受讚譽。機電署預料該技術會成為業界未來大趨勢，故於九年前，已開始探索在建築物使用年期內應用該技術。」

陳先生與其專業團隊研發了首個「建築信息模擬 — 資產管理」系統原型，並以機電署總部作為試點，成功把該系統與無線及有線實時系統的解決方案結合。團隊在2016年取得專利，並於2017年發布首份《建築信息模擬 — 資產管理標準及指引》。去年，他們發布了第三版以及新的交付和驗收指引，供內部及業界參考。

隨着物聯網技術進步，團隊把無線傳感器與該系統結合，並於2019年試行後建構了「政府物聯通」，讓使用者能夠在「建築信息模擬 — 資產管理」系統中接近實時監察機電系統。他們亦與其他政府部門緊密合作，促進智慧城市發展。陳先生解釋道：「現在『建築信息模擬 — 資產管理』系統配合流動應用程式，可以顯示全面的機電設備數據，包括實時數據，以支援遙距監察和故障診斷。」他亦表示，希望採用人工智能技術，實現數碼分身；透過分析實時數據，達成預測性維修保養的目標。

在過去兩年，團隊獲得各個組別及客戶部門全力支持，成功為逾90個現有政府場地建立建築信息模擬模型。首屆「建築信息模擬 — 資產管理」應用比賽亦於去年舉行，反應熱烈。陳先生表示：「大多數參賽作品質素都很高，可見參賽者對技術應用相當了解；團隊多年來的不懈努力和內部培訓終於取得了成果，令我非常感動。」

團隊亦透過分享會及研討會，在本地和國際間推廣該技術的應用；並於五年前開始，協助承辦商和顧問開辦建築信息模擬課程。陳先生補充道：「作為香港『建築信息模擬 — 資產管理』的先鋒，我們需要加倍努力去完善系統，展示各種應用，並秉持既定的標準，以推進香港的數碼化發展。」

Since 2014, the EMSD has been promoting the application of Building Information Modelling – Asset Management (BIM-AM), and the Building Information Modelling Sub-division was established in 2018. "In the construction industry, BIM has gained wide recognition in the international arena due to its notable value in design and construction stages. Foreseeing that BIM will become a game changer in the future, the EMSD began to explore the application of BIM within the service life of buildings nine years ago," Mr Chan Hor-yin, Steve, a senior engineer of the Digitalisation and Technology Division recalled.

Mr Chan and his professional team developed the first BIM-AM system prototype, and using the EMSD Headquarters as a pilot, successfully integrated BIM-AM together with wireless and wired real-time system solutions. The team secured a patent in 2016 and published the first BIM-AM Standards and Guidelines in 2017. The third version of the standards and guidelines, together with new handover and acceptance guidelines, was published last year for internal and the trade's reference.

As Internet of Things (IoT) technologies advanced, the BIM team integrated wireless IoT sensors with the BIM-AM system, and constructed the Government-Wide IoT Network after trials in 2019, enabling near real-time monitoring of the E&M systems within the BIM-AM system. They also fostered smart city development in close collaboration with other government departments. "The BIM-AM system, combined with a mobile application, can now display comprehensive E&M equipment data, including real-time data, which assists in remote monitoring and fault diagnosis," explained Mr Chan, who also expressed the hope for adopting artificial intelligence technology to realise digital twins and thereby achieving the goal of predictive maintenance through analysis of real-time data.

With strong support from various divisions and client departments in the past two years, the BIM team has successfully constructed BIM models for over 90 existing government venues. The first BIM-AM application competition was also organised last year, and received overwhelming responses. "Most of the submissions were of high quality, which demonstrated a good understanding of BIM-AM. The team's persistent efforts and internal training over the years have finally paid off, which was profoundly moving," Mr Chan said.

The team has also been promoting the application of BIM-AM locally and internationally through sharing sessions and conferences, and started to assist contractors and consultants in offering BIM courses five years ago. "As a BIM-AM pioneer in Hong Kong, we have to work harder to improve the system, showcase various applications and uphold established standards, so as to drive ahead the development of digitalisation in Hong Kong," Mr Chan added.

年輕工程師全情投入營運基金首個「機電裝備合成法」先導項目

WHOLEHEARTED DEDICATION OF YOUNG ENGINEERS IN THE EMSTF'S FIRST MiMEP PILOT PROJECT

李愷晴女士(右)和黃芷君女士(左)是綜合工程部的年輕工程師，她們全力策展大龍獸醫化驗所更換製冷機組項目，悉心研究如何落實「機電裝備合成法」的應用，每個環節都一絲不苟。

Ms Li Hoi-ching, Chelsea (right) and Ms Wong Tsz-kwan, Chris (left), two young engineers from the General Engineering Services Division, took forward the Chiller Plant Replacement project at Tai Lung Veterinary Laboratory with utmost dedication, exploring tirelessly the ways to implement MiMEP application and taking care of every aspect meticulously.

營運基金選定大龍獸醫化驗所更換製冷機組項目作為首個「機電裝備合成法」先導項目。綜合工程部工程師黃芷君女士解釋：「『機電裝備合成法』技術通常應用在新建成的大型建築物。然而，在是次項目中，製冷機組位於現有建築物的狹窄天台上，為項目帶來更多挑戰。正因如此，這些挑戰激發了我們應用新技術方案的創新想法。我們先利用三維雷射掃描及無人機把場地及周遭環境轉化為點雲模型，然後建立建築信息模擬模型，模擬整個施工過程，包括運輸、吊裝及模組組裝。通過全面的工程模擬，我們可更有效控制項目進度和進行場地協調，並降低潛在風險。」

綜合工程部工程師李愷晴女士補充：「我們利用建築信息模擬技術，為這次更換工程設計了八個模組，並在本地的工廠完成預製模組。在組裝過程中，我們應用了預製保溫層和機械人切割等創新技術，不但可提高準繩度和效率，也可減少製造噪音和浪費材料，以及避免在狹窄環境中潛在的安全問題。」

施工前，團隊運用擴增實境技術，結合建築信息模擬模型，檢視在施工及維修期間可能遇到的限制和挑戰，以便預先制訂解決方案。黃女士說：「完工後，我們充分利用該模型，在操作和維修平台上進行實時監察，以及作進一步人工智能分析，從而優化製冷機組的運作效能。」

在無先例可循的情況下，團隊要就項目每個步驟，包括採用哪種技術，花時間研究、討論，並反覆試驗和修改，才能妥善完成工程。兩位工程師表示：「項目在疫情期間進行，物料運輸常有延誤。慶幸我們應用了『機電裝備合成法』技術，將工序簡化，令施工時間由約90天大幅縮短至38天。希望這次項目的成功經驗能為業界打下強心針，令大家更有信心在日後的維修、保養、改建及加建工程中應用該技術。」項目並於歐特克香港建築信息模擬設計大獎2022獲得榮譽獎，令團隊大感振奮。

The Chiller Plant Replacement project at Tai Lung Veterinary Laboratory was selected by the EMSTF as the first pilot Multi-trade integrated Mechanical, Electrical and Plumbing (MiMEP) project. "The MiMEP technology is typically applied in newly built large-scale buildings. However, in our project, the chillers are located on the congested rooftop of an existing building, presenting even greater challenges to the project. Yet in the light of this, the challenges sparked our innovative ideas on the application of new technological solutions. Our team embarked on transforming the site and its surrounding environment into a point cloud model by three-dimensional (3D) laser scanning and drones, and subsequently developed a Building Information Modelling (BIM) 3D model to simulate the entire construction process, encompassing delivery, hoisting and module assembly. This comprehensive simulation provided us with better control over the project progress and site co-ordination, and also helped mitigate potential risks," Ms Wong Tsz-kwan, Chris, an engineer of the General Engineering Services Division (GESD) explained.

"Through BIM simulation, we designed eight modules for this replacement project and completed the prefabrication in a local factory. During the assembly process, we applied innovative technologies such as employment of pre-insulated pipes and robotic welding, which not only enhanced precision and efficiency but also curtailed noise, material waste and potential safety issues in crowded environments," Ms Li Hoi-ching, Chelsea, an engineer of the GESD added.

Before construction, the team employed augmented reality technology in conjunction with the BIM model to inspect possible restrictions and challenges that may arise during construction and maintenance in order to develop solutions in advance. "Upon completion of the works, we fully utilised the BIM model for real-time monitoring in the operation and maintenance platforms and further semantic artificial intelligent analytics, in order to optimise the operational efficiency of the chiller plant," Ms Wong said.

Without precedent cases for reference, all steps, including which technologies to adopt, required the team to spend time exploring, discussing and repeatedly experimenting and modifying in order to complete the project. The two engineers said, "The project was executed during the epidemic when material transportation delays were common. Fortunately, the application of MiMEP technology simplified the process and significantly reduced the construction time from about 90 days to 38 days. We hope the success of this project will inspire confidence in the industry to adopt MiMEP technology for future repair, maintenance, alteration and addition works." The project was awarded an Honourable Mention at the Autodesk Hong Kong BIM Awards 2022, which was very encouraging for everyone involved.

營運服務
TRADING SERVICES

抗疫不懈 全力復常

2019冠狀病毒病疫情進入第三年，營運基金的策略業務單位繼續積極參與各項抗疫工作，與各政府部門攜手並肩，一同守護香港，戰勝疫情。我們為醫療界及相關部門提供專業及全面的技術支援，包括為醫院管理局(醫管局)提升病房設施；協助政府設立社區隔離及治療設施以應急需；以及支援客戶實施多項抗疫措施。

第五波疫情爆發後，確診個案急增，升幅前所未見，導致醫療服務需求大增，醫管局因而急需加強所提供的醫療服務。有見及此，我們爭分奪秒，把更多普通病房改裝為二線隔離病房，加快隔離病房及設施的定期維修進度，並為北大嶼山醫院香港感染控制中心提供24小時技術支援。我們亦應客戶要求在醫院病房及普通科門診診所加裝「流動組合式 — 高效能空氣微粒子過濾器」和抽氣扇，以降低感染風險。

為進一步提升香港救治2019冠狀病毒病的能力，中華人民共和國中央政府協助香港特別行政區(香港特區)政府興建六個臨時社區隔離設施，以及位於落馬洲河套區的應急醫院和方艙設施。應急醫院於2022年年底移交香港特區政府營運管理後，機電署為醫管局於3月底完成機電系統及設施的基本調校及測試工作，並在其後一個月內完成多項改善工程，包括按照用家意見及消防處指示，為電力系統和消防系統進行設定工作，確保日間放射診斷服務先導計劃順利於4月推出。

PERSISTENT ANTI-EPIDEMIC EFFORTS TO HELP RESUME NORMALCY

Entering the third year of the Coronavirus Disease 2019 (COVID-19) epidemic, our Strategic Business Units continued their unwavering efforts to participate in various anti-epidemic tasks. Working alongside various government departments, we strived to protect Hong Kong and overcome the epidemic by providing professional and comprehensive technical support to the healthcare sector and the departments concerned. Our contribution included assisting the Hospital Authority (HA) in enhancing ward facilities; helping the Government set up community isolation and treatment facilities to meet emergency needs; and supporting clients in implementing different anti-epidemic measures.

The fifth wave of the epidemic saw an unprecedented surge in confirmed cases, which resulted in a sharp rise in demand for healthcare services and therefore prompted the HA to urgently increase its service capacity. In view of this, we raced against time to convert more general wards into second-tier isolation wards, accelerate regular maintenance of isolation wards and facilities and provide round-the-clock technical support to the North Lantau Hospital Hong Kong Infection Control Centre. We also installed more Mobile Modular High Efficiency Particulate Air (HEPA) Filter Units and exhaust fans, upon clients' request, in hospital wards and General Out-patient Clinics to reduce the risk of infection.

To further enhance Hong Kong's COVID-19 treatment capabilities, the Central Government of the People's Republic of China assisted the Hong Kong Special Administrative Region (HKSAR) Government in building six temporary Community Isolation Facilities (CIFs), as well as the Emergency Hospital and Mobile Cabin Facility in the Lok Ma Chau Loop. Upon the handover of the Emergency Hospital to the HKSAR Government for operation and management at the end of 2022, the EMSD completed for the HA the basic calibration and testing of the electrical and mechanical (E&M) systems and facilities in late March, followed by a series of improvement works within a month. Based on user feedback and instructions from the Fire Services Department (FSD), we carried out customisation work on the electrical systems and fire services systems to ensure a smooth launch of the Ambulatory Diagnostic Radiology Service Pilot Programme in April.

我們協助調校及測試機電系統及設施，以應付應急醫院初期的運作需要，其後並進行了多項改善工程。我們目前正與醫管局緊密溝通，為擴大應急醫院的服務進行籌備工作。

We assisted in the commissioning and testing of E&M systems and facilities to meet the initial operational needs of the Emergency Hospital, followed by a series of improvement works. Currently, we are in close communication with the HA and preparing for the service expansion of the Emergency Hospital.

我們為啟德社區隔離設施內的各類機電設備提供操作和維修保養服務，確保機電設備運作正常，讓設施可以盡快投入服務，以應付社會對隔離設施的需求。

To meet the social needs for isolation facilities, we provided operation and maintenance services for various E&M equipment at the Kai Tak CIF to ensure proper operation of the E&M equipment, enabling its prompt commencement of service.

我們與建築署合作，為啟德社區隔離設施啟用提供支援。這個位於舊啟德機場跑道的隔離設施規模龐大，設54座樓房，每幢樓高四層，提供約3 000個單位。我們負責為機電設施進行測試和校驗，以及提供後續的維修保養服務。此外，我們為青衣、新田、洪水橋、粉嶺、元朗潭尾及港珠澳大橋香港口岸人工島的臨時社區隔離設施，提供機電技術意見和操作及維修保養服務。

We partnered with the Architectural Services Department to support the commissioning of the Kai Tak CIF. Situated at the former Kai Tak airport runway, this large-scale CIF consists of 54 blocks, each of which has four storeys, providing approximately 3 000 units. Our responsibilities included the testing and commissioning of the E&M facilities as well as the provision of subsequent maintenance services. We also provided technical advice and operation and maintenance services for other temporary CIFs in Tsing Yi, San Tin, Hung Shui Kiu, Fanling, Tam Mei in Yuen Long, and on the Hong Kong Boundary Crossing Facilities Island of the Hong Kong-Zhuhai-Macao Bridge.

營運服務
TRADING SERVICES

2019冠狀病毒病對長者及兒童的威脅尤甚，因此他們是最需要保護的一羣。有鑑於此，我們與社會福利署合作，為逾700間安老及殘疾人士院舍進行通風評估，以檢查通風設備是否符合相關要求，並提出改善建議。要在緊迫的時限內為分布全港各區的院舍完成通風評估絕非易事，有賴各相關部門同心協力，悉力以赴，我們最終在九個星期內順利完成評估工作。

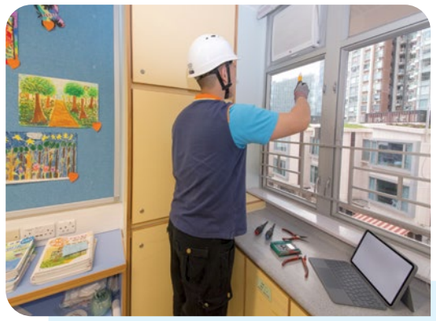
Elderly and children are particularly vulnerable to COVID-19, and thus need the most protection against the virus. In this light, we conducted ventilation assessment for some 700 residential care homes (RCHs) for the elderly and persons with disabilities, in co-ordination with the Social Welfare Department (SWD), to check whether the ventilation equipment fulfilled relevant requirements, and put forward improvement recommendations. Having to complete the ventilation assessment for all these RCHs scattered across Hong Kong within a tight time frame was an extremely daunting task, yet the task was successfully completed within nine weeks with a concerted and dedicated effort of all the departments involved.

我們繼2022年年初為全港65間官立學校進行通風系統評估後，再次與教育局合作，為官立學校進行一系列通風改善工程，以保障學生和教職員的健康。第一期工程已在2022年暑假完成，而第二期工程，包括為教員室、音樂室及多功能活動室等課室以外的地方安裝抽氣扇，已於2023年年初展開。

Further to our assessment of the ventilation systems in 65 government schools (GSs) in early 2022, we co-operated with the Education Bureau again to carry out a series of ventilation enhancement works at various GSs to safeguard the health of students and school staff. The first phase was completed during the summer holiday in 2022, whereas the second phase of the works, including the installation of exhaust fans in non-classroom areas such as staff rooms, music rooms and multi-purpose activity rooms, commenced in early 2023.

面對疫情肆虐，我們聯同社會福利署及有關決策局和部門迅速為全港逾700間安老及殘疾人士院舍評估通風系統，以減低長者感染病毒的風險。

In the face of the raging epidemic, we swiftly assessed the ventilation systems at more than 700 RCHs for the elderly and persons with disabilities all over Hong Kong in collaboration with the SWD and relevant bureaux and departments, in order to reduce the elderly's risk of virus infection.



隨着第二期通風改善工程展開，機電署為馬頭涌官立小學(紅磡灣)的英語學習室加裝抽氣扇，以助保持室內空氣流通及提升空氣質素，從而保障學生及教職員的健康。

With the commencement of the second phase of the ventilation enhancement works, the EMSD installed additional exhaust fans in the English Learning Room for Ma Tau Chung Government Primary School (Hung Hom Bay) to enhance indoor ventilation and air quality, safeguarding the health of students, teachers and school staff.

為應對疫情下緊急撤離傷病老弱人士的需要，我們為消防處把四輛24座位巴士改裝為可作抬牀運送及載客兩用的車輛，有效提升運載病人的效率。

To cope with the need for emergency evacuation of patients and the vulnerable amid the epidemic, we converted for the FSD four 24-seater buses into dual-purpose vehicles that can be used as multi-stretcher and personnel carrier, effectively enhancing the efficiency of patient transport.

第五波疫情肆虐，緊急救護服務需求急增，而安老及殘疾人士院舍的院友及職員也經常需要大批撤離以進行檢疫，以上種種均對消防處運載病人的工作造成莫大挑戰。為應對迫切需要，我們為消防處把四輛新引入的24座位巴士改裝為「抬牀運送及載客兩用車」。四部車輛均設置高效能空氣微粒子過濾系統，以改善車內的空氣質素，並配備電動尾板，以便把臥牀病人連同抬牀一併運上車內。裝設有關設施亦可保障工作人員的職業安全及健康。

The fierce fifth wave of the epidemic gave rise to a surge in demand for emergency ambulance services and frequent large-scale evacuations of residents and staff in RCHs for the elderly and persons with disabilities for quarantine, posing tremendous challenges to the patient transport work of the FSD. To address the pressing need, we converted four newly introduced 24-seater buses into Multi-stretcher cum Personnel Carriers for the FSD. All four vehicles were installed with HEPA filtration systems to improve in-vehicle air quality, and electric tailgates to facilitate the lifting of bedridden patients and stretchers onto the vehicle, which at the same time ensured occupational safety and health of staff.

此外，傳統救護車亦調配用作運載確診或疑似感染個案患者。為減低交叉感染的風險和保障救護員的健康，我們改善了救護車的空調系統，並增設高效能空氣微粒子過濾系統。年內，我們已完成逾150輛救護車的有關安裝工程，並陸續為其餘救護車進行改裝。

Conventional ambulances were also deployed to transport confirmed or suspected patients. To minimise the risk of cross-infection and protect the health of the ambulancemen, we optimised the air-conditioning systems of ambulances and installed HEPA filtration systems. The installation work for over 150 ambulances were completed during the year, and that for the rest are still in progress.

營運服務
TRADING SERVICES

2023年年初，我們落實為消防處採購兩部新型多用途感染控制救護車。這兩部救護車專為送院前治理及運載高度傳染病患者而設計和建造，不但備有負壓通風系統，其車廂布局更可輕易進行改動，以用作撤離病人，並為接駁體外膜氧合器(俗稱「人工心肺」)儀器的患者提供緊急運送服務。我們預計有關救護車將於2025年年初交付。

In early 2023, we confirmed the procurement of two new Multi-purpose Infection Control Ambulances for the FSD. These ambulances are specially designed and built for pre-hospital treatment and transfer of patients with highly infectious diseases. In addition to the equipped negative pressure ventilation systems, the interior layouts of these ambulances can be changed easily to provide patient evacuation services and emergency transport services for patients connected to an extracorporeal membrane oxygenation machine. The vehicles are expected to be delivered by early 2025.

我們亦運用科技協助客戶防疫抗疫。年內，我們在康樂及文化事務署轄下的元朗公共圖書館中央書庫安裝了自動圖書消毒系統，消毒效果理想。另外，我們陸續在多幢政府大樓安裝非接觸式升降機按鈕，以減少病毒經升降機按鈕傳播的風險。

We also assisted clients in preventing and combating epidemics with technologies. During the year, an automatic book sterilising system was installed at the Central Reserve Stack of Yuen Long Public Library under the Leisure and Cultural Services Department, with satisfactory sterilising results. Moreover, contactless lift buttons were installed progressively in various government buildings to minimise the risk of virus transmission via lift buttons.

我們致力抗疫工作，在2022年公務員優質服務獎勵計劃中獲得多個獎項，表現備受肯定。當中由19個決策局及部門合作興建社區隔離設施(包括規模最大的竹篙灣社區隔離設施)的「同心築」項目，榮獲「卓越部門合作獎」金獎；而「同心抗疫高效濾器」和「全天候監控為疫苗接種中心把關」項目，分別獲得「卓越團隊協作獎(危機管理)」及「卓越團隊協作獎(內部服務)」銀獎。

In recognition of our dedication to anti-epidemic work, we were awarded a number of prizes in the Civil Service Outstanding Service Award Scheme 2022, including the Gold Prize in Excellence in Partnership for Together We Build, a joint project by 19 bureaux and departments for building CIFs, with Penny's Bay CIF being the largest one; and the Silver Prizes in Excellence in Team Collaboration (Management of Crisis) for Together, We Filter out the Virus and in Excellence in Team Collaboration (Internal Service) for Round-the-clock Monitoring of Community Vaccination Centres.

由於疫情好轉，政府於2023年1月復辦農曆年宵市場，連續七天在全港15個地點舉行，共有114萬人次到訪。農曆新年期間，亦有不少市民到車公廟和林村等其他熱點遊玩。鑑於人流聚集帶來潛在感染風險，當局需實施適當的人流管制措施，確保公眾安全。因此，我們使用新研發的人流控制系統協助食物環境衞生署(食環署)監控各個場地的人流。該系統利用可同時感應多人進出的高架人流統計裝置，點算通過出入口的人數，以助監察人流數量並控制場內人數。

Owing to the improved epidemic situation, the Lunar New Year (LNY) fairs resumed in January 2023 for seven consecutive days in 15 locations across the territory, attracting a total of 1.14 million visitors. During the LNY, there were also a number of people visiting other popular spots such as Che Kung Temple and Lam Tsuen. Given the potential infection risk posed by large crowds, it was necessary to implement proper crowd management to ensure public safety. Thus, we deployed for the Food and Environmental Hygiene Department (FEHD) a newly developed crowd control system for monitoring the footfall at various venues. The system employed overhead people counting devices capable of sensing multiple people passing through at the same time to count the number of visitors passing through the entrances and exits, facilitating the monitoring of footfall and the control of the number of visitors inside the venues.

我們會根據在疫情中累積的經驗再接再厲，搜羅及研發不同的創新方案，全力支援客戶部門服務市民。

Building on experience in the epidemic, we will continue to explore and develop different innovative solutions for client departments to serve the public.

為協助食環署在農曆年宵市場有效實施人流管制措施，機電署採用了人流控制系統，並在機電署總部設立中央控制中心，為該署監察人流量及提供可靠的技術支援。

To assist the FEHD in effectively implementing crowd control measures at the LNY fairs, the EMSD deployed the crowd control system and established a Central Control Centre at the EMSD Headquarters to monitor the footfall and provide reliable technical support for the department.

迅速動員 克服萬難 確保應急醫院順利開展服務

RISING TO THE CHALLENGE WITH SWIFT MOBILISATION TO ENSURE SMOOTH SERVICE COMMENCEMENT OF EMERGENCY HOSPITAL

高級工程師葉煒堂先生(前排左三)及其團隊被委以重任，秉持不屈不撓的「機電署精神」，在短時間內為多項系統及儀器進行測試，讓中央援港應急醫院得以如期投入第一階段服務。

Mr Yip Wai-tong, a senior engineer (3rd left, front row), and his team rose to the occasion with the EMSD's spirit of resilience to perform various testing, and enabled the Central Government-aided Emergency Hospital to timely commence its phase-one services.

2022年12月30日，中央政府把中央援港應急醫院(應急醫院)移交香港特別行政區政府。其後於2023年1月13日，機電署與醫務衞生局簽訂服務水平協議，為應急醫院的機電系統和生物醫學儀器提供操作及維修保養服務。

為協助應急醫院順利啟用，衞生工程部從轄下場地及其他衞生工程部分部迅速調配具備不同技能的人手，組成一支專責應對這項緊急工程的工作小組。醫院位於偏遠的落馬洲河套區，靠近邊境且毗鄰建築地盤，交通及配套設施有限。有見及此，管理層為工作小組妥善安排交通運輸配套，並設立臨時設施，以支援團隊並確保其運作順暢。衞生工程部高級工程師葉煒堂先生是工作小組一員，他在召集人手時，同事一呼百應，他對此深表讚賞。

團隊充分發揮「機電署精神」，竭盡所能在短時間內為設備進行多項測試工程。在2023年3月底，團隊已完成院內各個機電、空調及屋宇裝備系統以及生物醫療儀器、一般電子設備和操作輔助設施的基礎調校、測試工作。

葉先生表示：「在測試和校驗階段，我們致力在系統及設備開始正常運作之前，模擬故障情況和緊急轉換流程。這項工作甚具挑戰且相當艱難。再者，要將該院轉型為可長遠營運的常規醫療設施，以持續提供日常臨牀醫療服務，實在是另一重大挑戰，這需要我們與相關持份者進行有效溝通並相互理解。」

全賴團隊上下一心、羣策羣力，應急醫院已於2023年4月25日開始首階段營運，而日間放射診斷服務先導計劃也如期展開。機電署會因應醫院管理局就應急醫院訂定的另一個營運模式，繼續為該院提供校驗服務。

The Central Government handed the Central Government-aided Emergency Hospital (Emergency Hospital) over to the Government of the Hong Kong Special Administrative Region on 30 December 2022. Subsequently, on 13 January 2023, the EMSD and the Health Bureau signed a Service Level Agreement for providing operation and maintenance services for the E&M systems and biomedical equipment of the Emergency Hospital.

To facilitate the commissioning of the Emergency Hospital, the Health Sector Division (HSD) promptly redeployed internal staff with diverse skills from various venues and sub-divisions of the HSD to form a task force dedicated to this urgent task. The hospital, situated in the remote Lok Ma Chau Loop, had limited amenities and logistics support due to its proximity to the boundary and being adjacent to a construction site. In view of this, the management provided transportation and established temporary site facilities to support the team and ensure its smooth operation. Mr Yip Wai-tong, a senior engineer of the HSD as well as being a task force member, expressed deep appreciation for colleagues' swift and unwavering response to the call for assistance.

The team demonstrated the "EMSD's spirit" and dedicated themselves to completing a series of tests for the equipment within a short time frame. By the end of March 2023, the team had carried out essential adjustments and testing to various electrical, mechanical, air-conditioning, building services systems, biomedical and general electronic equipment, and auxiliary operation facilities of the hospital.

"During the testing and commissioning stage, we aimed to simulate failure scenarios and emergency changeover process before commencing normal operations of the systems and equipment. This task proved to be challenging and demanding. Furthermore, transforming the Emergency Hospital into a general healthcare facility for long-term operation that provides ongoing regular clinical services, was indeed another significant challenge, which required effective communication and mutual understanding with the stakeholders," said Mr Yip.

Thanks to the concerted effort of the team, the Emergency Hospital successfully commenced phase-one operation on 25 April 2023, with the Ambulatory Diagnostic Radiology Service Pilot Programme launched as scheduled. The EMSD will continue to provide commissioning services for the Emergency Hospital in accordance with another operation mode determined by the Hospital Authority.

處變不驚 靈活應對 全力支援香港國際七人欖球賽回歸

RESPONDING TO CHALLENGES WITH ADAPTABILITY AND FLEXIBILITY: FULL SUPPORT TO THE RETURN OF HONG KONG SEVENS

香港國際七人欖球賽重返香港大球場，黃嘉麟先生(右二)與團隊在陳嘉明先生(左二)帶領下，為賽事提供全面支援，並加強防疫措施。

As the Hong Kong Sevens returned to the Hong Kong Stadium, Mr Wong Ka-lun (2nd right) and the team, led by Mr Chan Ka-ming (2nd left), provided comprehensive support with strengthened epidemic prevention measures for the tournament.

香港國際七人欖球賽停辦三年，終於在2022年11月4日至6日再次在香港大球場舉行。由於該球賽是自疫情以來首個在香港舉辦的大型國際盛事，且參與者眾，因此政府十分關注賽事的防疫安排。

市政工程部電氣督察黃嘉麟先生與其團隊負責為賽事提供機電支援服務。他們除了為場地裝設機電設備及為直播系統提供技術支援外，還協助防疫工作。黃先生表示：「因疫情關係，我們必須迅速完成所有安裝工作，並加強各項防疫措施，例如設置大量空氣清新機以確保大球場內有充足的鮮風流通，採用消毒機械人為廂房進行空氣淨化，量度現場換氣量，以及為場內所有抽風、鮮風和空調系統進行調校、清洗、檢查及測試。有賴同事靈活應變，積極配合，我們終能如期完成任務。」

賽事吸引了大量海外觀眾之餘，還招來了「不速之客」— 颱風尼格。八號風球在比賽前數天懸掛，因此團隊須在極短時間內拆卸戶外設備並把其遷移至室內，以及加強戶外臨時電力裝置的保護措施。颱風過後，團隊又立即把所有設備恢復至正常運作狀態，確保賽事可順利舉行。黃先生說：「儘管我們在疫情和颱風雙重夾擊下面臨重大挑戰，但同事迎難而上，全力以赴支援賽事舉行。他們隨機應變，迅速採取行動，真正展現出『香港速度』。」

團隊工作繁忙，日程緊湊，但仍抽空分享專業知識。具體而言，團隊為年輕同事舉辦培訓課程，好讓他們熟悉大球場的影音設備、直播系統及計分屏幕的操作與維修保養。黃先生表示，團隊分享親身經驗，讓年輕同事更加了解大型活動的準備工作，並汲取寶貴知識，這對他們日後的工作大有幫助。

他總結道：「衷心感謝同事盡心盡力工作和各部門通力合作！大家目標一致，同心協力，讓這項國際盛事得以圓滿舉行。」

After a three-year hiatus, the Hong Kong Sevens finally returned to the Hong Kong Stadium on 4 to 6 November 2022. As the tournament was the first major international event held in Hong Kong since the epidemic, and considering the substantial number of participants involved, the Government was concerned about its epidemic prevention arrangements.

Mr Wong Ka-lun, an electrical inspector of the Municipal Sector Division, and his team are responsible for providing electrical and mechanical support for the tournament. They not only installed E&M equipment for the venue and provided technical support for the live broadcasting system, but also assisted in epidemic prevention. "Due to the epidemic, we had to complete all installation work swiftly and step up various epidemic prevention measures, such as installing numerous air purifiers to ensure adequate fresh air ventilation in the stadium, using disinfection robots for air purification in the suites, measuring on-site air changes, and conducting adjustment, cleaning, inspection and testing for all exhaust, fresh air, and air-conditioning systems in the stadium. Thanks to colleagues' agility and proactive co-operation, we were able to complete the task on schedule," Mr Wong said.

In addition to a large international audience, the tournament had a visit from an unexpected guest, Typhoon Nalgae. Typhoon Signal No. 8 was hoisted several days before the tournament, prompting the team to disassemble the outdoor equipment and relocate them indoors, as well as strengthening the protection of the outdoor temporary power supplies, all within an extremely short period of time. As soon as the typhoon was over, the team immediately restored all equipment to operational status, ensuring the smooth running of the tournament. "We encountered significant challenges under the double blow of the epidemic and the typhoon. Nevertheless, our colleagues rose to the occasion and devoted their utmost efforts to supporting the tournament. Their flexible responses and prompt actions truly embody the 'Hong Kong speed'," Mr Wong shared.

Despite a hectic schedule, the team found time to share their expertise. Specifically, training courses were organised for young colleagues to familiarise them with the operation and maintenance of the audio-visual equipment, live broadcasting system and scoreboard of the stadium. Mr Wong said that the sharing of hands-on experience allowed young colleagues to better understand the preparation work for major events, equipping them with valuable knowledge for their future work.

"I am profoundly grateful for our colleagues' dedication and the collaboration of various departments. Everyone shared the same goal and worked together to bring this international event to a successful conclusion," he concluded.

營運服務
TRADING SERVICES

綠色城市 智慧生活

營運基金積極應用新科技，確保以經濟環保、安全可靠的方式運用機電設備及能源科技，協助客戶實踐智能節能方案，藉以加快智慧城市發展步伐，並實現碳中和。

作為政府的「創新促成者」，營運基金在年內繼續支援《香港智慧城市藍圖2.0》(《藍圖2.0》)的措施。《藍圖2.0》涵蓋六個主要智慧範疇，並提出智慧鄉村先導計劃的構想。年內的亮點之一，是我們與世界自然基金會香港分會合作進行的「智慧濕地」項目。該項目獲鄉郊保育資助計劃資助，利用物聯網技術監察米埔自然保護區內的環境，既可提升濕地管理效率，並可推廣在偏遠鄉郊地區應用物聯網技術。我們已經與環境保護署(環保署)簽訂服務水平協議，為「智慧濕地」項目提供「政府物聯通」網絡覆蓋和技術建議。

為落實《藍圖2.0》所提出的「智慧出行」措施，我們繼去年為運輸署更換9 800個停車收費錶後，年內又協助該署在路旁泊車位安裝了逾10 600個新一代太陽能停車收費錶。新一代收費錶支援多種付款方式，更配備傳感器以偵測泊車位佔用情況和作遙距監察，有關的實時資訊會經「入錶易」流動應用程式發放。此外，我們為運輸署轄下十個現有多層停車場安裝停車位指引系統、車輛搜尋系統及無票進出監控系統，所有系統均已於2023年3月投入服務。

SMART LIVING IN A GREEN CITY

Through the active employment of new technologies, the EMSTF ensures the E&M equipment and energy technology are used in an economical, environmentally friendly, safe and reliable way to facilitate the implementation of intelligent energy-saving solutions by our clients, and thereby accelerating our smart city development and achieving carbon neutrality.

As the Government's Innovation Facilitator, the EMSTF continued in the year to support the Smart City Blueprint 2.0 for Hong Kong (Blueprint 2.0), which covered six major smart areas and put forward the idea of smart village pilot initiatives. A highlight of the year was the "Smart Wetland" project carried out in collaboration with the World Wide Fund for Nature Hong Kong. Subsidised by the Countryside Conservation Funding Scheme, the project enabled environmental monitoring of the Mai Po Nature Reserve through Internet of Things (IoT) technology, thereby enhancing wetland management efficiency as well as promoting the application of IoT in remote areas. We have signed a Service Level Agreement with the Environmental Protection Department (EPD) to provide Government-Wide IoT Network (GWIN) coverage and technical advice for the project.

To achieve the Smart Mobility initiatives under the Blueprint 2.0, further to the replacement of 9 800 parking meters for the Transport Department (TD) in the previous year, we installed for it over 10 600 new-generation solar-powered parking meters at roadside parking spaces in the year. These meters support multiple payment methods and are equipped with sensors for vehicle occupancy detection and remote monitoring. The relevant real-time information will be disseminated through the HKeMeter mobile application. In addition, we installed the Bay Guidance System, Car Searching System and Ticketless Access Control System for ten existing multi-storey car parks under the TD, all of which were put into service in March 2023.

機電署職員在米埔自然保護區內設置「政府物聯通」基站(右)，以提供「政府物聯通」網絡覆蓋，讓世界自然基金會香港分會可透過在保護區內安裝的傳感器遙距接收數據，從而監察淡水塘的水位及水質。

The EMSD staff set up a GWIN gateway (right) in the Mai Po Nature Reserve to provide GWIN coverage, allowing the World Wide Fund for Nature Hong Kong to receive data remotely from sensors installed in the reserve, and thus monitoring the water level and quality of the freshwater ponds.

機電署在多個政府場地安裝了物聯網可用泊車位檢視系統，包括大埔綜合大樓(左)和港島東體育館(右)。該系統利用紅綠雙色燈顯示個別車位的佔用狀況，並在入口處配備顯示屏，提供實時的可用車位資訊。

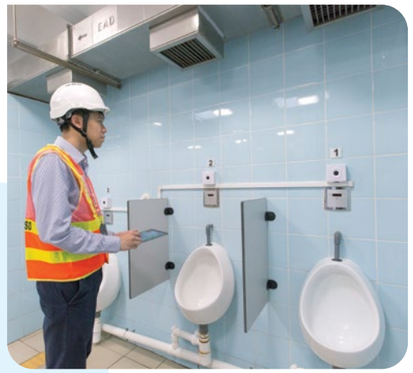
The EMSD installed the IoT-based Car Park Availability System at several government venues, including Tai Po Complex (left) and Island East Sports Centre (right). The system shows the occupancy status of individual parking spaces with red and green bicolour lights, and provides real-time information on available parking spaces with a display panel at the entrance.

繼利用物聯網的可用泊車位檢視系統在九龍公園成功試行後，我們為康樂及文化事務署(康文署)在其他市政場所安裝該系統的傳感器及室外顯示屏，以偵測車位佔用情況及實時顯示空置泊車位資料，當中以大埔綜合大樓和港島東體育館的成效尤為顯著。去年，我們又為油麻地分區警署停車場試行傳感器解決方案，結果成效理想，故此，在2023年年初亦為銅鑼灣警官會所的停車場安裝有關傳感器。目前，我們正與香港警務處探討把傳感器解決方案的應用擴展至其他地點。

《藍圖2.0》亦涵蓋「智慧環境」措施。我們參與了食物環境衞生署和康文署的智慧廁所試驗計劃，以兩署轄下17個公廁作為試點，安裝多種物聯網傳感器收集不同類型的數據，例如公廁的使用量、環境參數和設備的運作狀態等。由於試驗計劃成效優良，促成我們與漁農自然護理署合作，在四個使用率高的郊野公園廁所中裝設智慧廁所系統，以提升公共服務質素。

Following the successful trial of the IoT-based Car Park Availability System at the Kowloon Park, we installed sensors and outdoor display panels of the system at other municipal venues for the Leisure and Cultural Services Department (LCSD) for detecting parking space occupancy and enabling the display of real-time parking vacancy information, with particularly notable results seen at Tai Po Complex and Island East Sports Centre. Additionally, after the sensor solution had been trialled with good results in the car park at Yau Ma Tei Division Police Station last year, the car park of the Causeway Bay Police Officers' Club was also installed with sensors in early 2023. We are currently in discussion with the Hong Kong Police Force to extend the application of the sensor solution to other locations.

The Blueprint 2.0 also covers initiatives on Smart Environment. We participated in the smart toilet pilot programme in 17 toilets under the Food and Environmental Hygiene Department and the LCSD. Various IoT sensors were installed to collect different types of data, such as toilet usage, environmental parameters and operation status of equipment. The success of the programme prompted our collaboration with the Agriculture, Fisheries and Conservation Department to deploy the system in four high-usage country park toilets to improve service quality.



我們於九龍公園公廁增設智慧廁所系統，收集不同類型的數據，包括廁所及消耗品的使用情況；而廁所外亦會顯示可使用廁格數目及鄰近公廁等資料，以提升公共服務水平。

We installed the smart toilet system at public toilets in the Kowloon Park to collect various types of data including usage of toilets and consumables. Information such as the number of cubicles available and nearby public toilets are displayed outside the toilets to improve public service standards.

營運服務
TRADING SERVICES

在推廣「智慧生活」方面，我們與消防處合作，進一步測試「應用無人機技術的遠程網絡系統於偏遠地區提供位置追蹤」的成效。2022年8月，我們在攀山拯救專隊於船灣郊野公園訓練期間，與該隊合作測試有關技術。我們採用無人機搭載小型「政府物聯通」基站，配合遠程網絡系統和定位追蹤裝置，提高定位追蹤的準確度。有關項目於《經濟通》的「2022智慧生活夥伴大獎」中榮獲「智慧衣服 / 物聯網 / 機械人技術」類別的「傑出遠足安全系統」獎項。該項技術除了可保障遠足安全外，還可進一步在政府部門舉辦的大型戶外和水上活動中應用，以監察參加者位置，加強整體的安全措施。

To promote Smart Living, we conducted further tests on the Drone-based Long Range (LoRa) Network for Location Tracking in Remote Areas in collaboration with the Fire Services Department. In August 2022, we tested the technology with the Mountain Search and Rescue Team (MSRT) during the MSRT's training in Plover Cove Country Park by using a drone to carry a lightweight GWIN gateway (GWIN-on-Drone), which worked with the LoRa Network and positioning tracking devices, to enhance location tracking accuracy. The project was awarded the Outstanding Hiking Safety System under the Wearable/Internet of Things/Robotics category of the Smart Living Partnership Awards 2022 by etnet. In addition to hiking safety, the location tracking system can be further applied to monitoring participants' locations in large-scale outdoor and aquatic activities organised by government departments, and thereby enhancing the overall safety measures.

在上述大獎中，我們和渠務署合作開發的「智慧渠務 — 防洪監察系統」，贏得「智能建設 / 環境科技 / 綠色科技」類別的「傑出智慧防洪監察系統」獎項。另外，我們還獲得「教育科技」類別的「傑出全方位PLC培訓平台」、「房地產科技」類別的「傑出鼠患管理平台」和「智慧政府」類別的「傑出建築信息模擬及資產管理系統」等多項殊榮。以上獎項充分肯定我們為建設智慧城市所作出的貢獻。

In the same award programme, we also won the Outstanding Smart Flooding Monitoring System award in the Smart Building/Environment/Green Technology category for the Smart Drainage – Flood Monitoring System developed in collaboration with the Drainage Services Department; the Outstanding Integrated PLC Training Platform in the Education Technology category; the Outstanding Rodent Control Management Platform in the Property Technology category; and the Outstanding Building Information Modelling Asset Management System in the Smart Government category. These awards fully acknowledged our contribution to building a smart city.

我們的團隊利用無人機搭載「政府物聯通」基站，結合定位追蹤裝置，在攀山拯救專隊成員進行訓練期間實時追蹤他們的位置。這個定位追蹤系統專為偏遠地區的行動而設，能有效協助搜救人員確定傷者或失蹤人士的位置。

By utilising the GWIN-on-Drone, which worked with positioning tracking devices, our team tracked the locations of MSRT members in real time during their training. This location tracking system is specifically designed to assist search and rescue personnel in locating the injured or missing individuals effectively for operations in remote areas.

機電署與渠務署合作開發的「智慧渠務 — 防洪監察系統」，在「2022智慧生活夥伴大獎」中贏得「傑出智慧防洪監察系統」獎項。

The Smart Drainage – Flood Monitoring System, developed by the EMSD in collaboration with the Drainage Services Department, received the Outstanding Smart Flooding Monitoring System award in the Smart Living Partnership Awards 2022.

為配合《香港氣候行動藍圖2050》，營運基金積極推行多項節能減碳措施，廣受客戶和業界歡迎。我們應環保署要求，進行一系列電動車充電器安裝項目，以推廣使用電動車。有關項目包括在公眾停車場安裝數百個電動車充電器，以及裝設電力負荷管理系統和可供使用充電車位顯示系統。另外，我們正將在邊境管制站試驗充電器遙距監察系統。

In response to the Hong Kong's Climate Action Plan 2050, the EMSTF put forward a number of initiatives to save energy and reduce carbon emission, which were well received by customers and the industry. At the request of the EPD, we launched a series of electric vehicle (EV) charger installation projects to promote the use of EVs, including the installation of hundreds of EV chargers at public car parks, and the setup of the load management systems and EV charging space availability display systems. In addition, trials of a remote monitoring system for EV chargers are being conducted at boundary control points.

在2022/23年度，我們並協助路政署在其轄下的行人天橋、行人隧道、有蓋行人路及公共運輸交匯處等，把約4 090個照明設備更換成可節省能源的發光二極管(LED)燈具。我們計劃在2023/24年度繼續把另外7 020個照明設備更換成LED燈具。

In the year 2022/23, we also supported the Highways Department (HyD) in replacing nearly 4 090 lighting fixtures with energy-efficient light emitting diode (LED) luminaries at the footbridges, subways, covered walkways and public transport interchanges under the purview of the HyD. This initiative will continue in 2023/24 as we plan to replace an additional 7 020 lighting fixtures with LED luminaries.

營運基金繼續致力為醫療設施提供增值服務，務求達到減碳和可持續發展的目標。為進一步提升醫療設備維修保養的服務質素和效率，我們在2022/23年度開發了醫療儀器維修表格電子平台，並先行應用於輸液泵維修，讓本署人員可使用平板電腦存取不同品牌、型號的輸液泵的電子維修報表，不但可以簡化工作流程，以無紙化模式達致環保，更確保了維修質量並符合ISO 13485標準。我們計劃日後擴展平台的使用範圍，涵蓋其他醫療設備，以提升服務。

The EMSTF remains committed to providing value-added services to healthcare facilities to achieve carbon reduction and sustainable development goals. To further enhance our service quality and efficiency for medical equipment maintenance, the EMSTF developed a Biomedical Engineering Services (BES) e-form platform which is pilot used for the repair of infusion pumps in the year 2022/23. This platform allows our staff to access the electronic repair forms of different brands and models of the infusion pumps via tablets, not only streamlining the workflow and achieving environmental benefits by going paperless but also ensuring maintenance quality assurance to comply with ISO 13485. We also plan to extend the usage of the e-form platform to other medical equipment in the future to improve our service.

新推出的醫療儀器維修表格電子平台，可連結至維修保養手冊及內置的選項清單，並且與流動裝置兼容，讓員工能更輕易、快捷及準確地填寫醫療儀器的維修保養表格，較使用紙本表格更為方便，大大提高工作效率及服務質素。

The new BES e-form platform, which was not only linked to maintenance manuals and built-in checklists but also compatible with mobile devices, enables our staff to complete forms for repair and maintenance of medical equipment more easily, quickly and accurately than using paper forms, significantly enhancing work efficiency and service quality.

營運服務
TRADING SERVICES

此外，我們為17座醫院大樓進行重新校驗，以找出可節能之處。我們亦與醫院管理局(醫管局)及本地大學合作，為醫管局轄下的多所建築物和醫療設施建立人工智能製冷機組優化系統。截至2023年1月初，該系統已在將軍澳醫院試行約一年，共節省了5.5%能源。

Apart from that, we conducted retro-commissioning for 17 hospital buildings to identify energy-saving potential, and collaborated with the Hospital Authority (HA) and local universities to develop the artificial intelligence (AI) chiller plant optimisation system for various HA buildings and healthcare premises. A trial of the system at Tseung Kwan O Hospital for about a year until early January 2023 resulted in a 5.5% energy saving.

我們為民航處總部製冷機組系統實施的人工智能能源優化方案，亦成功減少能源消耗量達3%，成績令人滿意。

It is also noteworthy that the implementation of the AI Energy Optimisation Solution for the chiller plant system of the Civil Aviation Department Headquarters achieved promising results, with energy consumption reduced by 3%.

近年，營運基金積極提升港珠澳大橋香港口岸設施的能源效益，包括進行有關安裝太陽能發電系統的可行性研究，進行照明設備改造工程，應用人工智能技術優化區域供冷系統，以及自行開發太陽能發電的自動化學劑投藥系統。該化學劑投藥系統用於區域供冷系統的海水冷凝器，以防止海洋生物滋生。值得一提的是，我們亦為旅檢大樓的雨水收集缸進行改善工程。所收集的雨水原本僅用作灌溉，但為了善用雨水資源，我們安裝了加壓系統與雨水收集缸相連接，透過加壓系統抽出收集缸的雨水，用以清洗污水井，從而節省清水資源。

In recent years, the EMSTF has been making great effort to enhance energy efficiency of the facilities at the Hong Kong-Zhuhai-Macao Bridge Hong Kong Port by conducting a feasibility study on the installation of a solar photovoltaic system, carrying out lighting retrofit works, applying AI for optimisation of the district cooling system, and developing self-initiated solar-powered automatic chemical dosing system for the seawater condensers in the district cooling system to prevent marine organisms from growing. Also worth mentioning is the improvement work of the rainwater harvesting tanks at the Passenger Clearance Building. Originally, the collected rainwater was used only for irrigation. To make better use of the collected rainwater, the rainwater tanks are now connected to a newly installed pressure system, with which the water is pumped to clean the sewage tanks, and thus saving fresh water resources.

未來，營運基金會持續不斷地研發和使用新智能技術，以提高能源效益，為我們的客戶及市民提供更優質的服務。

Looking forward, the EMSTF will continue to develop and implement new intelligent technologies to improve energy efficiency and provide services of even higher quality to our clients and the community.

為達至提高能源效益和節能的目標，我們利用人工智能優化醫管局大樓的製冷機組，以分析及調節製冷機組的效能。

To achieve better energy efficiency and conservation, we applied AI for chiller plant optimisation at the HA Building for analysing and adjusting the performance of chiller units.

智慧渠務系統防治洪水更臻完善
PERFECTING SMART DRAINAGE SYSTEM FOR FLOOD PREVENTION

「智慧渠務 — 防洪監察系統」自2019年開發以來，發展漸趨成熟，這實在要歸功於工程師林坤然先生(右)和電子督察黃俊傑先生(左)孜孜不倦地創新突破。

The Smart Drainage – Flood Monitoring System has gradually matured since its development in 2019, thanks to the breakthroughs made by Mr Lam Kwan-yin, Henry, an engineer (right), and Mr Wang Chun-kit, Johnny, an electronics inspector (left).

為應對氣候變化對環境及社會構成的重大風險，機電署和渠務署合作開發「智慧渠務 — 防洪監察系統」。該系統在颱風季節開始運作，持續追蹤河流、海洋和渠道的實時水位及流量變化，有助及早偵測和預測潛在的水浸風險。

To address the substantial risks posed by climate change to the environment and society, the EMSD and the Drainage Services Department (DSD) collaborated to develop the Smart Drainage – Flood Monitoring System. This system, which began operation during the typhoon season, continuously tracks real-time variations in water levels and flows across rivers, seas, and channels, facilitating early detection and prediction of potential flooding risks.

負責項目統籌的保安及車輛工程部工程師林坤然先生表示：「我們目前已安裝了近140個監測點，新系統自2019年起實施，利用政府的低功率廣域網路物聯網感應器及遠距離無線攝影機，在現有排水系統內作跨平台實時防洪監察及警報。系統並整合香港天文台的數據，以進行更準確的分析。」

"Nearly 140 monitoring points have been installed so far," said Mr Lam Kwan-yin, Henry, the engineer of the Security and Vehicle Services Division (SVSD) in charge of project co-ordination. "Since 2019, we have implemented a new system utilising low-power wide-area network Internet of Things sensors (LPWAN IoT sensors) and Long Range cameras (LoRaCam) of the Government, enabling real-time cross-platform flood monitoring and alarm within the existing drainage system. Moreover, integrating data from the Hong Kong Observatory, we have more precise analysis."

保安及車輛工程部電子督察黃俊傑先生具備豐富前線經驗，「新系統更具成本效益，其成本僅為傳統測量站的二十分之一。該系統以電池運作，無需鋪設電線，安裝時間只需約一星期。此外，為了延長電池壽命，我們與渠務署協商，因應天氣變化調節量度頻率，以達節能之效。」

"The new system offers greater cost-effectiveness, costing only 1/20 of the traditional gauging stations," said Mr Wang Chun-kit, Johnny, an electronics inspector of the SVSD with extensive frontline experience. "The new system operates on batteries, eliminating the need for wiring, and requires only about a week for installation. In addition, to optimise the battery life, in consultation with the DSD, we adjust the measurement frequency in response to weather changes, in order to reduce energy consumption."

機電署最近獲委以重任，在雨季來臨前為流浮山鴨仔坑這個高風險及不穩定的水浸點裝設防洪監察系統。黃先生表示：「團隊在一周內迅速完成任務，而該監測點在其後的一場紅色暴雨中發揮作用，大大突顯了該系統的重要性。此外，我們開始對電池的生命周期進行監察，以預測何時需要更換及維修電池，這項工作有助及早規劃材料採購及維修時間表。」

The EMSD was recently entrusted with the crucial task of installing the flood monitoring system at the high risk precarious water-logging spot of Ap Tsai Hang, Lau Fau Shan prior to the rainy season. Mr Wang said, "The team efficiently completed the task within a week, and the monitoring point demonstrated its efficacy during a subsequent red rainstorm, underscoring the importance of this system. We also began battery life monitoring to predict when the battery needs replacement and maintenance, which facilitates advance planning for material procurement and maintenance schedules."

這個利用低功率廣域網路物聯網感應器及遠距離無線攝影機作防洪監察的智慧渠務系統，在2023年日內瓦國際發明展榮獲銅獎。林先生說：「獲獎固然令人鼓舞，但能夠保護公眾安全及財產才是最具意義的。我希望不斷完善系統，把其應用擴展至更多地點，日後能造福更多市民。」

The Smart Drainage System for Flood Monitoring using LPWAN IoT sensors and LoRaCam received a bronze award at the International Exhibition of Inventions of Geneva 2023. "Winning the award is certainly encouraging, but being able to protect public safety and property is what truly makes our efforts worthwhile," said Mr Lam. "I hope to continuously refine the system and see its application expand to more locations, so that even more people will benefit in the future."

營運服務
TRADING SERVICES

客戶伙伴 全力支援

為客戶的基建項目提供專業意見及支援，以及機電操作和維修保養服務，是營運基金的核心業務之一。我們的服務涵蓋多個範疇，包括道路與航空交通、邊境管制口岸、政府建築物，以及康樂場地和醫療設施等公共設施。

完善的基建配套是城市可持續發展的基石，香港深明此道。儘管面對第五波疫情，本港仍繼續推動基建發展。年內，我們與客戶部門緊密合作，推動公共基建發展，開展多個基建項目。我們的其中一項重大成就，是協助政府多個部門設計、建造和校驗香港國際機場三跑道系統的機電和電子系統，包括海關、出入境及港口衞生設施，以及採購相關家具及設備。此外，我們為香港機場管理局(機管局)提供新北跑道及滑行道助航燈系統的維修保養服務。

2022年4月，距離新北跑道啟用日期僅三個月，我們受機管局委託，為臨時航空交通管制指揮塔提供全面保養和維修服務。為了確保指揮塔的設施能順利交接並及時投入運作，我們馬上全力開展準備工作。由於時間緊迫，我們運用建築信息模擬技術來進行交接前的檢驗。建築信息模擬模型具備巡檢功能，讓我們可以在實地視察前先掌握指揮塔內各項機電設施的安裝情況，亦可預測日後的潛在維修保養問題。這種創新的檢驗方式成效卓著，項目最終如期順利交接。

CLIENTS' TRUSTED PARTNER AT ALL TIMES

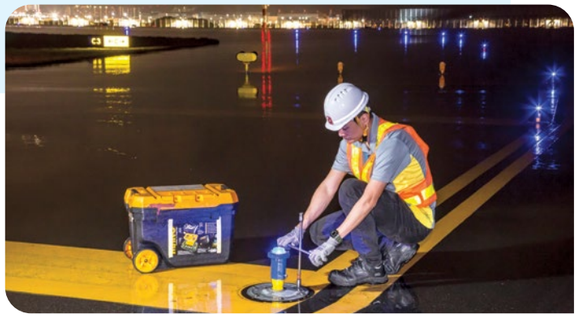
Providing professional advice and support, as well as E&M operation and maintenance services to clients for their infrastructure projects, is one of the core businesses of the EMSTF. Our services cover a wide range of areas, including road and air transport, boundary control points, government premises and public facilities, such as recreational venues and medical facilities.

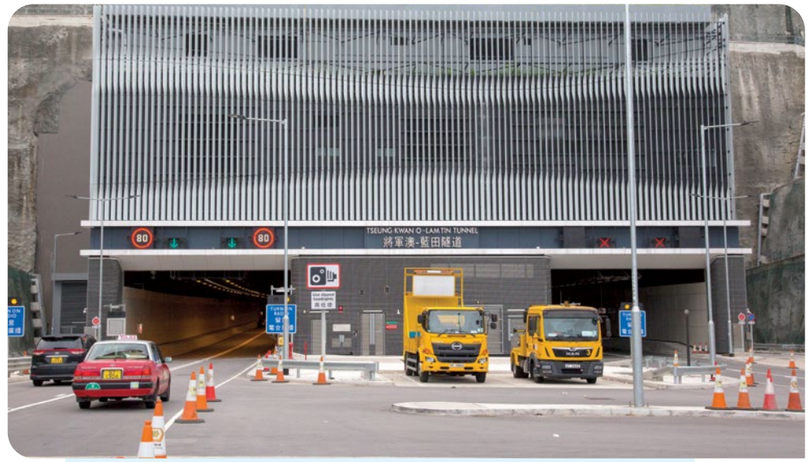
Sound infrastructure is the cornerstone of a sustainable city, and Hong Kong recognises this fact. Even in the face of the fifth wave of the epidemic, the city continued its infrastructure development. Throughout the year, we worked closely with our client departments to promote public infrastructure development and launched several infrastructure projects. One of our significant achievements was supporting various government departments in the design, construction and commissioning of E&M and electronic systems, including customs, immigration and port health facilities, as well as the procurement of relevant furniture and equipment, for the Three-runway System at Hong Kong International Airport. Also, we provided maintenance services for the Airfield Ground Lighting System of the new North Runway and taxiways for the Airport Authority Hong Kong (AAHK).

In April 2022, just three months before the new North Runway was put into operation, we were entrusted by the AAHK to provide comprehensive maintenance and repair services for the Interim Air Traffic Control Tower (IAT). To ensure a smooth handover and timely commissioning of the IAT facilities, we immediately launched the preparation work in full scale. Given the tight schedule, we employed the Building Information Modelling (BIM) technology to conduct a pre-handover inspection. The BIM model has a walk-through inspection function, which assisted us to gauge the installation condition of the E&M facilities in the IAT prior to on-site inspection, and anticipate potential maintenance issues in the future. With the aid of this effective and innovative inspection approach, the IAT facilities were eventually delivered within the given time frame.

機電署負責為香港國際機場新北跑道及其滑行道助航燈系統提供全天候維修保養服務。未來，我們會繼續積極研究創新方案，例如利用地面機械人協助清潔和維修助航燈，以加強工作安全和效率。

The EMSD is responsible for round-the-clock maintenance of the Airfield Ground Lighting System of the new North Runway and its taxiways at the Hong Kong International Airport. We will continue to actively explore innovative solutions, such as using ground robots for cleaning and maintaining ground lighting, to enhance work safety and efficiency.





年內，我們為將軍澳－藍田隧道的機電系統設計提供專業意見，並就不同系統和設備進行測試和校驗，包括將軍澳跨灣連接路拱橋的現場驗收測試，以確保隧道順利開通。

During the year, we offered professional advice on the design of E&M systems of the Tseung Kwan O-Lam Tin Tunnel, and carried out testing and commissioning of various systems and equipment, including the site acceptance test of the arch bridge of the Tseung Kwan O Cross Bay Link, to ensure the smooth opening of the tunnel.

支援道路基建是營運基金的另一項重點工作。年內其中一個亮點是在將軍澳－藍田隧道(將藍隧道)及將軍澳跨灣連接路通車前，為土木工程拓展署和運輸署提供機電支援及技術評估服務。我們為隧道機電系統的設計提供專業意見，進行測試及校驗，並見證廠內和現場驗收測試。我們於2022年8月首次進行隧道風扇的起動測試，其後並對相應的機電系統進行密集式現場驗收測試。為了配合隧道在2022年12月11日如期通車，我們竭力配合土木工程拓展署的工程進度，包括通宵工作以竭盡全力在四個月內完成所有檢驗測試。我們也監督隧道營辦商的工作並監察交通信號系統的運作。另外，為配合將軍澳隧道自將藍隧道通車當日起實施豁免收費，我們安排停用收費設施，並提供專業技術支援，以確保順利過渡。

Supporting road infrastructure is another focus area of the EMSTF. One of the highlights in the year was providing E&M support and technical assessment services to the Civil Engineering and Development Department (CEDD) and Transport Department (TD) prior to the opening of the Tseung Kwan O-Lam Tin Tunnel (TKO-LT Tunnel) and Tseung Kwan O Cross Bay Link. We provided professional advice on the design of E&M systems of the tunnel, carried out testing and commissioning, and witnessed the factory and site acceptance tests. The first start-up test for the tunnel ventilation fans was conducted in August 2022, followed by intensive site acceptance tests for the corresponding E&M systems. To meet the commissioning date of 11 December 2022, we spared no effort to cope with CEDD's project progress, including working overnight and endeavouring to witness all inspection tests within four months. We also oversaw the work of the tunnel operator and monitored the operation of the traffic signal system. In addition, to tie in with the implementation of a toll waiver for the Tseung Kwan O Tunnel starting from the commissioning date of the TKO-LT Tunnel, we arranged for the cessation of operation of the toll collection facilities and provided professional technical support to ensure a smooth transition.

營運服務
TRADING SERVICES

我們在道路基建方面的支援亦包括隧道/管制區改善工程，例如更換啟德隧道、東區海底隧道、香港仔隧道、大老山隧道、獅子山隧道及青馬管制區的交通管制及監察系統。我們也為運輸署在中環及灣仔繞道隧道現有的交通事故自動偵察系統增設逆線行車偵察功能，以及設置行人闖入檢測系統，以監察不當或非法進入隧道範圍的情況。

展望將來，我們計劃在西區海底隧道專營權於2023年下半年交還政府後承接隧道的監察服務。為實現政府的智慧城市發展願景，我們會分階段推行「易通行」不停車繳費服務，讓駕駛者無須在收費亭停車即可繳付隧道費，以促進智慧出行。

機電署亦為邊境管制站設施提供支援。我們正為施工中的新皇崗口岸進行機電設施設計和安裝工作。

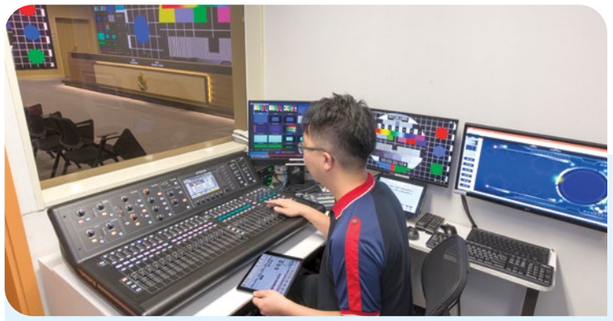
為客戶部門提供機電設施的操作和維修保養服務以及項目管理服務，也是我們的核心工程服務之一。年內，我們協助香港海關(海關)翻新海關總部大樓的傳媒接待室。為配合海關對影音系統的要求，我們把原本的音響系統，換上由兩台發光二極管顯示屏組成的兩幅巨型電視屏幕。我們亦為海關的人員提供有關操作新影音系統的培訓，並於綵排和活動中提供現場支援。這個項目的主要挑戰是時間限制，整項工程須在四個月內完成，時間緊迫。然而，我們的團隊靈活應變，項目終於如期在2023年2月竣工，海關亦得以在2023年3月1日在該接待室舉行2022年工作回顧記者會。

Our support for road infrastructure also covers tunnel/control area improvement projects, such as replacing the traffic control and surveillance systems in several tunnels, including the Kai Tak Tunnel, the Eastern Harbour Crossing, the Aberdeen Tunnel, the Tate's Carin Tunnel, the Lion Rock Tunnel and the Tsing Ma Control Area. Moreover, we assisted the TD in adding a wrong-way traffic detection feature to the existing Automatic Incident Detection System and providing the Human Intrusion System at the Central-Wan Chai Bypass Tunnel to monitor improper or illegal entry into the tunnel.

Looking ahead, we are planning to provide monitoring service for the Western Harbour Crossing after the Government takes over the tunnel upon the end of its franchise in the second half of 2023. To realise the Government's vision of smart city development, we will implement in phases the HKeToll, a free-flow tolling service that enables drivers to pay tolls without stopping at toll booths, thus facilitating smart travel.

The EMSD provides support for border control point facilities too. Currently, we are working on the design and installation of E&M facilities at the new Huanggang Port, which is still under construction.

Providing operation and maintenance service of E&M facilities as well as project management service for client departments is also one of our core engineering services. During the year, we provided support to the Customs and Excise Department (C&ED) in the renovation of the media briefing room in the Customs Headquarters Building. To meet the C&ED's requirements for the audio-visual system, we replaced the original audio system with two giant TV walls, which were formed by two sets of light emitting diode display panels. In addition, we provided various training sessions on the operation of the new audio-visual system for C&ED staff and on-site support during rehearsals and events. The main challenge of the project was time constraint, as we had to complete the entire project within four months. Nevertheless, our team, being flexible and adaptable, completed the project in February 2023 as scheduled, and hence the 2022 year-end press conference of the C&ED was held successfully at the venue on 1 March 2023.



我們在海關總部大樓安裝了新設備，包括傳媒接待室的大屏幕和先進混音器(左)，以便更精確調校聲音；此外，還有智能電掣房監察系統(右)，以加強電力裝置的維修保養。

We installed new equipment in the Customs Headquarters Building, including a large monitor and an advanced audio mixer at its media briefing room (left) for more precise control of sound, as well as a smart switch room monitoring system (right) to strengthen maintenance of electrical installations.

今年我們亦承接了多座新落成的政府建築物及設施的機電操作和維修保養服務，例如屯門滅火輪消防局、銅鑼灣警官會所、設有體育館和游泳池的大埔東昌街康體大樓、位於古洞北的福利服務綜合大樓和位於啟德的稅務中心等，不一而足。

為確保香港的醫療設施足以應付臨牀及營運需求，機電署致力為公立醫院及政府診所提供優質的機電維修保養服務。今年，我們投得三份標書，為仁濟醫院、律敦治醫院、東華東院、春磡角慈氏護養院以及雅麗氏何妙齡那打素醫院提供機電、空調和屋宇裝備系統的維修保養服務。我們又與醫務衞生局簽訂服務水平協議，為落馬洲河套區的應急醫院提供機電、空調和屋宇裝備系統維修保養服務及生物醫學工程服務。此外，我們也承接了東區尤德夫人那打素醫院新複合手術室的機電服務，並於新建的南昌家庭醫學診所試行「建築信息模擬 — 資產管理」技術。

This year, we have also taken on the E&M operation and maintenance services for several new government buildings and facilities, for instance the Tuen Mun Fireboat Station, the Causeway Bay Police Officers' Club, the Tai Po Tung Cheong Street Leisure Building, which comprises a sports centre and a swimming pool, the Multi-welfare Services Complex in Kwu Tung North and the Inland Revenue Centre at Kai Tak, just to name a few.

To ensure that the medical facilities in Hong Kong are able to meet clinical and operational needs, the EMSD is dedicated to providing high-quality E&M maintenance services for public hospitals and government clinics. This year, we were awarded three bids to provide maintenance of the electrical, mechanical, air-conditioning and building services (EMABS) systems for the Yan Chai Hospital, the Ruttonjee Hospital, the Tung Wah Eastern Hospital, the Cheshire Home, Chung Hom Kok, and the Alice Ho Miu Ling Nethersole Hospital. We also signed a Service Level Agreement with the Health Bureau for providing maintenance of the EMABS systems and Biomedical Engineering Services for the Emergency Hospital in the Lok Ma Chau Loop. Additionally, we have taken on the E&M services for the new hybrid operating theatre at the Pamela Youde Nethersole Eastern Hospital and the trial application of Building Information Modelling – Asset Management technology at the new Nam Cheong Family Medicine Clinic.

機電署負責為屯門滅火輪消防局的緊急發電機、低壓電掣房及防水閘等設備進行維修及保養，以確保設備運作暢順，並切合場地的特定需要。

The EMSD is responsible for the repair and maintenance of equipment such as the emergency generator, low-voltage switch room and flood gates at the Tuen Mun Fireboat Station, ensuring smooth operation of the equipment and fulfilling the specific needs of the venue.

機電署為新落成的稅務中心裝設各項節能設施，包括智能空調和照明系統。這些系統具有自動調節功能，有助節省用電。

The EMSD equipped the newly built Inland Revenue Centre with energy-efficient facilities, such as smart air-conditioning and lighting systems, featuring automatic adjustments to reduce electricity consumption.

營運服務
TRADING SERVICES

我們為新落成的屯門醫院手術室擴建大樓提供專業的機電工程服務，俾能為病人提供全天候的最佳護理。

We provided professional E&M services for the newly completed Tuen Mun Hospital Operating Theatre Extension Block, enabling the hospital to provide patients with round-the-clock optimal care.

在兩個十年醫院發展計劃下，多個興建、重建及擴建醫院的項目正在進行中。除了為新醫院的機電、空調和屋宇裝備設施提供專業意見及進行操作和維修保養服務外，我們早在項目初期的概念設計階段已參與其中，運用專業知識提升新醫院的服務水平，並確保新醫院的各個系統便於維修。年內竣工的項目包括屯門醫院手術室擴建大樓，而威爾斯親王醫院重建項目、北區醫院擴建工程，以及啟德發展區的新急症醫院興建工程也在有條不紊地進行。我們亦參與本港首間中醫醫院的自動存儲系統及輸送系統的採購工作，該醫院預計於2025年年底投入服務。

A series of hospital construction, redevelopment and expansion projects are currently underway under the two Ten-year Hospital Development Plans. In addition to providing professional advice on EMABS equipment at new hospitals and carrying out operation and maintenance services, we were involved in the early conceptual design stage, through which we utilised our expertise to enhance the serviceability and maintainability of the new hospitals. Projects completed in the year included the Tuen Mun Hospital Operating Theatre Extension Block, while the redevelopment project of the Prince of Wales Hospital, the expansion of the North District Hospital and the construction of the new acute hospital at Kai Tak Development Area have also been taken forward in an orderly manner. We are also involved in the procurement of the automated storage system and conveyor system for the first Chinese Medicine Hospital in Hong Kong, which is expected to come into operation by the end of 2025.

除了為客戶提供機電維修保養服務，我們亦提供緊急支援服務，並致力促進行業發展，以及支援客戶推行惠澤社羣的項目。其中一個項目是協助食物環境衞生署（食環署）在葵涌火葬場附近設置流產胎火化設施，並為相關設施提供維修保養服務。該設施命名為「永愛堂」，象徵永遠的關懷和愛護。該火化設施由食環署管理，設有兩個小型火化爐，專為胎齡未滿24周的流產胎提供火化服務。「永愛堂」的落成標誌着香港法例的重大突破，因為過往不足24周的流產胎不能在政府火葬場進行火化，「永愛堂」為這些珍貴的小生命提供莊嚴的安息之所，也有助紓緩父母的悲傷情緒。

In addition to providing E&M maintenance services, we offer emergency support services to our clients, promote industry development and support clients in implementing projects that benefit the community. One such project with the Food and Environmental Hygiene Department (FEHD) was the provision of cremation services of abortuses and maintenance services of associated facilities near the Kwai Chung Crematorium. The cremation facility named Home of Forever Love, symbolises eternal care and love. Managed by the FEHD, this cremation facility, which houses two small-scale cremators, is dedicated to abortuses of less than 24 weeks' gestation. Its establishment represents a significant breakthrough in Hong Kong legislation as miscarried fetuses under 24 weeks were not allowed to be cremated in government crematoria in the past. The Home of Forever Love provides a dignified resting place for the precious little ones and helps alleviate parents' painful emotions.

位於葵涌火葬場附近的「永愛堂」，是全港首個專門提供流產胎火化及相關服務的設施。機電署為場地內兩個小型火化爐及其他機電設備提供維修保養服務。

Located near the Kwai Chung Crematorium, the Home of Forever Love serves as the first facility in Hong Kong dedicated to providing cremation of abortuses and related services. The EMSD provides maintenance services for two small-scale cremators and other E&M equipment at the venue.

在另一個項目，我們利用專業知識服務社區，為香港導盲犬訓練學校安裝模擬行人過路燈系統，以便進行導盲犬引路訓練。

In another project, we made use of our expertise to serve the community by installing a Pedestrian Crossing Light System for the Hong Kong Seeing Eye Dog Training School to facilitate road-leading training for guide dogs.

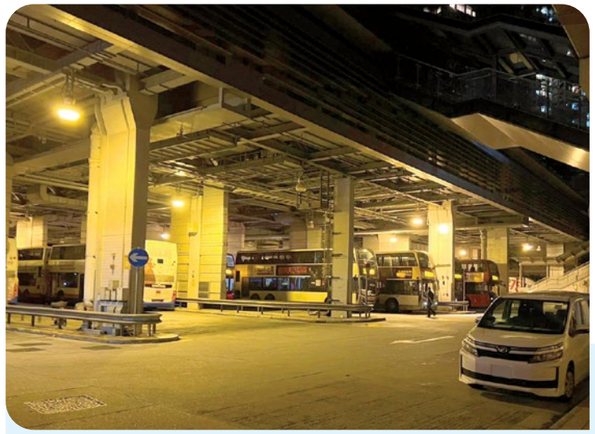
我們也提供車輛採購和維修保養服務，為其他政府部門提供支援。舉例而言，我們在2023年上半年為香港警務處採購並向其交付了36輛機動三輪車。這款車輛是政府車隊的新車型，擁有三個車輪，與傳統電單車相比，行駛時更穩定及提供更佳的牽引控制。這種三輪設計降低了翻車事故的風險，顯著提升行駛安全，特別有利於低速行駛。

We also support other government departments by providing vehicle procurement and maintenance services. For example, in the first half of 2023, we procured and delivered 36 motor tricycles to the Hong Kong Police Force. This vehicle type is new to the government fleet and features three wheels, providing better stability and traction control during operation compared to conventional motorcycles. The three-wheel design is particularly advantageous for low-speed operation, as it reduces the risk of tip-over accidents and significantly increases operational safety.

機電署為香港警務處引入新型機動三輪車，並提供專業意見和維修保養服務。新車的三輪設計更方便駕駛者操控，而且穩定性更佳，可加強保障警員執勤安全。

The EMSD introduced new motor tricycles to the Hong Kong Police Force and provided professional advice and maintenance services. The three-wheel design of the new vehicles provides better driving manoeuvrability and higher stability, enhancing the safety of police officers during their execution of duties.

營運服務
TRADING SERVICES



2022年6月，新界西地區發生大規模停電，導致多個客戶場地及設施無法正常運作。經機電署團隊同心協力通宵搶修後，受影響場地的電力供應於翌日早上陸續恢復。

In June 2022, a major power outage struck districts in New Territories West, leading to operational disruptions at numerous client sites and facilities. After our team worked concertedly to make urgent repairs overnight, the power supply to affected venues was progressively restored the next morning.

機電署在緊急情況下的迅速反應及支援，對協助客戶維持安全可靠的公共服務至關重要。2022年6月21日晚上，位於元朗朗屏的一條電纜橋發生火警，導致新界西地區大規模停電。我們的團隊迅速趕到現場提供緊急支援，迅速修復元朗、屯門及天水圍地區受影響的交通燈系統，避免翌日出現交通混亂情況。此外，由於該些地區的醫院、健康中心、警署、消防局及康樂場地同樣受到停電影響，我們迅速檢查所有相關設施，並為醫院和其他客戶部門提供了即時和有效的支援，獲得客戶高度讚賞。

The EMSD's prompt response and support for emergencies have been crucial in helping our clients maintain safe and reliable public services. On the evening of 21 June 2022, a fire broke out at a cable bridge in Long Ping, Yuen Long, causing a major power outage in the New Territories West. Our team promptly arrived at the scene to provide emergency support and quickly restored the affected traffic light systems in Yuen Long, Tuen Mun and Tin Shui Wai, avoiding traffic chaos on the next day. Besides, since hospitals, health centres, police and fire stations, and recreational venues in the districts were also affected by the power outage, we quickly inspected all related facilities and provided prompt and firm support to hospitals and other client departments, earning high acclaim from clients.

香港經常發生電壓驟降，尤其在雨季及颱風季節情況更甚。有見及此，我們一直積極探討有關緩解措施，減低電壓驟降帶來的嚴重影響。我們在2023年2月10日舉行「測試高壓電力設備」分享會，分享我們為醫院提供的電壓驟降緩解措施，即電壓驟降緩解過渡裝置。我們亦正研究把電壓驟降緩解過渡裝置的應用範圍擴大至所有醫院及其他重要場地的可行性。

In response to frequent voltage dips in Hong Kong, particularly during the rainy and typhoon seasons, we have been actively exploring mitigation measures to minimise the severe effects of voltage dips. At the "Testing High Voltage Power Equipment" sharing session held on 10 February 2023, we shared the voltage dip mitigation measure we provided for hospitals, namely the voltage dip ride-through device. We are also reviewing the feasibility of extending the use of voltage dip ride-through devices to all hospitals and other critical venues.

展望未來，我們會繼續為客戶提供優質服務，研發更多工程解決方案，全力支援客戶推動基建發展，完善社區設施配套，以提升公共服務效能，改善民生，提升香港的競爭力。

Looking to the future, we will continue to provide high-quality services to our clients by developing more engineering solutions and supporting them in taking forward infrastructure development as well as improving community facilities, with a view to enhancing public service efficiency, improving people's livelihood, and strengthening Hong Kong's competitiveness.

以專長服務社會：裝設導盲犬引路訓練設施
SERVING THE COMMUNITY WITH EXPERTISE: PRODUCING FACILITIES FOR GUIDE DOG ROAD-LEADING TRAINING

工程師吳文韜先生(左)和區域經理莫惠寶先生(右)帶領團隊為香港導盲犬訓練學校安裝模擬行人過路燈，作為本地導盲犬引路訓練之用。

Mr Ng Man-to, an engineer (left) and Mr Mok Wai-po, a regional manager (right) led a team to install the Pedestrian Crossing Light System for Guide Dog Training at the Hong Kong Seeing Eye Dog Training School to facilitate local guide dogs' road-leading training.

以往導盲犬主要在公共街道上進行引路訓練，但此舉可能會對其他道路使用者構成危險，並會限制訓練過程。為應對這些挑戰，團隊提供了模擬行人過路燈的解決方案，不單確保導盲犬和視障人士在進行引路訓練時的安全，更提升訓練的靈活性，大大減少外在因素的干擾。

In the past, guide dogs mainly received road-leading training on public streets, but this might pose dangers to other road users and impose limitations on the training process. To meet these challenges, the team offered the solution of the Pedestrian Crossing Light System for Guide Dog Training. In addition to ensuring the safety of both guide dogs and visually impaired people during road-leading training, this solution also enhanced training flexibility and minimised interruptions from external factors.

邊境及運輸工程部工程師吳文韜先生表示：「我們使用現有的交通燈，並根據學校的特殊需要制訂設計。這是本港首次把此類裝置應用在導盲犬引路訓練。」

"We used existing traffic lights and customised the design to meet the special needs of the school. This marks the first application of such a device in road-leading training for guide dogs in Hong Kong," said Mr Ng Man-to, an engineer of the Boundary Crossing Facilities and Transport Services Division (BTSD).

該項目是史無前例的新嘗試。團隊需要全面考慮設計、改裝、承造和測試等各個環節，並根據學校環境和導盲犬訓練方法，提出可行和容易操作的技術方案。為配合使用者的需要，團隊為系統進行特別改裝。此外，系統改裝後，使用者更可按訓練內容，調節綠燈時間、發聲器的音量和角度。有關控制器的設定已進行調校、更新軟件和改裝線路，表現穩定可靠。

The project was a pioneering endeavour without precedent. The team had to comprehensively consider various aspects from design, modification, construction to testing, and propose feasible and user-friendly technical solutions based on the school's environment and guide dog training methods. To suit the users' needs, the system was specifically modified. Moreover, upon modification, it featured adjustable timing of the green light, as well as volume and angle of the speaker, which may be modified in accordance with the training content. The controllers concerned also underwent changes in tuning settings, software updates and wiring modifications, staging stable and reliable performance.

邊境及運輸工程部區域經理莫惠寶先生補充道：「學校環境始終與公共街道不同，需要進行獨特的改裝。例如，由於裝置只用作校內訓練，我們便調低系統的靈敏度，以避免頻繁檢查。此外，因為學校鄰近民居，所以我們加設獨立的發聲器開關鍵，避免發聲器的聲響影響附近的居民。」

"The school environment is always different from public streets, necessitating some unique modifications. For example, since the device is only used for in-school training, we have reduced the system sensitivity to avoid frequent inspections. Also, as the school is located near residential areas, we have added an independent on/off switch to prevent the sound of the speaker from disturbing residents nearby," added Mr Mok Wai-po, a regional manager of the BTSD.

模擬行人過路燈系統於2022年10月中旬順利完成，並於12月8日正式投入服務，為本地導盲犬引路訓練開啟新紀元。吳先生表示：「我們一直希望以專長回饋社會，該項目讓我們了解到本港目前的導盲犬遠遠供不應求。現在有了模擬行人過路燈，希望能夠有助學校進行導盲犬引路訓練，令視障人士更快獲配導盲犬。」

Officially launched on 8 December 2022, the system has heralded a new era of road-leading training for local guide dogs following its successful completion in mid-October 2022. "We have always aimed to contribute to society with our expertise. Through this project, we have come to realise that the supply of guide dogs in Hong Kong falls short of the demand. Now, with the Pedestrian Crossing Light System for Guide Dog Training, we hope to facilitate guide dogs' road-leading training in the school and expedite the allocation of guide dogs to visually impaired people," Mr Ng said.

企業管理
CORPORATE STEWARDSHIP

2022年年初，香港飽受2019冠狀病毒病第五波疫情衝擊，因此2022/23年度實在充滿挑戰。儘管面對重重困難，各個企業單位竭盡全力，支援策略業務單位、客戶、機電業界、機電署同事以至廣大市民正面應對挑戰，與香港社會攜手踏上復常之路。

2022/23 was a challenging year as the fifth wave of the Coronavirus Disease 2019 (COVID-19) epidemic hit Hong Kong hard in early 2022. Yet in the face of endless difficulties, our corporate units offered full support to all Strategic Business Units (SBUs), clients, the electrical and mechanical (E&M) trade, our colleagues and the community in meeting the challenges head-on, moving forward together with Hong Kong society on the path towards normality.

在抗疫之餘，我們亦協助完成營運基金第二個五年策略計劃，並制訂將於2023/24年度展開的第三個五年策略計劃，以實現「加強多方協作，運用創新科技，創造公眾價值，同心建社惠民」的企業目標。

Apart from combating the epidemic, we assisted in completing the EMSTF's second Five-year Strategic Plan and formulating the third Five-year Strategic Plan which will commence in 2023/24, all to achieve the corporate goal of "strengthening collaboration between various parties and creating public value for community betterment together through innovation and technology".

我們在2022年7月及11月舉辦第三個五年策略計劃制訂工作坊，邀請員工就營運基金的遠景和未來發展發表意見，以協助制訂策略方向及框架，以及未來的策略行動。

The third Five-year Strategic Plan Formulation Workshops were organised in July and November 2022 to engage our staff to express their opinions on the vision and future development of the EMSTF in order to help formulate the strategic direction and framework, as well as strategic tasks for the future.

2022/23財政年度關鍵績效指標成績及表現承諾
Key Performance Indicator Results and Performance Pledges in Financial Year 2022/23

目標 Target　成績 Result

根據每月客戶意見調查結果所得的客戶滿意度 (%)
Satisfaction Level Based on Monthly Customer Feedback (%)
目標 Target: 99　成績 Result: 99.96

客戶滿意指數 [以8分為滿分計]
Customer Satisfaction Index [on an 8-point scale]
目標 Target: 6.8　成績 Result: 7.03[2]

每千名營運基金員工須呈報的累積意外宗數（以每千名員工計算）
Accumulated Reportable Accidents per 1 000 EMSTF Staff (no. per 1 000 staff)
目標 Target: 5.0[3]　成績 Result: 1.71

營運基金員工的訓練日數（每名員工接受訓練的日數）
Training Days of the EMSTF Staff (no. of training days per staff member)
目標 Target: 4.5　成績 Result: 5.03

年內續訂的服務水平協議 (%)
SLAs Renewed during the Year (%)
目標 Target: 95　成績 Result: 99.94

收入回報率(%)
Return on Revenue (%)
目標 Target: 1.8　成績 Result: 2.6

員工建議計劃書[1]（份）
Staff Suggestion Proposals[1] (no.)
目標 Target: 75　成績 Result: 117

違反法例次數（宗）
Statutory Non-compliance (no.)
目標 Target: 0　成績 Result: 0

新業務及業務增長（百萬元）
New Business and Growth of Business ($M)
目標 Target: 613.1　成績 Result: 639.0

員工滿意度指數[1] [以10分為滿分計]
Staff Satisfaction Rating[1] [on a 10-point scale]
目標 Target: 6.8　成績 Result: 7.6[4]

達到服務水平協議所訂的表現目標 (%)
Service Level Agreement (SLA) Service Performance Target Compliance (%)
目標 Target: 99　成績 Result: 99.98

耗電量[1]（千瓦小時）[機電署總部大樓、企業數據中心及所有策略業務單位的主要場地]
Electricity Consumption[1] (kWh) [EMSD Headquarters Building, Corporate Data Centre and all SBUs Major Venues]
目標 Target: 7 825 918　成績 Result: 7 346 990[5]

1 此項目適用於機電工程署整個部門，其他項目只適用於機電工程營運基金。
2 數字為2022年的調查結果。
3 此為警戒水平，並非目標。
4 數字為2021年的調查結果。下一次調查將於2023年進行。
5 2022/23財政年度經調整後的耗電量(扣除客戶使用量)。

1 This item applies to the EMSD as a whole. Other items apply to the EMSTF only.
2 Results are derived from the survey conducted in 2022.
3 This is an alert level, not a target.
4 Results are derived from the survey conducted in 2021. The next survey will be conducted in 2023.
5 Normalised electricity consumption (exclude client usage) as of Financial Year 2022/23.

應對緊急情況

持續抗疫

為了在疫情期間維持機電署的核心運作和必要的客戶服務，我們經常檢視及更新業務持續計劃，確保為維持重要服務作好充分準備，並能迅速應變，緩減疫情對重要服務的影響。我們向所有策略業務單位提供充足的防疫物資，包括個人防護裝備、快速抗原測試套裝和口罩，以應付運作需要。

在這場漫長的抗疫戰中，我們與其他政府部門合作，參與多項地區工作，包括在2022年4月向鰂魚涌居民派發「防疫服務包」，以及在各區住宅大廈和屋苑進行「圍封強檢」和突擊行動。此外，我們支援策略業務單位為多家安老及殘疾人士院舍進行通風評估工作，以助及早採取改善措施。

我們積極投入抗疫工作，因而在2022年公務員優質服務獎勵計劃中獲得多個獎項，當中與18個決策局和部門合作興建社區隔離設施的「同心築」項目，更榮獲該計劃的「卓越部門合作獎」金獎，充分肯定我們為客戶和社區進行抗疫工作所付出的努力。此外，兩位最近退休的營運基金同事獲頒授2022年行政長官公共服務獎狀，表揚他們在抗疫方面的貢獻。我們對於抗疫工作備受肯定，深感榮幸，亦很高興能為抗疫出一分力。

RESPONDING TO EMERGENCIES

Continued Efforts against COVID-19

To maintain the EMSD's core operations and essential client services during the epidemic, our Business Continuity Plan was frequently reviewed and updated so as to ensure adequate preparedness to sustain our critical services and prompt responses to minimise the impact of the epidemic on such services under COVID-19. Adequate anti-epidemic supplies including personal protective equipment, rapid antigen test kits and masks were provided to all SBUs to meet operational needs.

In fighting this protracted battle, we collaborated with other government departments and took part in various community-level initiatives, including delivering anti-epidemic service bags to Quarry Bay residents in April 2022 and conducting "restriction-testing declaration" and blitz operations in residential buildings and housing estates in various districts. We also supported the SBUs in their ventilation assessment work at many residential care homes for the elderly and persons with disabilities for facilitating prompt improvement measures.

Actively engaged in the anti-epidemic work, we won multiple awards in the Civil Service Outstanding Service Award Scheme 2022, in recognition of our efforts to combat the epidemic for clients and the community. Among them, Together We Build, a joint project we carried out with 18 bureaux and departments for building the Community Isolation Facilities (CIFs), won the Gold Prize in Excellence in Partnership. Furthermore, two recently retired EMSTF colleagues were awarded the Chief Executive's Commendation for Government/Public Service 2022 for their contribution to the anti-epidemic work. We are honoured for the recognition and delighted to have played a role in fighting the epidemic.

在第五波疫情期間，本署人員不但向市民派發防疫服務包(左)，還在有關的住宅樓宇進行突擊行動，查核住戶的檢測證明(右)，竭盡全力防止病毒擴散。

During the fifth wave of the epidemic, our staff not only distributed anti-epidemic service bags to the public (left), but also conducted blitz operations to verify the testing certification of residents in various residential buildings concerned (right), making strenuous efforts to prevent the spread of the virus.

為未來事故動員

為進一步加強政府的應變能力，行政長官在2022年《施政報告》中公布，於2022年第四季增設「全政府動員」級別，各部門會預先制訂指定人員名單，確保在事故或重大危機出現時，能立即動員公務員組成應急隊伍，即時提供人力支援及輔助隊伍。

Mobilisation for Future Incidents

In order to further strengthen the Government's emergency response capabilities, the Chief Executive announced in the 2022 Policy Address the introduction of a "government-wide mobilisation" level in the fourth quarter of 2022. Under the system, a list of designated personnel would be drawn up by various departments in advance to ensure that civil servants could be mobilised promptly to form a quick response unit so as to provide immediate manpower support and auxiliary teams during incidents or major crises.

政府於2023年2月16日進行代號為「達陣I」的首次演練。約300名來自六個部門的人員，包括50名機電署同事，於指定時間內到達北角社區會堂集合，模擬在執行海嘯疏散行動前聽取簡報。他們並在演練後參與小組討論，與行政長官、公務員事務局局長及其他高級官員分享及交流意見。

The first drill, code-named "Exercise Touchdown I", was held on 16 February 2023. About 300 staff members from six departments, including 50 staff from the EMSD, gathered at the North Point Community Hall within the specified time to simulate receiving a pre-operation briefing for a tsunami evacuation. They also participated in subsequent group discussions to share their views and feedback with the Chief Executive, Secretary for the Civil Service and other senior officials.

支援客戶及機電業界

為客戶提供創科方案

推動創新科技(創科)發展是營運基金在日常工程服務及整體策略發展上的重點，年內亮點包括為社區疫苗接種中心和社區隔離設施提供創科方案及持續的機電工程支援；以及在2023年1月，於15個年宵市場利用高架三維影像傳感器監察人流數量，以在有需要時實施人流管制。

我們建立的政府首個智能貨倉，在提升倉庫的儲存量及運作效率方面成效顯著，客戶和潛在用家均大感興趣。年內我們為政府決策局、部門及中醫醫院安排參觀智能貨倉，亦於「機電創科開放日2022」展示智能貨倉項目，以推廣在倉庫管理中使用機械人技術。

為了實現營運基金第二個五年策略計劃「機電2.0」的願景，我們引入數碼化資產管理系統，以提升客戶於主要政府場地的機電資產日常操作及維修效能。該系統設有更方便使用及簡單直接的圖像用戶界面，有助營運基金團隊提升日常工作效率，確保客戶的機電設備運作順暢，俾能提供優質公共服務。

SUPPORTING CLIENTS AND E&M TRADE

I&T Solutions for Clients

Promoting the development of innovation and technology (I&T) is the EMSTF's focus in both its day-to-day engineering services and overall strategic development. Highlights of the year included the provision of I&T solutions and ongoing E&M support for Community Vaccination Centres and CIFs; and the use of overhead three-dimensional video sensors to monitor the footfall at 15 Lunar New Year fairs in January 2023 for implementing crowd control measures when necessary.

Our ai (artificial intelligence) Store, the Government's first smart warehouse, had proved so successful in increasing the storage capacity and operational efficiency of our warehouse that great interest arose among clients and other potential users. During the year, visits to our smart warehouse were arranged for government bureaux, departments and Chinese Medicine Hospital stakeholders. It was also showcased at the Inno@E&M Open Day 2022 to promote the use of robotics in warehouse management.

To realise the EMSTF's vision of "E&M 2.0" in its second Five-year Strategic Plan, a digitalised asset management system (AMS) has been introduced to enhance the daily operation and maintenance (O&M) of our clients' E&M assets at major government venues. Using a more user-friendly and intuitive graphical user interface of the AMS, the EMSTF teams can improve day-to-day work efficiency and ensure smooth operation of clients' E&M equipment which can enable the provision of quality public services.

我們邀請客戶代表參觀由機電署建立的政府首個智能貨倉，體驗以創科實踐和應用促進智慧城市發展。

We invited customer representatives to visit our ai Store, the Government's first smart warehouse, and experience how the implementation and application of I&T could enhance smart city development.

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在7月份舉行的「機電創科日2022」上，機電署與三所學術機構簽訂合作備忘錄，致力共同支援政府部門應用各種創科方案。

The EMSD signed memoranda of co-operation with three academic institutions at the E&M I&T Day 2022 in July to jointly support government departments in applying I&T solutions.

在多個平台推廣創科

我們不遺餘力，透過各式各樣的活動向業界、社會大眾和持份者推廣創科。2022年7月，我們以視像會議形式舉辦「機電創科日」，以「機電裝備合成法」和智慧機電應用方案為主題，讓業界就有關主題分享創科經驗。活動當日，機電署更與香港浸會大學、香港都會大學和職業訓練局簽署合作備忘錄，進一步擴大創科合作網絡。

Promoting I&T on Various Platforms

We spared no efforts in promoting I&T to the trade, the public and other stakeholders via a variety of activities and events. Of note was the E&M I&T Day held in July 2022 via video conference for the trade to share their I&T experience under the themes of Multi-trade integrated Mechanical, Electrical and Plumbing (MiMEP) Technology and Smart Engineering Solutions. At the event, the EMSD also signed memoranda of co-operation with the Hong Kong Baptist University, the Hong Kong Metropolitan University and the Vocational Training Council (VTC), further expanding our I&T co-operation network.

另一項新活動是在2022年5月至11月舉辦的「智在GWIN」物聯網機電應用挑戰賽。活動目的是加深市民對「政府物聯通」的認識，讓他們了解該技術如何透過實時監察機電系統，提高公共服務質素。比賽邀請小學、中學及大專學生提交方案，推廣在日常生活中更廣泛使用「政府物聯通」和優化智慧城市管理。

A new initiative was the "Smart@GWIN" E&M IoT (Internet of Things) Application Challenge held from May to November 2022. It was aimed at raising public awareness and understanding of the Government-Wide IoT Network (GWIN) and how it could enhance the quality of public services by monitoring various E&M systems in real time. The Challenge called for GWIN-inspired projects from primary, secondary and tertiary students to promote the wider use of GWIN in daily life and optimise smart city management.

機電署致力加深市民對「政府物聯通」的認識，推廣在日常生活中應用該技術。我們舉辦「智在GWIN」物聯網機電應用挑戰賽，鼓勵學生構思「政府物聯通」的應用方案，讓公共服務發揮最大價值，造福社羣。

The EMSD is committed to raising public awareness of the GWIN and promoting its application in our daily lives. The "Smart@GWIN" E&M IoT Application Challenge was held to encourage students to explore solutions for the use of GWIN and maximise the value of public services for the community.

為慶祝香港特別行政區成立25周年，我們於機電署總部大樓舉辦為期三天的「機電創科開放日2022」，向市民展示創科在機電工程服務中的應用，並深入闡釋這些技術如何使他們在日常生活中得益。

In celebration of the 25th anniversary of the establishment of the HKSAR, a three-day Inno@E&M Open Day 2022 was held at the EMSD Headquarters to showcase the I&T applications in E&M engineering services to the public and provide in-depth explanation of how these technologies could benefit them in their daily lives.

此外，我們舉辦了「機電創科開放日2022」，向市民展示創科在機電工程服務和智慧城市發展中的應用，而活動更是香港特別行政區成立25周年的慶祝活動之一。開放日於11月舉行，為期三天，設有創科展覽、攤位、講座、工作坊、導賞、虛擬實境體驗及遊戲設施，吸引約17 000名各界人士參加。

In addition, the Inno@E&M Open Day 2022 was organised to showcase I&T applications in E&M engineering services and smart city development to the public, and it was one of the celebratory events of the 25th anniversary of the establishment of the Hong Kong Special Administrative Region (HKSAR). The three-day event held in November featured exhibition of I&T projects, fun booths, seminars, workshops, guided tours, virtual reality experience and gaming facilities, which attracted about 17 000 participants from all walks of life.

客戶滿意度上升

全賴員工努力不懈，辛勤工作，我們在2022年10月至12月進行的最新一次營運基金客戶意見調查中，獲得客戶踴躍發表意見，回應率達58.7%；並取得優異成績，以8分為滿分計算，客戶滿意指數為7.03分，整體服務競爭力指數為7.06分。回應率和兩項指數的得分均創新高，可見客戶對營運基金服務的滿意度有所提升。此外，我們在2022年公務員優質服務獎勵計劃中獲得13個獎項，包括「卓越部門精進服務獎（大部門組別）」金獎，優質服務備受肯定。我們會參考調查結果、客戶意見和建議，致力持續改進服務。

Increased Customer Satisfaction

Thanks to the hard work of our staff, we received enthusiastic response from clients, with a response rate of 58.7%, and achieved outstanding results, with Customer Satisfaction Index scored 7.03 and Overall Service Competitiveness Index scored 7.06 on a scale of 8, in the EMSTF's latest Customer Opinion Survey conducted between October and December 2022. The response rate and the two indexes hit record highs, indicating clients' increased satisfaction with our services. Another recognition of our quality services came in the EMSD receiving 13 awards in the Civil Service Outstanding Service Award Scheme 2022, including the Gold Prize in Excellence in Service Enhancement (Large Department Category). We will strive for continuous improvement with reference to the survey results, client feedback and suggestions.

機電署在2022年公務員優質服務獎勵計劃中得到「卓越部門精進服務獎（大部門組別）」金獎，獲表揚在持續提升服務方面的優秀表現。

The EMSD received the Gold Prize in Excellence in Service Enhancement (Large Department Category) in the Civil Service Outstanding Service Award Scheme 2022, in recognition of the Department's exceptional performance in continuous service enhancement.

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培養創新文化

機電署非常重視培養部門的創新文化。我們在2022年舉辦了第三屆「Inno@E&M創新科技挑戰賽」，在部門內推動技術創新。比賽收到超過180個創新方案，反應熱烈。對外方面，我們積極參與其他部門和機構舉辦的資訊科技活動，展示機電署的創科成就，例如在建造創新博覽會2022展示「建築信息模擬 — 資產管理」的成果、「機電裝備合成法」的效能及區域供冷系統項目。我們亦會參與在2023年4月舉行的香港國際創科展2023，展示機電署的智慧城市項目和得獎創科項目，包括「建築信息模擬 — 資產管理」應用實例、升降機及自動梯數碼工作日誌，以及透過「機電創科網上平台」為客戶部門的服務願望與初創企業的創科解決方案配對的成功個案。

Cultivating an Innovation Culture

The EMSD attaches great importance to fostering an innovative culture. We organised the 3rd Inno@E&M Challenge in 2022 to promote technological innovation in-house. The response was overwhelming, with more than 180 innovative proposals received. Externally, we participated in I&T events hosted by other departments and organisations to showcase our I&T achievements, such as showcasing our Building Information Modelling – Asset Management (BIM-AM) achievements, MiMEP capabilities and the District Cooling System project at the Construction Innovation Expo 2022. We will also take part in the InnoEX 2023 in April 2023 to exhibit the EMSD's smart city projects and award-winning I&T projects including BIM-AM application cases, the Digital Log-books System for Lifts and Escalators, and the success stories of matching the service wishes of client departments with the I&T solutions proposed by start-ups through the E&M InnoPortal.

第三屆「Inno@E&M創新科技挑戰賽」收到逾180個參賽項目，數目為歷屆最多。比賽成功激勵本署人員積極創新，實踐創科解決方案，應對內部和客戶部門的需求。

The 3rd Inno@E&M Challenge received over 180 entries, the highest number of entries ever, and successfully encouraged our staff to actively innovate and implement I&T solutions to meet internal and client departments' needs.

我們於2022年12月舉行的建造創新博覽會設置展覽攤位，與建造及機電業界交流，分享我們在「建築信息模擬 — 資產管理」工作、「機電裝備合成法」及區域供冷系統項目的經驗。

We set up an exhibition booth to share about our BIM-AM work, MiMEP technology and District Cooling System project and exchange experience with the construction and E&M industries at the Construction Innovation Expo held in December 2022.

提升部門效率

年內，營運基金持續利用創科提高內部運作效率。舉例來說，我們為專業職系員工的電子評核表格加入新功能，提醒評核和加簽人員在撰寫評核報告和給予工作表現評級時，注意評語和評級的普遍問題，提高評核質素。此外，我們在2023年1月推出新的採購平台「部門運作支援系統」，提升採購效率。

Boosting Internal Efficiency

The year saw continuous momentum in using I&T to enhance the EMSTF's internal operation efficiency. For example, a new function was added to our e-appraisal form for professional grades to alert the appraising and countersigning officers to common irregularities in comments and ratings during appraisal writing and performance ratings, raising the quality of appraisals. Meanwhile, a new procurement platform, the Departmental Operation Supporting System (DOSS), was launched in January 2023 to enhance procurement efficiency.

2022年12月，我們舉辦年度「品質及安全日」，邀得演講嘉賓就「機電裝備合成法」和創新及安全設計分享真知灼見。在活動中，我們亦向員工團隊頒發獎項，表揚他們努力不懈提升工作安全和服務質素，以及營造綠色文化，活動並設有冠軍隊伍分享環節。

Our annual Quality and Safety Day was held in December 2022, with speakers sharing their views on the MiMEP technology and innovation and design for safety. Prizes were presented to staff teams to commend their continued efforts in enhancing work safety and service quality, as well as creating an environment-friendly culture. There were also the champion teams' sharing sessions.

職業安全健康局首席顧問楊冠全博士(右二)及香港科技園公司首席項目總監何國聰先生(左三)出席「2022品質及安全日」，擔任主禮嘉賓。

Dr Winson Yeung, Principal Consultant of the Occupational Safety and Health Council (2nd right), and Mr Tony Ho, Chief Project Development Officer of the Hong Kong Science and Technology Parks Corporation (3rd left), attended the Quality and Safety Day 2022 as the officiating guests.

機電署作為靈活的學習型機構，知識管理可謂至關重要。為了便利員工更有效地檢索、分享和應用不同類型的知識，我們在2022年10月推出「知識管理網站3.0」。網站功能優化，可提升用戶體驗，並加強部門各個知識羣體之間的連繫。

Knowledge management is vital to us being an agile learning organisation. To facilitate more effective retrieval, sharing and application of different types of knowledge by staff, we launched the Knowledge Management Portal (KMP) 3.0 in October 2022, with enhanced features to improve user experience and better connect the Department's various knowledge community groups.

事實上，除了「知識管理網站」外，我們還有其他知識管理措施，包括為不同工程專業成立特定機電團隊，以及在特定客戶場地設立「卓越中心暨優才訓練基地」，向新一代見習技術員傳授技術和經驗。年內，特定機電團隊在中環添馬海水泵房進行了一次恢復供電演練，而位於港澳碼頭的「卓越中心暨優才訓練基地」則進行了水翼船船台大型翻新工程。年輕的見習技術員可透過這些項目增進技術和充實經驗。

In fact, our knowledge management is not confined to the KMP but also involves other initiatives, such as setting up Special Duty Units (SDUs) for different engineering disciplines and Centres of Excellence (CoEs) at specific client venues, both aimed at passing on the technical expertise and experience to the new generation of Technician Trainees (TTs). During the year, the SDU held an electricity resumption drill at the Tamar Seawater Pump House in Central, while the CoE at the Hong Kong-Macau Ferry Terminal carried out major refurbishment works for hydrofoil platforms. Young TTs were able to gain technical skills and experience through these exercises.

我們在2022年10月獲香港理工大學頒發香港最具創新力知識型機構大獎2022；並在同年12月獲全球最具創新力知識型機構大獎委員會頒發全球最具創新力知識型機構大獎2022。兩個獎項印證了我們推動並運用創新和知識管理，將部門知識轉化為優質服務和方案，為持份者創造價值，成績斐然。

In addition to receiving the Hong Kong Most Innovative Knowledge Enterprise (MIKE) Award 2022 from the Hong Kong Polytechnic University in October 2022, we also garnered the Global MIKE Award 2022 from the International Global MIKE Award Committee in December of the same year. Both are recognition for our achievements in creating great value for stakeholders by promoting and leveraging innovation and knowledge management, and turning enterprise knowledge into superior services and solutions.

我們致力推動創科的應用及知識管理，有關工作備受肯定。2022年10月及12月，我們分別獲香港理工大學及全球最具創新力知識型機構大獎委員會頒發香港最具創新力知識型機構大獎及全球最具創新力知識型機構大獎。

We are committed to promoting the application of I&T and knowledge management, and our efforts are widely recognised. In October and December 2022, we were awarded the Hong Kong MIKE Award by the Hong Kong Polytechnic University and the Global MIKE Award by the International Global MIKE Award Committee respectively.

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擴大人才庫

機電署不斷致力吸引具備潛質的人才加入機電行業。一如往年，我們聯同香港機電業推廣工作小組，在2022年10月合辦「機電．啟航2022」迎新典禮，歡迎750多名在本地機構擔任見習技術員的年輕人加入機電行業；以及在2023年3月於職業訓練局葵涌大樓舉行的機電業博覽2023，讓參觀者了解行業發展，吸引有興趣的年輕人入行。

Enlarging the Talent Pool

The EMSD continued its efforts in attracting prospective talent to join the E&M trade. As in previous years, we co-organised with the Hong Kong Electrical and Mechanical Trade Promotion Working Group the "E&M GO!" Orientation Ceremony 2022 in October 2022 to welcome on board more than 750 young people who had recently joined the E&M industry as TTs in local organisations; and the E&M Expo 2023 in VTC Kwai Chung Complex in March 2023 to showcase to visitors the development of the industry and attract interested youngsters to join in.

由機電署聯同機電業界組成的香港機電業推廣工作小組，多年來積極培育業界生力軍。2022年10月，工作小組舉行「機電．啟航2022」迎新典禮，約有750名年輕機電學員出席。

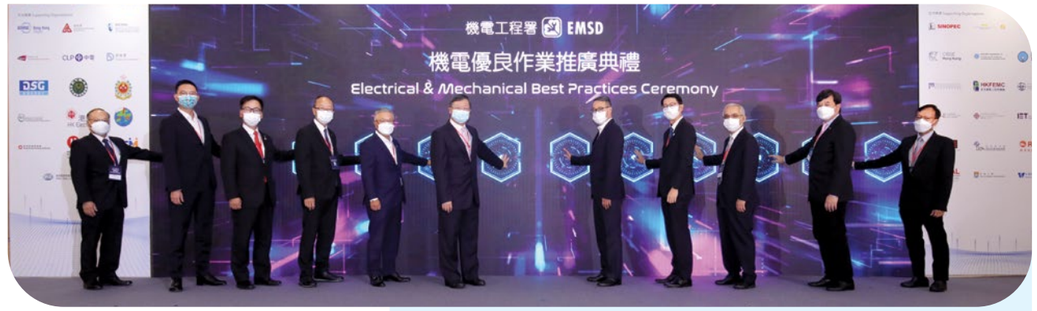
The Hong Kong Electrical and Mechanical Trade Promotion Working Group, formed by members from the EMSD and the E&M trade, has been nurturing new talent for the trade over the years. The "E&M GO!" Orientation Ceremony 2022 was held by the working group in October 2022, with around 750 young E&M trainees attended.

為了向機電業界推廣優良操作和維修作業，以加強作業水平，機電署與業界緊密合作，就暖通空調裝置、升降機及自動梯裝置、消防裝置及設備等機電資產，編製《優良操作和維修作業手冊及指引》，並推出電子平台，方便使用者閱讀手冊和觀看個案短片，以作學習和分享之用。2022年9月，我們舉辦了「機電優良作業推廣典禮」，獲得約40個專業團體和來自機電業界及學術界的機構支持及參與。

To promote best practices in O&M among the E&M trade to enhance the work standards, the EMSD collaborated closely with the trade to compile O&M Best Practices Booklets and Handbooks on E&M assets such as heating, ventilation and air-conditioning installations, lift and escalator installations and fire service installations, and launched an e-platform to provide easy access to the handbooks and case videos for learning and sharing. The Electrical & Mechanical Best Practices Ceremony was also held in September 2022, with the support and participation of around 40 professional institutes and organisations from the E&M trade and academia.

為協助承辦商維持優良的工作標準，我們在年內舉行了四場機電署承辦商研討會，向承辦商簡介最新的健康和安全措施、誠信管理和「新工程合約4」的合約管理事宜等資訊。此外，我們在2022年9月與職業安全健康局和香港科技園公司合辦首屆安全研討會。在研討會上，講者分享以智能機電系統保障工地安全的經驗，超過210名公私營機構代表出席。

To help contractors maintain a high standard of work, four sessions of the EMSD Contractors Forum were held during the year to brief contractors on, among others, the latest health and safety measures, integrity management and contract management of the New Engineering Contract 4. Moreover, the first Safety Conference was held jointly with the Occupational Safety and Health Council and the Hong Kong Science and Technology Parks Corporation in September 2022. More than 210 representatives from the public and private sectors attended the conference, in which speakers shared their experience in using smart E&M systems to keep construction sites safe.



2022年9月，機電署舉辦「機電優良作業推廣典禮」，正式啟用機電優良作業電子平台。典禮當日有近300位來自機電業界、學術界，以及物業管理行業的代表出席。

The Electrical and Mechanical Best Practices Ceremony was held in September 2022 to launch an e-platform on E&M best practices. The ceremony was well attended by about 300 representatives from the E&M trade, academia and property management sector.

與內地協作

疫情無阻我們與內地伙伴交流，以及在大灣區進行人才發展工作，為部門和行業培育年輕一代。

當中最值得一提的是與廣州市人力資源和社會保障局轄下技師學院加強培訓合作，包括在2022年6月至9月期間由廣州市技師學院、廣州市工貿技師學院和廣州市機電技師學院舉辦的線上培訓課程，內容涵蓋電氣、空調和屋宇裝備，共有54名見習技術員參加。我們又分別在2022年6月和10月，為廣州市技師學院的學生和廣州市機電技師學院領導及資產管理員舉辦以「建築信息模擬 — 資產管理」系統為題的線上分享會。

2022年8月，機電署與廣東省科學技術協會和澳門工程師學會合作舉辦為期兩天的粵港澳青年科創考察交流活動。活動以線上線下混合模式進行，讓參加者就新材料技術、科技政策和初創企業成功故事交流分享。

Collaboration with the Mainland

The epidemic has not stopped our exchange with partners on the Mainland and the talent development work in the Greater Bay Area (GBA) to nurture the young generation for the Department and the industry.

Most notable was the deepening of our training co-operation with technician colleges under the Guangzhou Municipal Human Resources and Social Security Bureau, including online training programmes on electrical, air-conditioning and building services delivered by the Guangzhou Technician College, the Guangzhou Industry and Trade Technician College and the Guangzhou Electromechanical Technician College from June to September 2022, with 54 TTs participating in the programmes. Online sharing sessions on BIM-AM technology were also held for students of the Guangzhou Technician College, and top management and asset managers of the Guangzhou Electromechanical Technician College in June and October 2022 respectively.

In August 2022, the EMSD, the Guangdong Provincial Association for Science and Technology and the Macau Institute of Engineers joined efforts to organise the two-day Guangdong-Hong Kong-Macao Youth Innovation and Technology Exchange in a hybrid mode with both physical and virtual access for participants. It provided an opportunity for participants to exchange their views on new materials technology, science and technology policies, and success stories of start-ups.

為深化粵港兩地技術合作及培育大灣區人才，機電署為廣州市技師學院的學生及廣州市機電技師學院的領導及資產管理員舉辦「建築信息模擬 — 資產管理」系統線上技術分享會，分享應用該技術的經驗。

To deepen technical co-operation between Guangdong and Hong Kong and nurture talent in the Greater Bay Area, the EMSD held online technical sharing sessions on BIM-AM technology for students of the Guangzhou Technician College and top management and asset managers of the Guangzhou Electromechanical Technician College to share the experience in BIM-AM application.

關顧員工

「國家主席重要講話精神」座談會及國家事務培訓

國家主席習近平先生於慶祝香港回歸祖國25周年大會暨香港特別行政區第六屆政府就職典禮上發表重要講話。為了加深員工對講話核心要義的了解，機電署署長及兩位副署長在2022年10月主持兩場「國家主席重要講話精神」座談會，向中高層管理人員作詳細講解，特別是「四個必須」和「四點希望」，分享如何在機電署的工作中體現其精神，並在問答環節解答員工的問題。

除此之外，為了加強員工的國家事務培訓，我們與國家行政學院合辦兩個線上國情研習班，各有40名機電署員工參加。參加者均認為課程有助他們了解國家發展策略重點，以及香港在促進大灣區發展所扮演的角色。

國家行政學院在2022年10月至12月期間為機電署舉辦了兩個線上國情研習班，由多個領域的知名專家學者教授不同課程，包括深入學習貫徹二十大精神、中國政治制度與政府架構等內容。

The Chinese Academy of Governance provided two online National Studies Programmes for the EMSD between October and December 2022. Well-known experts and scholars in various fields gave lectures on the in-depth study and implementation of the spirit of the 20th National Congress of the Communist Party of China, the political system and government structure of China, etc.

預防員工染疫

疫情期間，我們致力保障員工的健康和安全。過去一年，每當出現疑似感染或確診個案時，我們都會安排在總部大樓內進行消毒，總數超過一千次。即使在第五波疫情緩和後，我們仍然採用多種創科技術，包括紫外線消毒機械人、發燒偵測系統、空氣淨化機和自動感應消毒站，進行徹底清潔和消毒以及感染監察，以保護員工免受感染。

員工福利及支援

在這場抗疫戰中，我們繼續為員工舉辦線上和實體活動。與往年一樣，我們委託香港家庭福利會為機電署員工提供免費輔導熱線服務。我們亦舉辦了八場關於心理、情緒和生理健康的線上研討會，吸引1 100人參加。

今年的員工康體活動多姿多彩，特別是隨着疫情在2022年下半年漸趨緩和，社交距離措施逐步放寬，活動更添繽紛。有關活動包括在總部露天廣場進行的「水耕種植Fun Fun樂」、「機電廚神大比拼」比賽、「吉澳、鴨洲、荔枝窩元旦一日遊」、「愛跑．東涌呀」慈善跑，以及多場足球和乒乓球比賽等。

CARING ABOUT OUR STAFF

Sessions on "Spirit of the President's Important Speech" and National Studies Training

President Xi Jinping delivered an important speech at the meeting celebrating the 25th anniversary of Hong Kong's return to the motherland and the inaugural ceremony of the sixth-term HKSAR Government. To deepen staff understanding of the core essence of the speech, the Director of Electrical and Mechanical Services and the two Deputy Directors held two sessions on "Spirit of the President's Important Speech" in October 2022 to elaborate on the subject matter, in particular the "four musts" and "four proposals", to middle and senior management staff, share with them the ways to manifest the spirit in the EMSD's work, and answer their questions in the Q&A discussion.

Apart from that, to enhance national studies training for our staff, we co-ordinated with the Chinese Academy of Governance to organise two online National Studies Programmes, each with 40 EMSD staff members joining. Participants found the training highly useful in understanding the national development strategies and priorities, as well as Hong Kong's role in promoting the GBA development.

Safeguarding Staff against COVID-19 Infection

We strived to protect the health and safety of staff members during the epidemic. Disinfection at the headquarters building, which was carried out for more than a thousand times, was arranged whenever there were suspected or confirmed cases of COVID-19 over the past year. Even when the fifth wave of the epidemic subsided, we still carried out thorough cleaning and disinfection as well as infection monitoring, by deploying an array of I&T solutions, including ultraviolet disinfection robots, fever screening systems, air purifiers and touchless sanitising stations, to safeguard staff against infection.

Welfare and Assistance for Staff

Throughout the battle against the epidemic, we continued to organise both online and face-to-face activities for our staff. As in previous years, we commissioned the Hong Kong Family Welfare Society to provide free counselling hotline service to the EMSD staff. Eight webinars on mental, emotional and physical health were held, attracting 1 100 participants.

The year also saw a kaleidoscope of recreational and sports activities, especially when the epidemic situation eased and social distancing measures were gradually relaxed in the second half of 2022. These included hydroponic planting events at the headquarters piazza, the "EMSD Master Chef" competition, a New Year day trip to Kat O, Ap Chau and Lai Chi Wo, Lifewire Run 2022 – Tung Chung, and various football and table tennis tournaments, just to name a few.

機電署員工康樂會不但舉辦各類體育活動，並安排本地一日遊，讓同事欣賞鄉郊的自然風光及歷史名勝。

The EMSD Staff Club not only organised a variety of sports activities, but also arranged a local day tour for the staff to enjoy the natural scenery and historical spots of the rural areas.

提升員工滿意度

兩年一度的員工滿意度調查為我們提供有關員工意見的重要資訊，可供參考以作持續改進。繼2021年員工滿意度調查的員工滿意度指數及回應率創新高後，我們正籌備於2023年7至8月進行下一輪調查。此外，我們很榮幸在香港人力資源管理學會舉辦的卓越人力資源獎2022，獲頒「優秀員工投入獎(企業類別)」。

從員工滿意度調查和其他渠道收集所得的員工意見，有助我們改善署內設施，回應員工的需要。舉例而言，我們優化了總部的授乳室，透過安裝物聯網傳感器，維持空氣質素及保持雪櫃溫度穩定，另外亦增設了電子預訂系統。我們會在2023年增建一間設有七個房間的授乳室，預計於第三季完成。此外，我們一個部別辦公室翻新後，獲得綠建環評室內建築鉑金評級，其節能效益表現及室內環境質素尤其獲得肯定。

機電署首次在香港人力資源管理學會舉辦的卓越人力資源獎獲頒「優秀員工投入獎(企業類別)」，我們在人力資源管理方面的出色表現獲得嘉許。

The EMSD was for the first time awarded the Elite Employee Engagement Award (Organisational Category) in the Human Resources Excellence Awards organised by the Hong Kong Institute of Human Resources Management, recognising our outstanding performance in human resources management.

Enhancing Staff Satisfaction

The biennial Staff Satisfaction Survey (SSS) provides important information on employee views which we can make reference to in pursuing continuous improvement. Further to the 2021 SSS which saw a record-high satisfaction rating and response rate, preparation for the next SSS to be conducted between July and August 2023 is now underway. In addition, we are honoured to have won the Elite Employee Engagement Award (Organisational Category) in the Human Resources Excellence Awards 2022, organised by the Hong Kong Institute of Human Resources Management.

Staff feedback obtained from SSS exercises and other channels have inspired us to enhance workplace facilities to meet specific staff needs. A case in point was upgrading the existing lactation room at the headquarters with the installation of IoT sensors to maintain air quality and keep the refrigerator temperature stable, plus the introduction of an electronic booking system. An additional lactation room with seven cubicles will be provided and is expected to be completed by the third quarter of 2023. Also worth mentioning is a newly renovated divisional office, which was awarded the BEAM Plus Interiors Platinum rating in recognition of its energy efficiency performance and indoor environmental quality in particular.

我們一個部別辦公室獲得綠建環評室內建築鉑金評級。辦公室設計以綠色環境和自然採光為主，着重可持續發展和能源效益，為同事提供舒適的工作環境。

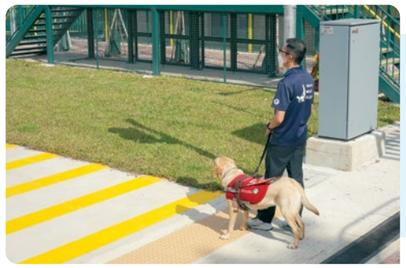
A divisional office was awarded the BEAM Plus Interiors Platinum rating. Focusing on a green environment with natural sunlight, the office design emphasised sustainable development and energy efficiency, providing a comfortable working environment for colleagues.

社區服務和參與

機電署秉承優良傳統，致力回饋社會。我們的義工在疫情期間繼續積極幫助有需要的人士，社區服務在2023年年初大致回復正常。

以科技支援導盲犬訓練

香港第一所導盲犬訓練學校於2022年12月正式開幕。該校設於由發展局資助翻新的空置校舍，專門訓練導盲犬協助視障人士。我們的團隊運用專業知識，為校舍安裝及調節模擬交通燈，讓導盲犬在近似真實的環境下，學習帶領視障人士過馬路。



年內，我們繼續運用專業機電知識貢獻社會，為導盲犬訓練學校設計及安裝模擬行人過路燈訓練系統，並根據訓練需要改裝設備，以便更靈活進行訓練。

During the year, we continued to make use of our E&M expertise to serve the community. We designed and installed the Pedestrian Crossing Light System for Guide Dog Training at the Hong Kong Seeing Eye Dog Training School, and modified the equipment according to training needs to allow greater flexibility.

扶助貧困

我們的義工隊與慈善團體仁愛堂合作，發起「編編送暖行動」，舉辦頸巾編織班，讓機電署同事學習編織技巧，親手編織頸巾給有需要的長者，為慈善出一分力。行動最終送出超過230條頸巾，為長者送上暖暖心意。

我們又與發展局和其他工務部門攜手合作，利用機電知識，在全港各區為貧困家庭提供免費家居維修服務，有關服務深受使用者歡迎。

疫情期間，為配合政府創造臨時職位的政策措施，營運基金推出首輪計劃，提供約1 450個臨時職位，有關職位的工作範疇包括改善客戶資產和宣傳教育。首輪計劃的臨時職位已於2022年6月結束。其後兩輪計劃亦已展開，截至2023年3月底，營運基金再額外開設240個職位，以提升現有服務。

我們為有需要的家庭提供家居維修義工服務，關懷弱勢社羣。

Caring about the disadvantaged in the community, we provided free home repair service for underprivileged households.

COMMUNITY SERVICE AND ENGAGEMENT

The EMSD carries on the fine tradition of giving back to the community. Our volunteers continued to serve the needy throughout the epidemic, and our community services resumed normal in general in early 2023.

Supporting Guide Dog Training with Technology

Hong Kong's first guide dog training school officially opened in December 2022. Established on the premises of a vacant school renovated with the funding of the Development Bureau (DEVB), the Hong Kong Seeing Eye Dog Training School specifically trains guide dogs to help the visually impaired. Utilising professional knowledge, our team installed and fine-tuned simulation traffic lights at the facility so that guide dogs could learn to guide the visually impaired to cross the roads in a highly realistic setting.

Helping the Needy

Working with the charity Yan Oi Tong, our volunteer team launched the "Knit for Warmth" campaign with a series of scarf knitting classes organised to enable EMSD colleagues to learn knitting skills and knit scarves for the needy elderly for a worthy cause. Eventually, more than 230 hand-knitted scarves were distributed to the elderly, bringing care and warmth to them.

We also joined hands with the DEVB and other works departments to provide free home repair services to underprivileged households across the territory by making use of our E&M expertise. Such services were well received by the recipients.

To support the Government's initiative to create temporary jobs for the community under the epidemic, the EMSTF launched the first round of programme, in which about 1 450 temporary jobs were created for carrying out client asset enhancement and publicity work. The temporary jobs under the first round of programme were completed in June 2022. The next two rounds of the programme have also begun, further creating 240 posts as at end of March 2023 to enhance existing services.

公眾教育流動宣傳車

我們深信走進社區向市民，特別是學生和兒童，進行宣傳教育，是提高公眾機電安全和節能意識的有效方法。為此，我們首輛流動宣傳車「機智生活體驗館」在2022年7月正式登場。車上除了設有有趣的展板和融合創科的互動遊戲外，更有「機智啤啤」和「智析寶寶」擔當導賞員，向參觀者介紹機電安全、能源效益及創科等資訊。在2022年7月至9月期間，宣傳車走進校園及走訪全港多處地方，吸引超過7 500人參觀。

我們首輛流動宣傳車「機智生活體驗館」走訪香港多間學校及不同地區，以輕鬆有趣的方法，積極向學生及市民推廣機電知識。

Our first mobile promotion truck, The Bearbot Lifestyle Experience, visited schools and travelled to various districts in Hong Kong to actively promote E&M knowledge to students and citizens in an interesting way.

Mobile Truck for City-wide Public Education

We believe that going into the community to conduct publicity and educational activities for the public, especially students and children, is an effective way to raise their awareness of E&M safety and energy efficiency. In this connection, our first mobile promotion truck, The Bearbot Lifestyle Experience, made its official debut in July 2022. Apart from the fun display panels and I&T-driven interactive games, the truck also featured our mascots Witty Bear and KnowBot acting as tour guides to introduce information on E&M safety, energy efficiency and I&T to visitors. From July to September 2022, the publicity vehicle visited schools and travelled to many districts across the territory, attracting over 7 500 visitors.

為慶祝機電署成立75周年，我們在2023年2月1日，於機電署總部大樓露天廣場為「機智啤啤」和「智析寶寶」的塑像舉行揭幕儀式，其後並向同事送上水果，共享喜悅。

To celebrate the 75th anniversary of the EMSD, an unveiling ceremony of Witty Bear and KnowBot statues was held at the piazza of EMSD Headquarters, followed by distribution of fruits to colleagues to share the joy on 1 February 2023.

鑽禧誌慶 展望未來

為更充分地描繪部門的願景和時代精神，我們在2022年年底修訂了機電署的抱負、使命和信念，加入創科和環保元素。更新版進一步加強我們對提供優質服務的承諾，並帶領機電署邁向科技新紀元。

2023年是機電署成立75周年。在2月1日機電署成立誌慶當天，我們在總部大樓露天廣場舉行典禮，公布周年標誌和周年主題「傳承創新同心惠民」，並進行機電署親善大使「機智啤啤」和「智析寶寶」塑像的揭幕儀式。我們將舉行一連串慶祝活動，活動的壓軸高潮是年底舉行的機電署75周年典禮暨同樂日，屆時會邀請客戶、業界和公眾一同參與。

過去70多年，機電署有幸能服務大眾，與市民休戚與共，與香港同行同進。我們會本着創新和服務社羣的精神，與各界攜手共創更美好的明天。

CELEBRATING DIAMOND JUBILEE AND LOOKING AHEAD

To better capture our aspirations and the spirit of the times, we updated the EMSD's Vision, Mission and Values (VMV) in late 2022 with elements of I&T and environmental friendliness incorporated. The revised VMV further reinforces our commitment to providing excellent services and leads us towards a new era of technology.

The year 2023 marks the 75th anniversary of the EMSD. On 1 February, our birthday, a ceremony was held at the piazza of EMSD Headquarters Building. In the ceremony, the anniversary logo with the theme of "Serving the Community with Heart and Innovation" was announced and the statues of our mascots Witty Bear and KnowBot unveiled. A series of celebratory events will be rolled out, which will culminate in the EMSD 75th Anniversary Ceremony cum Fun Day to be held by the end of this year to engage our clients, the trade and the public.

The EMSD is grateful for the opportunity to have served and grown with Hong Kong for more than seven decades. In the spirit of innovation and serving the community, we aim to co-create an even brighter future with all walks of life.

社會及環保報告
SOCIAL AND ENVIRONMENTAL REPORT

推動環保　服務社羣　花繁葉茂
Sustainability and Community Work Blossoms

關於本報告
ABOUT THIS REPORT

匯報原則

機電工程署(機電署)矢志推動社會及環境持續發展，每年均發表社會及環保報告，全面匯報部門在各連作範疇實踐的可持續發展措施。本《社會及環保報告2022/23》(本報告)概述機電署於年內的可持續發展成效和工作進展，具體闡明本署如何致力為環境及社會帶來裨益。

本報告根據全球報告倡議組織發布的2021年全球報告倡議組織可持續發展報告標準編寫，並參照環境保護署的《環保報告指引 — 管制人員適用》和聯合國可持續發展目標。為保持優良質素，機電署編製報告時依循準確性、平衡性、清晰度、可比性、完整性、可持續發展背景、時效性和可驗證性的報告原則。

相關的全球報告倡議組織和可持續發展目標的披露及對照的本報告章節已載於第214頁的**全球報告倡議組織內容索引**，並附有其他適用的補充資料。為確保本報告的準確性、可靠性及公信力，機電署已委託獨立第三方核實本報告，詳情請參閱第235-236頁的**獨立保證意見聲明書**。

本報告已通過全球報告倡議組織的「內容索引–基本服務」評核，確認本報告的全球報告倡議組織內容索引闡述清晰，2-1至2-5、3-1及3-2披露議題的參照索引與本報告內文的相應章節一致。

REPORTING PRINCIPLES

Committed to social and environmental sustainability, the Electrical and Mechanical Services Department (EMSD) continues to publish its Social and Environmental Report annually to provide a comprehensive overview on how sustainability is embedded in different aspects of our operations. The Social and Environmental Report 2022/23 (hereafter "this Report") presents our sustainability performance and progress, with highlights on our accomplishments in creating value for the environment and community during the reporting year.

This Report has been prepared according to the GRI Sustainability Reporting Standards 2021 (GRI Standards) published by the Global Reporting Initiative, as well as taking reference from A Guide to Environmental Reporting for Controlling Officers published by the Environmental Protection Department and the United Nations Sustainable Development Goals (SDGs). In order to maintain high reporting quality, the EMSD has aligned with the reporting principles of accuracy, balance, clarity, comparability, completeness, sustainability context, timeliness and verifiability in preparing the report.

The **GRI Content Index** on page 214 provides a cross-reference of relevant GRI and SDGs disclosures against corresponding sections of this Report, with supplementary information included where applicable. In order to ensure the accuracy, reliability and credibility of this Report, a third party has been commissioned by the EMSD to provide independent assurance. Please refer to the **Independent Assurance Opinion Statement** on page 235-236 for details.

Furthermore, this Report has been reviewed by the GRI Content Index – Essential Service to confirm that the enclosed GRI Content Index is clearly presented and that references for Disclosures 2-1 to 2-5, 3-1 and 3-2 are aligned with appropriate sections in the body of this Report.

報告範圍

本報告載述機電署於2022/23財政年度(由2022年4月1日至2023年3月31日)在可持續發展方面的主要工作成果，內容涵蓋年內各項可持續發展措施及計劃的資料和主要數據。除另外說明，本報告中所有數據均為部門於知悉範圍內所整合的標準化實際數字，所有財務數據的金額均以港元為單位。

機電署轄下設有規管服務及營運服務兩大服務範疇，後者亦稱為機電工程營運基金。於匯報期內，機電署的權責關係、規模、架構或供應鏈均無重大變化。

REPORTING SCOPE

The EMSD's key sustainability achievements during the Financial Year 2022/23 (from 1 April 2022 to 31 March 2023) are highlighted in this Report by providing detailed descriptions and key statistics regarding our sustainability initiatives and programmes. All data contained in this Report are standardised and presented in absolute figures to the best of our knowledge unless otherwise specified. Financial data are denominated in Hong Kong Dollars unless otherwise stated.

The EMSD consists of two functional units: Regulatory Services and Trading Services. The Trading Services is also known as the Electrical and Mechanical Services Trading Fund. During the reporting period, there were no major changes in the departmental ownership, size, structure or supply chain of the EMSD.

重要議題

為界定對機電署及持份者最息息相關的可持續發展議題並擬定其優先次序，本署在擬備報告的過程中舉行持份者參與活動，以助編製報告內容。我們已充分考慮不同持份者對機電署運作及服務的關注度和期望。

機電署近年識別了多個主要持份者組別並邀請他們參與諮詢，包括員工、客戶、承辦商/供應商、學術團體、業界、專業團體及公眾。我們每年聘請獨立外界顧問就編製可持續發展報告進行多類持份者參與活動，以聽取和分析各方的意見。我們根據持份者回應的意見進行重要性評估，據此釐定最相關環境、社會及經濟議題的優先次序。

MATERIAL TOPICS

To identify and prioritise sustainability topics that are most relevant to the EMSD and its stakeholders, the EMSD conducted a stakeholder engagement exercise during report preparation to facilitate the development of reporting content, by taking into consideration the interests and expectations of different stakeholders towards the EMSD's operations and services.

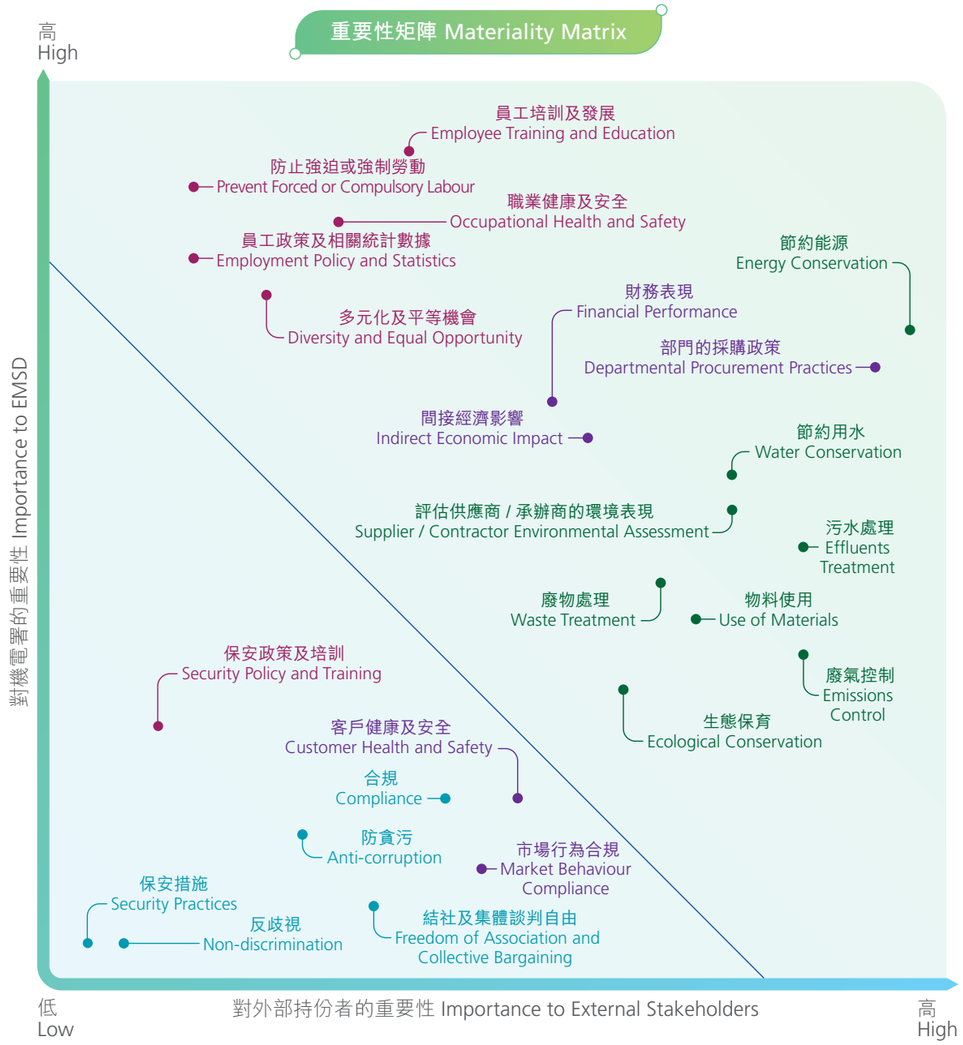
In recent years, the EMSD has identified and engaged a number of key stakeholder groups, including our staff, clients, contractors / suppliers, academia, trades, professional associations and the public. An independent external consultant has been appointed by the EMSD to conduct annual stakeholder engagement activities for sustainability reporting to gauge and analyse stakeholders' opinion across the spectrum. Based on collected feedback from stakeholders, we conducted materiality assessments to prioritise most relevant topics in the environmental, social and economic areas.

關於本報告
ABOUT THIS REPORT

2023年4月，我們透過問卷調查諮詢了學術團體、業界及公眾，機電署感激各界不吝賜教，向我們提供寶貴意見，以助確定本報告的重要議題。以下的重要性矩陣列出重要性評估的結果，並根據持份者的關注度概述24個可持續發展議題的重要性。本報告共識別出16項重要議題，分別置於下圖分界線的右上角及載於右頁列表。

In April 2023, a survey was conducted to invite input from academia, trade and the general public. We are grateful for their valuable opinions, which we refer to when confirming the material topics for this Report. The following materiality matrix summarises the results of our materiality assessment, providing an overview of the significance of the 24 selected sustainability topics to our stakeholders as indicated by their interest levels. A total of 16 material topics are mapped at the upper right corner in the graph above the cut-off line. These material topics are also listed in the table on the right page.

重要性矩陣 Materiality Matrix



重要議題 Material Topics

環境 Environmental

- 生態保育 Ecological Conservation
- 節約能源 Energy Conservation
- 污水處理 Effluents Treatment
- 廢物處理 Waste Treatment
- 廢氣控制 Emissions Control
- 節約用水 Water Conservation
- 物料使用 Use of Materials
- 評估供應商 / 承辦商的環境表現 Supplier / Contractor Environmental Assessment

經濟 Economic

- 財務表現 Financial Performance
- 部門的採購政策 Departmental Procurement Practices
- 間接經濟影響 Indirect Economic Impact

社會 Social

- 員工培訓及發展 Employee Training and Education
- 多元化及平等機會 Diversity and Equal Opportunity
- 員工政策及相關統計數據 Employment Policy and Statistics
- 職業健康及安全 Occupational Health and Safety
- 防止強迫或強制勞動 Prevent Forced or Compulsory Labour

歡迎讀者於機電署網站閱覽或下載本報告，並就我們的運作、可持續發展方面的成效、報告內容和方式提出意見及建議，您的寶貴意見有助我們持續改進。如有任何查詢或意見發表，請透過電郵與我們聯絡：ccsd@emsd.gov.hk。

We welcome readers to view or download this Report on the EMSD website. Feedback from readers is valuable to us for continual improvement of our operations, sustainability performance, reporting content and approach. Please feel free to contact us at ccsd@emsd.gov.hk if you have any comments or enquiries.

環境及社會概覽
ENVIRONMENTAL AND SOCIAL HIGHLIGHTS

環保成效概覽
Environmental Performance Highlights

訂立綠色能源目標，在2020/21至2024/25年度提升能源表現6%（以2018/19年度為基準）
Green Energy Target of improving energy performance from 2020/21 to 2024/25 by 6% (2018/19 as baseline)

2022/23年度機電署建築物及其基礎設施能源表現提升
Improving Energy Performance of EMSD Buildings and Infrastructure Facilities in 2022/23
3.2%

啟德區域供冷系統截至2022/23年度共節省
Kai Tak District Cooling System Saved
51 百萬千瓦小時電力 million kWh of electricity by 2022/23

於2022/23年度已落成淡水冷卻塔的設施
Successful Implementation of Fresh Water Cooling Towers within 2022/23
每年可減少約 can save approximately **40.91** 百萬千瓦小時電力 million kWh of electricity per year

增加廢紙回收量
Increasing Waste Paper Recycling
2022/23年度（目標24 403公斤）
2022/23 (Target 24 403 kg)
實際回收量 Actual **26 123** 公斤 kg
達標 Achieved

減少碳粉及噴墨盒購買和耗用量
Reducing Toner and Inkjet Cartridge Purchases and Consumption
2022/23年度（目標6 929個）
2022/23 (Target 6 929 no.)
實際用量 Actual **4 636** 個 no.
達標 Achieved

減少私家車碳足跡
Reducing Private Car Carbon Footprint
2022/23年度（目標1 123噸二氧化碳當量）
2022/23 (Target 1 123 tonnes of carbon dioxide equivalent)
實際排放量 Actual **1 031** 噸二氧化碳當量 tonnes of carbon dioxide equivalent
達標 Achieved

機電署建築物於2022/23年度產生的可再生能源
EMSD Buildings Generated Renewable Energy in 2022/23
143 000 千瓦小時 kWh

社會成效概覽
Social Performance Highlights

連續第九年獲得香港社會服務聯會頒發的**「同心展關懷」**標誌
The Ninth Consecutive Year of Receiving the **Caring Organisation** Logo from the Hong Kong Council of Social Service

持續參與**《精神健康職場約章》**，建設精神健康友善的工作環境
Continued to participate in the **Mental Health Workplace Charter** to create a supportive work environment for mental well-being

持續參與**《有能者．聘之約章》**及**共融機構嘉許計劃**，支持平等機會和有特殊需要人士的就業
Ongoing engagement in the **Talent-Wise Employment Charter** and **Inclusive Organisations Recognition Scheme** supporting equal opportunities and the employment of individuals with special needs

邁向「零意外」的工作環境
Towards an Accident-Free Workplace
- 死亡率：0（員工及承辦商）
  Rate of fatalities: 0 (employees & contractors)
- 嚴重工傷率：0.03（員工）；0.05（承辦商）
  Rate of high-consequence work-related injuries: 0.03 (employees), 0.05 (contractors)
- 工傷率：0.26（員工）；0.22（承辦商）
  Rate of recordable work-related injuries: 0.26 (employees), 0.22 (contractors)

培訓時數
由141 047小時 (2021/22年度)增至
Training Hours
Increased from 141 047 hours (2021/22) to
145 216
小時 hours (2022/23)

在香港人力資源管理學會舉辦的卓越人力資源獎中獲得**「優秀員工投入獎(企業類別)」**殊榮
Granted the **Elite Employee Engagement Award (Organisational Category)** in the Human Resources Excellence Awards from the Hong Kong Institute of Human Resources Management

在義工項目合共錄得 Contributed a total of **482.5** 小時義工服務時數 man-hours in volunteering projects

在**2022年公務員優質服務獎勵計劃**中榮獲四個金獎、四個銀獎及五個優異獎
Won four Gold Prizes, four Silver Prizes and five Meritorious Awards in the **Civil Service Outstanding Service Award Scheme 2022**

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

機電署透過規管服務及營運服務兩大職能，盡心竭力促進環境和社會持續發展。

本署規管服務團隊負責推行多項規管計劃及公眾教育活動，要旨是保障香港的機電安全和促進能源效益。規管服務經常為公眾及業界舉辦技術工作坊、論壇、研討會和會議，推廣良好作業，倡導各行各業提高能源效益，此外，並會向政府提供專業意見和技術指導，以及建議立法和發布各類指引。

我們的營運服務團隊緊貼客戶及業界的最新需要，年內繼續運用最新技術和最佳作業方法，提供優質完備的專業機電服務。團隊並會引入最先進的技術及創新方案，以助客戶持續改善營運場所的能源表現。

我們在最高管理層的領導下，緊守部門的核心價值，熱心關愛員工、客戶、社會和環境，並向各職級的同事表述這個宗旨。機電署的管理層和同事一直並肩合作，致力創造更美好的環境及持續推進人力資源發展，同時確保本署及承辦商員工達到最高的工作安全和健康標準。機電署亦長期實施多項計劃力求進步，不斷提升部門的核心能力和可持續發展成效。

At the EMSD, we are devoted to promoting environmental and social sustainability in our operations through Regulatory Services and Trading Services.

The Regulatory Services team is responsible for executing various regulatory schemes and conducting public education activities to ensure electrical and mechanical (E&M) safety and promote energy efficiency in Hong Kong. Through organising technical workshops, forums, seminars and conferences for the public and the industry, the team strives to improve energy efficiency by promoting best practices to all industries. In addition, it provides professional advice and technical expertise to the Government to facilitate its introduction of legislation and guidelines.

Staying informed of the evolving needs of our clients and the trade, the Trading Services team continued to provide professional, comprehensive and quality E&M engineering services with the latest technologies and best practices. By applying state-of-the-art technologies and innovative solutions, the team helps continuously improve the energy performance of client premises.

Steered by top management, we adhere to the core value of caring for staff, customers, the community and the environment, and communicate this principle to our employees at all levels. With the concerted effort of our management and staff, the EMSD is committed to building a better environment, continuous development of human resources, as well as achieving and maintaining a high standard of safety and health at work for in-house staff and contractor employees. The EMSD has also put in place ongoing programmes for the continuous improvement to enhance corporate core competencies and sustainability performance.

可持續發展管理

機電署致力在日常營運及決策過程中加入環境及社會方面可持續發展的考慮。除了嚴格遵守相關的社會及環境法律與規例，我們也全力推行部門的環境、安全及健康政策。我們在可持續發展管理系統的框架下，定期檢討及管理與可持續發展相關的風險，並會盡量減低潛在的負面影響和開拓新機遇，力求改進。此外，我們會不時檢討可持續發展策略和政策，務求與最新的政府政策及國際趨勢同步邁進。我們亦會廣開渠道與各界持份者緊密溝通，將可持續發展表現推向更高水平。

SUSTAINABILITY MANAGEMENT

The EMSD endeavours to promote sustainable development and take into consideration environmental and social aspects in our operations and decision-making process. We strictly comply with all applicable social and environmental laws and regulations, and regard different environmental, safety and health policies. As an integral part of our sustainability management systems, we regularly review and manage sustainability-related risks, and strive to minimise any potential adverse impacts, while exploring new opportunities for improvement. We also continuously review our sustainability strategies and policies to align with the latest government policies and international trends. We provide a range of communication channels to maintain close dialogue with our stakeholders for continuous improvement of our sustainability efforts.

為完善管理機電署的運作，以切合可持續發展原則，規管服務及營運服務均已設立符合國際標準或最佳作業方法的綜合管理系統，範圍涵蓋多項經濟、環境及社會議題，例如品質、資產、環境、能源、職業健康與安全和資訊安全等。為確保機電署與時並進，精益求精，我們建立了強大的管理架構，下設多個委員會，包括品質、環境及生產力策導委員會、職業安全及健康策導委員會和環保管理委員會，負責監督運作表現、訂立目標、開展新計劃和促進知識保存與分享。

機電署員工秉持崇高的誠信和操守為公眾服務，嚴格遵從所有公務員行為守則及指引，包括關於處理利益衝突和防貪的規條。我們設有多種渠道供持份者提出關注與疑慮，例如透過電話、傳真或電郵聯絡機電署資訊服務中心、公務員事務局及廉政公署。於匯報期內，機電署並無因為違反相關法律或規例而被懲處任何大額罰款或非金錢制裁。

我們沿用政府的機制，透過全面表現評估系統評定員工在實踐機電署目標、提供社會及環境效益方面的表現，當中包括高級職員在內。我們在甄選和擢升員工時，嚴守客觀誠信的道德原則，同時制訂完善的薪酬政策，藉以吸引、挽留和激勵人才為公眾提供優質服務，另外，我們亦成立了多個專責常務委員會，就不同職級員工的薪酬及薪級表提供意見。

To govern the EMSD's operations in a sustainable manner, integrated management systems have been implemented for the Regulatory Services and Trading Services, covering a range of economic, environmental and social topics, such as quality, assets, environmental, energy, occupational health and safety, and information security, in line with international standards or best practices. To ensure continuous improvement of the EMSD, a robust management structure supported by designated committees is also put in place to oversee operational performance, set up targets, initiate new programmes and promote knowledge retaining and sharing. These include the Quality, Environmental & Productivity Steering Committee, the Steering Committee on Occupational Safety and Health and the Green Management Committee.

Committed to maintaining a high standard of integrity and conduct in delivering service, the staff of the EMSD strictly abide by the code of conduct and guidelines for civil servants, including those handling conflicts of interest and prevention of corruption. Various channels are available for stakeholders to raise any concerns, such as getting in touch with the Information Service Centre of the EMSD, the Civil Service Bureau and the Independent Commission Against Corruption by phone, fax or email. During the reporting period, the EMSD was not subject to significant fines or non-monetary sanctions for non-compliance with laws or regulations.

Following the mechanism of the Government, a comprehensive performance evaluation system is in place to review the performance of staff, including senior staff, towards the EMSD's operational goals that contribute to our social and environmental impacts. Impartiality and integrity are safeguarded during the selection and promotion of staff, and a pay policy has been implemented to attract, retain and motivate talent to provide quality services. Dedicated standing committees are established to advise on matters regarding salaries and pay scales for staff of different ranks.

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

本地及全球可持續發展背景脈絡

香港政府一直與全球攜手應對氣候變化，積極作出貢獻，並已承諾於2050年前達致碳中和。為達成目標及實現共同利益，政府決心在2020/21至2024/25年度的五年內改善能源表現，目標是在相同的運作條件下，較2018/19基準年度的水平提高6%。為促進政府實踐目標，改善能源表現及邁向碳中和，機電署一直悉力優化香港的能源管理規管架構，與此同時，為廣大持份者提供協助，包括各界機構和個人，從而創造協同優勢，一起推進能源效益及實現減碳的共同目標。

在國際層面上，機電署參照聯合國可持續發展目標，相應地部署可持續發展措施，務求與全球可持續發展進程步伐一致。我們識別了八項與我們營運最相關的聯合國可持續發展目標，針對此八項目標的工作成果簡述如下。

Local and Global Sustainability Context

Contributing to global efforts in combating climate change, the Hong Kong Government has played an active role and pledged to achieve carbon neutrality by 2050. Striving for this common good, the Government is committed to improving energy performance by 6% for the five-year period from 2020/21 to 2024/25, under comparable operating conditions of the 2018/19 baseline. In order to support the Government's target of improving energy efficiency and moving towards carbon neutrality, the EMSD has made its best efforts to improve Hong Kong's regulatory energy management framework and provide assistance to different stakeholders, including organisations and individuals, so that all could join hands to optimise energy performance and achieve carbon reduction goals.

At the global level, the EMSD responds to the global sustainability agenda by referencing the United Nations Sustainable Development Goals (UNSDGs) and aligning our sustainability efforts accordingly. We have identified eight UNSDGs which are most relevant to our operations. Our latest efforts towards these eight UNSDGs are summarised below.

環境層面 Environmental Aspect

相關聯合國可持續發展目標 Relevant SDGs	機電署於2022/23年度的貢獻 Contributions by the EMSD in 2022/23
  	• 針對《香港氣候行動藍圖2050》擬定工作計劃。 Drew up working plan in response to Hong Kong's Climate Action Plan 2050. • 定期檢討及實施相關法例、政策、計劃和其他措施，支持香港減碳量。 Regularly reviewed and implemented relevant legislation, policies, schemes and other initiatives to support carbon reduction in Hong Kong. • 達到回收紙張、減少購買碳粉及噴墨盒、減少私家車碳足跡的目標。 Achieved targets for recycling paper, reducing toner and inkjet cartridge purchases and reducing the carbon footprint of private cars.

詳情請參閱**促進環境可持續發展**章節
Please refer to **Environmental Sustainability** for details

社會層面 Social Aspect

相關聯合國可持續發展目標 Relevant SDGs	機電署於2022/23年度的貢獻 Contributions by the EMSD in 2022/23
    	• 繼續透過舉辦一系列培訓課程及計劃推廣職業安全與健康。 Continued to promote occupational safety and health through a series of training and schemes. • 為機電業現職專業人才及新血提供培訓，促進專業發展。 Nurtured professional growth by providing training to current E&M professionals and new blood in the industry. • 繼續參與《有能者．聘之約章》及共融機構嘉許計劃。 Continued to participate in the Talent-Wise Employment Charter and Inclusive Organisations Recognition Scheme.

詳情請參閱**社會成效**章節
Please refer to **Social Performance** for details

管理可持續發展相關風險

機電署主動推行措施，預防負面影響，同時促進可持續發展。我們採取防患於未然的風險管理方針，監察、防範或緩解營運上潛在風險的隱患，務求不斷改進。本署已擬備企業及業務計劃，評估風險與機遇，當中包括與可持續發展相關的風險與機遇，此外亦設有監管機制完善管理風險。我們定期為客戶的工程方案安排預防性檢查及維修保養，確保運作安全可靠。

Sustainability-related Risk Management

The EMSD takes proactive measures to prevent adverse impacts and foster sustainable development. Adopting a risk-based precautionary approach, the EMSD strives to monitor, prevent or mitigate undesired effects of potential risks relating to its operations, and to achieve continuous improvement. The EMSD has developed the Corporate and Business Plan for evaluating risks and opportunities, including sustainability-related ones while setting in place a control mechanism for effective risk management. Moreover, preventive inspection and maintenance are also scheduled regularly for client engineering solutions to ensure they function safely and reliably.

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

持份者的參與

我們繼續組織不同活動，與各界持份者廣泛溝通並聽取他們的心聲，這類活動既可蒐集意見，亦有助我們檢討可持續發展議題，我們充分參考意見後作出明智的決策及部署行動，應對可持續發展路上的新挑戰。下表列出了我們不定期地推動持份者參與的主要管道。

STAKEHOLDER ENGAGEMENT

We continued to engage a wide range of stakeholders through different activities to encourage communication and feedback. At the same time, these engagement activities facilitated our review of sustainability topics and provided valuable references for us to make informed decisions and actions to respond to upcoming sustainability challenges. The following table lists some major channels that have been periodically used for our stakeholder engagement.

主要持份者 Key Stakeholders	主要參與渠道 Key Engagement Channels
客戶 Clients 政府決策局及部門 Government Bureaux and Departments	客戶意見調查及訪問 Customer Opinion Surveys and Interviews 電話調查 Telephone Surveys 客戶通訊 Customer Newsletters 合作項目 Joint-projects 會議 Meetings 研討會及座談會 Symposiums and Seminars 報告重要議題調查 Report Materiality Survey 參觀機電署總部 Visits to the EMSD Headquarters (HQs)
供應商及承辦商 Suppliers and Contractors	會議 Meetings 報告重要議題調查 Report Materiality Survey 研討會及座談會 Symposiums and Seminars
公眾人士 General Public 學術團體 Academia 非政府組織 Non-governmental Organisations 培訓機構 Training Institutes	機電安全及節能社區推廣活動 Community-wide Promotion of E&M Safety and Energy Efficiency 合作項目 Joint-projects 研討會及座談會 Symposiums and Seminars 會議 Meetings 通訊 Newsletters YouTube 社交媒體平台 Social Media Platforms 外展計劃 Outreach Programmes 報告重要議題調查 Report Materiality Survey 公眾調查 Public Surveys 參觀機電署總部 Visits to the EMSD HQs

主要持份者 Key Stakeholders	主要參與渠道 Key Engagement Channels
傳媒 Media	傳媒聚會 Media Gatherings 就傳媒查詢回應及發表意見 Feedback and Responses to Media Enquiries
員工 Staff	員工滿意度調查 Staff Satisfaction Surveys 員工工會及員工協商委員會 Staff Unions and Departmental Consultative Committees 焦點討論小組 Focus Groups 員工通訊 Staff Newsletters 高級管理層親善大使探訪 Ambassador Visits by Senior Management 培訓課程 Training Sessions 比賽及團隊建立活動 Competitions and Team-building Activities 會議 Meetings 報告重要議題調查 Report Materiality Survey
專業團體及行業公會 Professional and Trade Associations 受規管行業 Regulated Trades	業界調查 Trade Surveys 研討會及座談會 Symposiums and Seminars 工作小組 Working Groups 會議 Meetings 報告重要議題調查 Report Materiality Survey

此外，機電署已委託外界的獨立顧問安排活動，加強持份者的參與度，以協助界定機電署年度社會及環保報告的匯報範圍。此類活動旨在識別納入機電署社會及環保報告的優先重要議題(詳情請參閱**關於本報告**章節)。

In addition, the EMSD has appointed an independent external consultant to further stakeholder engagement to help define the scope of our annual Social and Environmental Reports (SERs). These activities aim to prioritise the most relevant material topics to be included in the EMSD's SERs (Please refer to the **About this Report** section for details).

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

聯繫我們的客戶

服務客戶是我們的不變承諾，機電署竭誠為客戶提供優質的工程服務方案和稱心的客戶體驗。我們委託獨立市場研究公司每兩年進行一次客戶意見調查，藉以了解客戶的看法，創造更愜意的客戶體驗。我們於2022年進行的最新調查，整體客戶滿意指數為7.03分(以8分為滿分)。

我們設有「顧客為本電子平台」，方便客戶了解本署的工作進度。該平台的流程持續進行升級，從而提高委派工作和追蹤工作進度的效率及透明度，讓客戶一目了然。

我們善用日益先進的數碼科技，進一步優化本署為業界提供的服務。機電署積極應用創新技術，提升服務質素，以及為客戶提供數碼化機電工程方案。本署已設立「政府物聯通」和區域數碼監控中心，具有實時監察及控制功能，可提高機電設備的運作效率和環境表現。

機電署總部是展示創科理念應用方案的理想平台，例如物聯網可用泊車位檢視系統及綜合式智能貨倉。年內我們安排公眾和多個政府部門的團體到機電署總部參觀。

聯繫我們的供應商

本署要求所有提供機電服務以及與機電安裝、操作和維修相關零部件、設備及服務的承辦商和供應商達到我們的嚴格規定，確保符合最高的品質與安全標準。我們遵循公開及公平的程序甄選承辦商和供應商，並定期檢討他們的表現，確保他們遵行所有關於守法合規、產品質素標準、職業健康與安全、商業操守和環境管理的規定，此外並向承辦商和供應商闡述關於職業健康與安全的政策及指引。

於2022/23年度，共有2 892間供應商為機電署提供各類產品和服務，這些機構包括人力仲介公司、活動、電訊、資訊科技和金融服務供應商等。此等產品和服務供應商主要向我們提供與機電安裝、操作及維修工程相關的零部件、設備和服務，當中逾99%為香港本地企業，以合約形式參與個別活動或項目。

Engaging our Clients

Providing quality engineering solutions to our clients and enhancing customers' experience is our ongoing endeavour. Every two years, we appoint an independent market research company to conduct a Customer Opinion Survey (COS) to better understand our clients' perspectives for enhancing their experience. The latest COS was completed in 2022, and the overall Customer Satisfaction Index was 7.03 out of 8.

With the adoption of Customer Centric e-Platform (CCeP), our clients can be kept informed of our work progress in a convenient manner. We have been upgrading the processes of CCeP so that work assignment and progress tracking will become more efficient and transparent to clients.

Benefitting from digitalisation, the EMSD further enhanced our service provision to the industry. The EMSD has applied innovative technologies to raise service quality and provide digitised E&M engineering solutions for clients. The EMSD established the Government-Wide Internet of Things Network and Regional Digital Control Centres which effectively enhance the operational efficiency and environmental performance of E&M equipment through real-time monitoring and controls.

The EMSD Headquarters is a platform to showcase innovation and technology applications, such as the Internet of Things-based Car Park Availability System and Integrated Smart Warehouse. Visits were arranged for the public and government departments during the year.

Engaging our Suppliers

By putting in place stringent requirements for contractors and suppliers providing E&M services as well as parts or equipment and services related to E&M installation, operation and maintenance, we strive to ensure the highest level of quality and safety. The selection process for contractors and suppliers is conducted in an open and fair manner. We review the performance of contractors regularly and ensure that they comply with all applicable requirements for legal compliance, product quality standards, occupational health and safety, business conduct and environmental management. We also communicate the EMSD's policies and guidelines on occupational health and safety to all contractors and suppliers.

In 2022/23, the EMSD has engaged a total of 2 892 suppliers, covering different types of products and services, including human resources agencies, events, telecommunications, information technologies, financial services, etc. Supplies engaged for the EMSD's products and services are mainly involved in the provision of parts, equipment and services related to E&M installation, operation and maintenance. More than 99% of the suppliers are located in Hong Kong, and they are engaged under contractual relationships for individual events or project-based.

所有納入註冊名單的新供應商均會註明可提供的環保產品。於匯報期內，我們共新增60間可提供環保產品的供應商，現時供應商名冊上共有543間環保產品供應商。除此之外，我們亦會參照環境保護署訂立的環保規格，選購合適的產品與服務。

When registering new suppliers, the EMSD will record any offer on environmental friendly products. During the reporting period, we recorded 60 newly added suppliers offering environment-friendly products, bringing the total number of environment-friendly suppliers on our supplier list to 543. In addition, when selecting products and services, we adopt green specifications promoted by the Environmental Protection Department as far as practicable.

供應鏈管理的環境及社會層面
Environmental and Social Aspects of Supply Chain Management

環境層面
Environmental Aspect

- 規定承辦商和供應商嚴格履行合約訂明的環保規定。
  To require contractors and suppliers to place great emphasis on environmental requirements in contracts.
- 要求承辦商和供應商遵守ISO 14001環境管理系統認證標準所指定的環保規定。
  To request contractors and suppliers to observe environmental requirements stipulated by the ISO 14001 Environmental Management System standard.
- 鼓勵供應商提供環保產品。
  To encourage suppliers to provide environmentally friendly products.
- 保存環保產品供應商資料在本署數據庫以供日後採購時評選。
  To keep information of suppliers offering sustainable products in our database for future procurement consideration.
- 納入環保採購指引促進供應商採購環保物料及產品。
  To incorporate green procurement guidelines for suppliers to source green materials and products.

社會層面
Social Aspect

- 遵守所有與安全及健康有關的法例規定及合約條款、相關的標準和實務守則，並推動主動積極、風險為本的文化，預防意外發生。
  To observe all statutory and contractual requirements for safety and health, relevant standards and codes of practice, and foster a pro-active risk-based accident prevention culture.
- 監察承辦商的工地安全與健康表現，就表現未如理想的情況，適時採取必要的行動，避免意外發生。
  To monitor the site safety and health performance of our contractors, and to take necessary actions timely in case of sub-standard performance and for preventing accidents.
- 致力不斷改進安全與健康的管理及表現，包括尋找及制訂最佳安全健康實務做法，要求承辦商採納或向其推廣。
  To strive for continual improvement in safety and health management and performance, including identifying and developing best practices in safety and health, and requiring or promoting where appropriate the adoption of such practices by our contractors.

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

打造香港成為綠色智慧城市一直是我們努力的目標，所以我們與各界持份者合作無間，當中包括承辦商和供應商。我們鼓勵承辦商和供應商分享創新意念或先進科技，並特設「機電創科網上平台」，讓供應鏈伙伴分享最新引入的產品與技術。

It is our long-standing commitment to make Hong Kong a greener and smarter city. To advance this goal, we have been actively engaging different stakeholders, including our contractors and suppliers. We encourage contractors and suppliers to share their innovative ideas or advanced technologies. For this reason, we have established an E&M InnoPortal which serves as a technical platform for our supply partners to share their latest products and technologies.

「機電創科網上平台」：https://inno.emsd.gov.hk/tc/home/
E&M InnoPortal: https://inno.emsd.gov.hk/en/home/

可持續發展認證及嘉許

我們嚴格遵守所有相關的環境及社會規例，貫徹實施關於品質、安全與健康的工作和環境政策，與此同時，我們設有綜合管理系統，周全管理各類可持續發展及營運層面事務。綜合管理系統結合ISO 9001品質管理系統、ISO 14001環境管理系統、ISO 37001反賄賂管理系統和ISO 45001職業健康與安全管理系統。另外，我們取得ISO 13485醫療器材品質管理系統、ISO 27001資訊安全管理系統、ISO 50001能源管理系統和ISO 55001資產管理系統的證書。

SUSTAINABILITY CERTIFICATIONS AND RECOGNITIONS

In addition to strict compliance with all applicable environmental and social regulations, and adherence to our work and environment policies on quality, safety and health, the EMSD has implemented an Integrated Management System (IMS) to provide holistic management of different sustainability and operation aspects. The IMS incorporates the requirements of ISO 9001 Quality Management System, ISO 14001 Environmental Management System, ISO 37001 Anti-bribery Management System and ISO 45001 Occupational Health and Safety Management System. Also, we obtained certifications for ISO 13485 Medical Devices – Quality Management System, ISO 27001 Information Security Management System, ISO 50001 Energy Management System and ISO 55001 Assets Management System.

於匯報期內，我們榮獲多個由外界機構頒發的獎項，表揚我們卓越的營運及服務，這些嘉許印證本署致力提供優良服務，促進可持續發展。

During the reporting period, the EMSD has received a number of external awards that recognise our excellent operations and services. They testify to our competence in delivering service for sustainable development.

機電署總部取得由環境運動委員會聯同環境及生態局所協辦「香港綠色機構認證」計劃的「香港綠色機構」榮譽，肯定我們在綠色管理方面的佳績。該計劃旨在嘉許綠色機構和表揚機構在環保方面所作出的貢獻及承諾。除此之外，機電署總部亦取得該計劃內的「清新室內空氣證書」，我們致力確保室內空氣質素達到「良好級別」水平，表現備受嘉許。

In recognition of our achievements in green management, the EMSD Headquarters was granted the title of Hong Kong Green Organisation under the scheme of Hong Kong Green Organisation Certification (HKGOC), led by the Environmental Campaign Committee alongside the Environment and Ecology Bureau. HKGOC aims to benchmark green organisations and recognise efforts and commitments to the environment. The EMSD Headquarters also received an IAQwi$e Certificate with Good Level under the scheme, which commends our committed efforts to ensure a high level of indoor air quality (IAQ).

「香港綠色機構」證書及標誌
Hong Kong Green Organisation Certificate and Logo

清新室內空氣證書
IAQwi$e Certificate

機電署團隊奮力提供優質服務，為業界、社會和環境創造裨益，我們的傑出表現獲得客戶及業界讚賞。機電署於2022年公務員優質服務獎勵計劃囊括13個獎項，包括「卓越部門精進服務獎(大部門組別)」金獎、「創新及科技獎(持份者協作)」金獎、「卓越團隊協作獎(監管服務)」金獎，以及與18個決策局和部門合作「同心築」項目獲頒發「卓越部門合作獎」金獎。獎項帶來無比的激勵，機電署今後定將繼續盡力為公眾和客戶提供優質服務，並會應用創新科技，使公共服務達到更佳效益。

The EMSD team is committed to providing quality services for the betterment of the industry, society and the environment. Our performance has won acclaim from clients and the trade. In the Civil Service Outstanding Service Award Scheme 2022, the EMSD garnered 13 awards, including the Gold Prize in Excellence in Service Enhancement (Large Department Category), the Gold Prize in Innovation and Technology Awards (Best Stakeholder Collaboration), the Gold Prize in Excellence in Team Collaboration (Regulatory Service) and the Gold Prize in Excellence in Partnership for Together We Build, a collaboration project with 18 bureaux and departments. With such encouragement, the EMSD will continue its endeavour to provide quality services to the public and clients as well as enhancing the effectiveness of public services with innovative technology.

機電署榮獲香港最具創新力知識型機構大獎2022 殊榮。
The EMSD won the Hong Kong Most Innovative Knowledge Enterprise Award 2022.

機電署持續推動創新及知識管理，2022年10月，機電署榮獲香港理工大學頒發香港最具創新力知識型機構大獎2022，同年12月更榮獲全球最具創新力知識型機構大獎委員會頒發全球最具創新力知識型機構大獎2022。兩項殊榮肯定了本署的傑出表現，憑藉創新及知識管理提升工作效率並持續進步。

The EMSD continues to promote innovation and knowledge management, we received the Hong Kong Most Innovative Knowledge Enterprise Award 2022 from the Hong Kong Polytechnic University in October 2022, followed by the Global Most Innovative Knowledge Enterprise (MIKE) Award 2022 granted by the International Global MIKE Award Committee in December 2022. These awards recognised our stellar performance in innovation and knowledge management which in turn enhances work efficiency and facilitates continuous improvement.

機電署榮獲全球最具創新力知識型機構大獎2022 殊榮。
The EMSD won the Global Most Innovative Knowledge Enterprise Award 2022.

機電署年內並首次參與香港人力資源管理學會主辦的卓越人力資源獎，奪得「優秀員工投入獎(企業類別)」。

The EMSD has also participated in the Human Resources Excellence Awards organised by the Hong Kong Institute of Human Resources Management for the first time, and won the Elite Employee Engagement Award (Organisational Category) during the year.

促進環境可持續發展
ENVIRONMENTAL SUSTAINABILITY

為應對氣候變化帶來的挑戰，政府已公布《香港氣候行動藍圖2050》，闡述香港邁向「零碳排放．綠色宜居．持續發展」的願景。機電署將竭力促進香港的可持續發展進程，通過本署的規管及營運服務不斷優化環境成效，同時採取環保作業方法，例如在辦公室提高資源效益和減少浪費。

To tackle the challenge of climate change, the Government has announced Hong Kong's Climate Action Plan 2050, setting out the vision of "Zero-carbon Emissions · Liveable City · Sustainable Development" for Hong Kong. The EMSD is committed to supporting the city's sustainability agenda and continuously improving environmental performance through both the EMSD's regulatory and trading services as well as adopting sustainable workplace practices, such as enhancing resource efficiency and reducing wastage generated in the office.

對聯合國可持續發展目標的貢獻
Contribution to United Nations Sustainable Development Goals

- 確保人人獲得負擔得起的、可靠和可持續的現代能源
  Ensure access to affordable, reliable, sustainable and modern energy for all
- 採用可持續的消費和生產模式
  Ensure sustainable consumption and production patterns
- 刻不容緩地採取行動應對氣候變化及其影響
  Take urgent action to combat climate change and its impacts

可持續發展守則及規例

香港若要成為可持續發展的宜居城市，關鍵是採取完善措施提高資源效益和減少對環境的影響。香港的建築物用電佔總用電量高達90%，由此可見，能源效益是實現《香港都市節能藍圖2015~2025+》所訂明的減少能源強度目標的優先要項。我們在這方面的工作包括定期檢討關於耗用能源的條例、政策和計劃，以及研究創新技術和節能措施，減低耗用資源及碳排放。

提升建築物能源效益

政府於2012年全面實施《建築物能源效益條例》。該條例規定新建及現有訂明建築物必須遵行《建築物能源效益守則》及/或《能源審核守則》2021年版。《建築物能源效益條例》下的《建築物能源效益守則》和《能源審核守則》載有關於屋宇裝備裝置及能源審核的技術指引和法定要求。機電署一直與樓宇業主、負責人及物業管理公司合作，確保他們遵從《建築物能源效益條例》，同時推廣建築物能源效益。

CODES AND REGULATIONS IN SUPPORT OF SUSTAINABILITY

Implementing resource efficiency measures is a vital step towards making Hong Kong a sustainable and liveable place while minimising its environmental impact. Given that buildings account for 90% of the city's total electricity consumption, energy efficiency is a top priority to meet the energy intensity reduction targets outlined in the Energy Saving Plan for Hong Kong's Built Environment 2015~2025+. Our efforts include regular reviews of relevant ordinances, policies and schemes related to energy use, as well as exploring innovative technologies and energy-saving measures, to minimise resource consumption and carbon emissions.

Buildings Energy Efficiency in Buildings

The Government fully implemented the Buildings Energy Efficiency Ordinance (BEEO) in 2012. It requires new and existing prescribed buildings to comply with Building Energy Code (BEC) 2021 and/or Energy Audit Code (EAC) 2021. The BEC and EAC under BEEO provide technical guidance for compliance with statutory requirements regarding building services installations and energy audits. The EMSD has been working with building owners, responsible persons and property management companies to ensure compliance with the BEEO and to promote energy efficiency in buildings.

我們努力向公眾宣傳相關規例，務求提高意識。在2022/23年度，我們慶祝《建築物能源效益條例》十周年，並舉辦了關於該條例的網上問答比賽，鼓勵大眾尤其年青一代，在日常生活中減少碳排放，持之以恒地實現碳中和。我們邀請來自多間大學的專家出席頒獎禮，分享節能方法及綠色建築意念，並進行問卷調查，蒐集參加者對《建築物能源效益條例》未來發展的意見。

We have been endeavouring to promote awareness of the regulations. During 2022/23, we celebrated the 10th Anniversary of the BEEO and held an online quiz competition about the BEEO to encourage the public, particularly young people, to reduce carbon emissions in everyday life as an ongoing means to achieve carbon neutrality. We invited experts from universities to share their ideas in energy savings and green buildings at the prize presentation ceremony and conducted a survey to collect the views of participants on the way forward for the BEEO.

能源效益標籤

我們於2009年推行「強制性能源效益標籤計劃」。「強制性能源效益標籤計劃」規定所有訂明產品必須貼上能源標籤，列明其能源效益級別和表現。本計劃透過提供產品的相關能源效益表現，鼓勵消費者選用高能源效益產品。

Energy Efficiency Labelling

Mandatory Energy Efficiency Labelling Scheme was introduced in 2009. The Scheme requires all prescribed products to be supplied with energy labels to show their energy efficiency grading and performance. By information provided on energy-efficient products, customers are encouraged to choose products with high energy efficiency.

向各行各業推廣可持續發展作業方法

供冷技術

區域供冷系統

區域供冷系統作為低碳高能源效益基礎設施，可向鄰近區域的多類建築物供冷，相比在建築物獨立安裝傳統中央空調系統，大大減少用電量。我們正大力推動在新發展項目中引入區域供冷系統，作為提升能源效益及實踐綠色建築的最佳作業方法。

PROMOTING SUSTAINABLE PRACTICES IN TRADES

Cooling Technologies

District Cooling System

The District Cooling System (DCS) is a low-carbon and energy-efficient infrastructure that supplies cooling to multiple structures within a localised vicinity. It can reduce electricity consumption substantially, as compared with conventional central air-conditioning systems separately installed in individual buildings. Incorporating DCS into new development undertakings is a significant endeavour towards implementing best practices in energy efficiency and green buildings.

位於啟德的全港首個區域供冷系統，自2013年至今已節省約5 100萬千瓦小時電力，相等於減少34 600公噸碳排放，節省了約6 630萬港元電費[1]。機電署設立能源效益事務處，廣泛與各界持份者合作，促進相關界別遵守《區域供冷服務條例》，從而推動區域供冷服務發展和提倡節能及綠色建築，支持香港邁向碳中和。我們的措施包括發布區域供冷服務的供應條款與技術指引，以及與不同持份者合作。

The first DCS at Kai Tak has saved approximately 51 million kWh of electricity consumption since 2013, equivalent to reducing 34 600 tonnes of carbon emissions. The associated electricity cost saving is estimated at HK$66.3 million[1]. Our Energy Efficiency Office was established to collaborate with stakeholders to facilitate compliance with the District Cooling Services Ordinance by relevant sectors, thereby promoting DCS development, energy saving and green buildings, thus contributing to carbon neutrality in Hong Kong. Our initiatives include publishing district cooling services supply conditions and technical guidelines, as well as collaborating with different stakeholders.

淡水冷卻

淡水冷卻的能源效益比氣冷式空調系統高，碳排放亦較低。水冷式空調系統的耗電量預計比氣冷式空調系統低約20%。有鑑於此，機電署推行淡水冷卻塔計劃，擴大淡水冷卻塔在非住宅建築物的應用。在本匯報年度，我們共接獲61宗新申請，並批准安裝123個淡水冷卻塔[2]。按照估計，所有在本匯報年度已落成淡水冷卻塔的設施，每年可減少約4 091萬千瓦小時電力，相等於每年減少約29 000公噸碳排放。

Fresh Water Cooling

Fresh water cooling demonstrates superior energy efficiency and lower carbon emissions versus air-cooled air-conditioning systems. Water-cooled systems are estimated to consume approximately 20% less electricity than air-cooled counterparts. Given this, the EMSD has instituted the Fresh Water Cooling Towers (FWCTs) Scheme to expand FWCT adoption in non-domestic buildings. During this reporting year, a total of 61 FWCT new applications were received, with 123 FWCTs[2] approved for installation. It is estimated that energy savings associated with the successful implementation of FWCTs within this reporting year can save approximately 40.91 million kWh of electricity per year, equivalent to about 29 000 tonnes of carbon emissions annually.

[1] 以每度電$1.3港元計算。
Calculated at HK$1.3 per kWh.
[2] 每宗淡水冷卻塔申請可能涉及一個或多個淡水冷卻塔。
Each FWCT application may involve one or more than one cooling tower(s).

促進環境可持續發展
ENVIRONMENTAL SUSTAINABILITY

重新校驗

重新校驗指評估及優化現有建築物的節能表現，從而探索節能的可行性，以減低能源成本和改善室內環境。為促進重新校驗的工作成功推行，機電署發布《重新校驗技術指引》，以闡述整個重新校驗流程。此外，機電署伙拍香港綠色建築議會舉辦一系列專業培訓及發展課程，培育更多合格的重新校驗專業人才和從業員，以確保有充足人才推展計劃。

Retro-commissioning

Retro-commissioning (RCx) refers to the assessment and enhancement of existing buildings' energy performance by identifying energy-saving opportunities, resulting in cost savings and improvement of indoor conditions. To promote successful RCx implementation, the EMSD has introduced the Technical Guidelines on RCx to articulate the full process. Furthermore, we have worked with the Hong Kong Green Building Council to arrange different professional training and development programmes, aiming to expand the supply of qualified RCx professionals and practitioners to ensure adequate expertise for effective implementation of RCx.

可再生能源

機電署配合政府發展可再生能源的政策，積極鼓勵各界廣泛使用可再生能源。我們發布多份相關技術指引和指南，同時建立「香港可再生能源網」，透過網上平台發布各類可再生能源實用資訊，增進公眾對可再生能源技術的認識。

Renewable Energy

The EMSD actively promotes the adoption of renewable energy in support of the Government's policy on renewable energy development. Apart from promulgating technical guidelines and guidance notes, we have instituted the Hong Kong Renewable Energy Net (HK RE Net), an online portal of various informative resources on renewable energy, to enhance public understanding of renewable energy technologies.

「香港可再生能源網」
The HK RE Net
https://re.emsd.gov.hk/

創造可持續發展的工作環境

我們堅守嚴格的環境管理和合規標準。本節詳述機電署的環保措施，以及能源管理、碳排放、環保採購、減廢及水資源效益的表現數據。過去一年，我們在節能、採用可再生能源、負責任採購和減少排放工作跨步前行，穩步實現本署的可持續發展使命。我們致力實施環境管理系統，絕不鬆懈，並且時刻保持警覺，密切追蹤，不斷力求改進。

ENVIRONMENTAL SUSTAINABILITY AT WORKPLACE

We uphold robust environmental stewardship and compliance. This section details our environmentally conscious initiatives and performance data in energy management, carbon emissions, green procurement, waste reduction and water efficiency. Over the past year, we made strides in energy conservation, renewable energy adoption, responsible sourcing and emissions mitigation to advance our sustainability mission. Our committed environmental management system and vigilant tracking helped drive continual improvement.

環境管理系統及守法合規

機電署嚴格實施ISO 14001:2015環境管理系統，持續提升工作場所的環境表現。我們通過系統檢討環保成效，並不時推行各種環保計劃。本署在日常營運中推行環保措施，以減少耗用資源和縮減碳足跡，致力營造可持續發展的工作環境。於匯報年度，我們全面遵守相關的環保法規，因此年內並無任何不遵行環境監管規例的個案。

Environmental Management System and Compliance

To continuously improve our workplace environmental performance, the EMSD has implemented the ISO 14001:2015 Environmental Management System, with which we review our environmental performance and develop new environmental programmes regularly. Environment-friendly measures are applied in daily operations to minimise our resource consumption and carbon footprint, so as to create a sustainable work environment. During the reporting year, we maintained full compliance with applicable environmental laws and regulations, therefore, there were no reported incidents of environmental non-compliance.

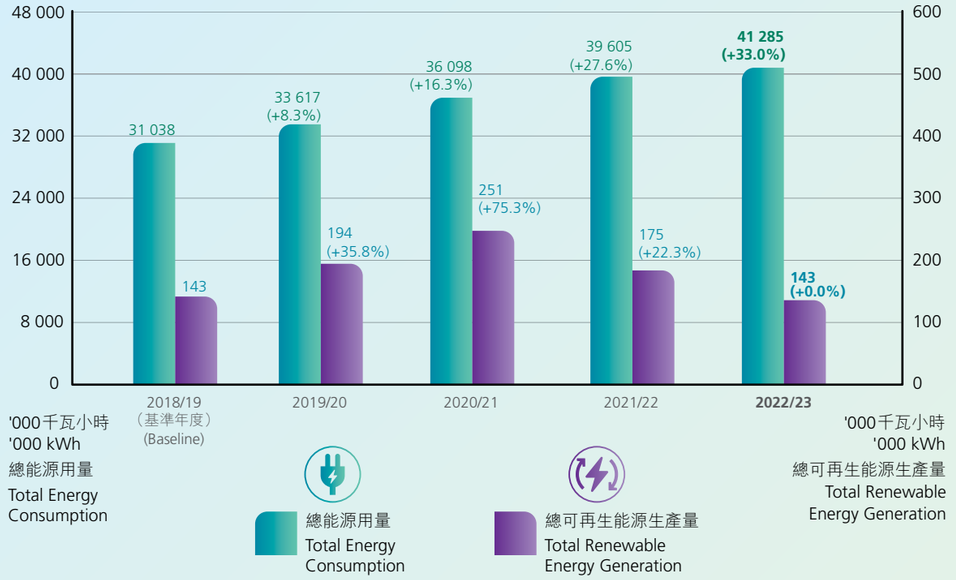
耗用能源

香港特別行政區(香港特區)政府已訂立「綠色能源目標」，以2018/19年度為基準，在2020年至2025年期間減少總能耗6%。機電署作為政府的執行部門，全面支持政府推行的目標，並着力採取措施，使轄下建築物和基礎設施達標。然而，香港取消防疫限制措施後，經濟及社會活動持續恢復，能源用量亦相應增加，以致本匯報年度的能源用量較2018/19年度上升約33%。新數字反映區域供冷服務發展及需求迅速上升，香港各方面持續樂觀復甦。整體而言，過去數年隨着香港努力在達成可持續發展目標與推動經濟增長兩方面取得平衡，總能源用量一直呈上升趨勢。機電署將積極探索更多途徑，透過各種節能措施及應用可再生能源，改善能源表現。我們會繼續與不同決策局通力合作，協助政府達成2025年「綠色能源目標」。

Energy Consumption

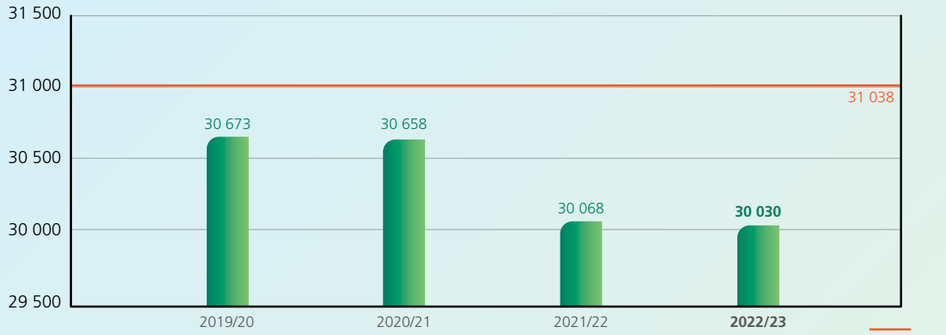
The Hong Kong Special Administrative Region (HKSAR) Government has set a Green Energy Target to reduce total energy consumption by 6% between 2020 and 2025, using 2018/19 level as the baseline. As an executive arm of the Government, the EMSD fully supports this target and is taking active measures to help achieve it across our buildings and infrastructure facilities. However, as the city emerges from epidemic restrictions, we have seen energy consumption rise as economic and social activities resume. This has led to an approximate 33% increase in energy use compared to 2018/19 level over the current reporting period. This reflects the rapid development and rising demand for district cooling services, and reviving city operations. Overall, total energy consumption has trended upward over the past few years as Hong Kong strives to balance sustainability goals with economic growth. The EMSD remains committed to identifying further opportunities to improve energy performance through conservation efforts and renewable energy adoption. We will continue cross-bureaux collaborating to help the Government meet the 2025 Green Energy Target.

總能源表現
Total Energy Performance



促進環境可持續發展
ENVIRONMENTAL SUSTAINABILITY

於相若運作情況下的總能源用量[3]
Total Energy Consumption under Comparable Operating Conditions[3]



減碳

節約用電是減碳的重要途徑，機電署總部大樓特別設計了接駁區域供冷系統的空調系統，減低製冷的能源用量。此空調系統投入運作後，原來的熱蓄能系統已停用。我們將熱蓄能系統的蓄冰槽和周邊範圍改造成為展覽區，向公眾介紹系統的技術、運作原理及背景資料。

為進一步推廣天然可再生能源，我們安裝多項太陽能裝置，包括在戶外廣場的天篷安裝建材一體型太陽能發電系統和太陽能樹燈飾。此外，大樓地下的「機電創科廊」也對外開放，展示得獎機電創科項目，向公眾介紹如何善用創科應用方案，締造安全節能的智慧型生活環境。

以二氧化碳為主的溫室氣體排放是氣候變化的元凶之一，若要保護環境，減排是不可或缺的行動。正因如此，機電署密切監測和量度各主要碳排放源的排放量，包括使用燃油、用電、處置廢物及公務旅行。為縮減碳足跡，我們推行了多項減碳策略，包括優化車隊、提高建築物能源效益，以及減少用紙和用水。於本匯報年度，機電署的溫室氣體總排放量增至約17 741公噸二氧化碳當量，碳排放強度較往年亦相應提高至每位員工3.04公噸二氧化碳當量。

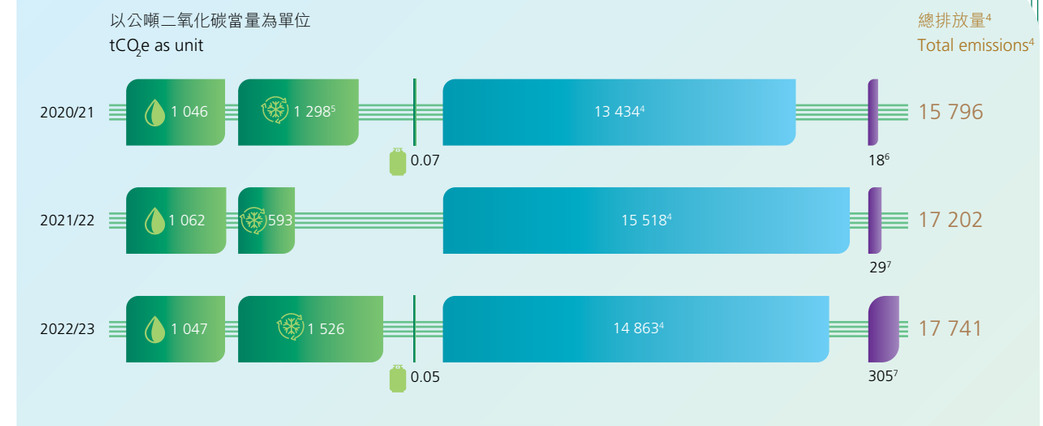
Carbon Reduction

Conservation of electricity plays an important role in decarbonisation. Our Headquarters Building was designed with a DCS-connected air-conditioning system to reduce cooling energy consumption. With this air-conditioning system in place, the original thermal energy storage system ceased operations. The ice storage tank and surrounding area of the storage system were modified into an exhibition area where visitors can learn about the technology, operation and background of the system.

To further promote the use of natural renewable resources, we installed solar fixtures, such as building-integrated photovoltaics on the canopy and solar tree lighting in the outdoor piazza. Additionally, the public can visit the E&M InnoFoyer to see award-winning E&M related innovation and technology projects illustrating how these applications create safe, energy-efficient smart living.

Greenhouse gas (GHG) emissions, primarily in the form of carbon dioxide, are a major contributor to climate change. As such, reducing carbon emissions is crucial for protecting our environment. Therefore, we closely monitor and measure our major sources of carbon emissions, including fuel and electricity use, waste disposal and business travel. To reduce our carbon footprint, we have implemented reduction strategies, including upgrading vehicle fleets, improving energy efficiency in buildings, and reducing paper usage and water consumption. For the current reporting period, the EMSD's total GHG emissions increased to approximately 17 741 tonnes of carbon dioxide equivalent (tCO_2e). This also resulted in an increase in emission intensity to 3.04 tCO_2e per employee than the previous year.

2020/21至2022/23年度溫室氣體排放概覽
GHG Profile 2020/21 to 2022/23



[3] 此計算比較於2018/19至2022/23年度仍然運作的營運單位淨採購電力用量的改變。
The calculation compares the net purchased electricity consumption changes of operating units that were still in operation from 2018/19 to 2022/23.

[4] 排放量不包括由區域供冷系統產生的電力。
The electricity generated from DCS is not included in the emission.

[5] 2020/21年度製冷劑數據經審查後新增其溫室氣體排放。
In 2020/21, refrigerant consumption was available after data review and the associated GHG emission was newly included.

[6] 數據包括2020/21年度處置廢紙及公務旅行。
The figure includes waste paper disposal and business travelling in 2020/21.

[7] 數據包括處置廢紙、公務旅行、處理食水和污水時耗用的電力。
The figure includes waste paper disposal, business travelling, electricity used for fresh water and sewage processing.

[8] 範圍一排放是指由機電署控制的活動所產生的所有直接排放，例如燃氣鍋爐和車輛。
Scope 1 emissions refer to all direct emissions generated by activities controlled by the EMSD, such as combustion of fuel in gas boilers and vehicles.

[9] 範圍二排放是指由機電署從能源供應商購買的能源生產所產生的排放，例如購買的電力和煤氣。
Scope 2 emissions refer to emissions resulting from the production of energy purchased by the EMSD from energy suppliers, such as purchased electricity and gas.

[10] 範圍三排放是指機電署以外發生的其他間接溫室氣體排放，例如處置廢紙、公務旅行、處理食水和污水時耗用的電力
Scope 3 emissions refer to other indirect greenhouse gas emissions outside the EMSD, such as waste paper disposal, business traveling, electricity used for fresh water and sewage processing.

[11] 參考《香港中小企業碳審計工具箱》(由香港大學及香港城市大學發佈)。
Made reference to the Carbon Audit Toolkit for Small and Medium Enterprises in Hong Kong (by The University of Hong Kong and City University of Hong Kong).

促進環境可持續發展
ENVIRONMENTAL SUSTAINABILITY

我們在本港廣泛提倡使用電動車及其他可再生能源驅動的交通工具，以助運輸業實現淨零碳排放的目標。去年部門的車隊共有201部車輛，包括17部電動車及5部混合動力車。我們將逐步引入更多電動車和混合動力車，藉此縮減碳足跡，並以身作則，鼓勵各界採用可持續發展的運輸方法。

We advocate the widespread use of electric vehicles (EVs) and other renewable energy-powered transportation, which can help the transportation industry achieve net zero carbon emissions. In the past year, our corporate fleet comprised 201 vehicles in total, including 17 EVs and 5 hybrid models. By steadily integrating more EVs and hybrid vehicles into our fleet, we aim to reduce our carbon footprint and lead by example in sustainable transportation practices.

用水效益

我們深明減少用水的重要性。隨着氣候變化，香港可持續及穩定可靠的供水情況可能受到威脅，所以我們已採取措施，加強管理水資源，包括建設雨水回收系統，採集雨水作灌溉和洗車用途，亦在廁所加裝感應式水龍頭，減少用水量。

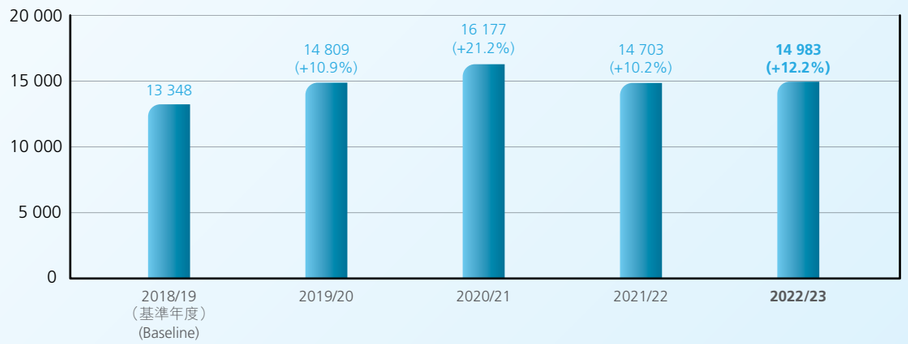
Water Efficiency

We deeply value the importance of reducing water consumption. As climate change threatens water sustainability and reliability in Hong Kong, we have taken proactive steps to improve our water management. This includes implementing a rainwater harvesting system to collect water for irrigation and car washing. We have also retrofitted toilets with sensor taps to reduce water consumption for hand washing.

為追蹤節約用水的進展，我們持續監察和收集用水數據。如下方涵蓋過去四年的用水數據表顯示，機電署於本匯報年度的總用水量較往年增加。

To track our progress, we consistently monitor and collect data on water consumption. For the current reporting period, our total water consumption increased as compared to the previous year, as shown in the consumption data table below covering the past four years.

總用水量
Total Water Consumption



用水量(立方米)
Water consumption (m^3)

廢物管理

我們緊隨香港特區政府實現減廢、資源循環使用和零堆填的願景。為達致目標，我們致力於節約資源及減少廢物量，同時防止轄下營運活動產生污染。

為減少用紙，我們於匯報年度共採購28 380令再造紙供辦公室使用，並在部門內部推行環保程序，妥善回收及分類辦公室和工場的廢物，將有害廢物、無害廢物及回收物料分類，交由合格承辦商妥善處置。年內回收後交由承辦商處置的廢物總量為50.9公噸。

Waste Management

We are committed to aligning with the HKSAR Government's vision of waste reduction, resources circulation and zero landfill. As part of this goal, we are dedicated to reasonably conserving resources, minimising waste generation and preventing pollution across our operations.

To reduce paper usage, we purchased 28 380 reams of recycled paper for office use during the reporting period. We have also implemented internal environmental procedures to properly collect and categorise waste in our offices and workshops. Hazardous waste, non-hazardous waste and recyclables are separated for proper disposal by qualified contractors. In total, 50.9 tonnes of waste were collected this year for appropriate handling by our contractors.

環保採購

環保採購是推動環境可持續發展的重要一環，對此我們非常重視。為了有系統地減少供應鏈的影響，本署採用ISO 14001：2015環境管理系統甄選負責任的供應商，要求他們遵守所有相關環境法規。只要情況可行，我們會在採購指引納入環保規定。我們亦會參照環境保護署訂立的環保規格選購合適的環保物料和產品。

Green Procurement

We recognise the importance of green procurement in driving environmental sustainability. To systematically reduce our supply chain impacts, we have implemented the ISO 14001:2015 Environmental Management System. This helps us select responsible suppliers who adhere to applicable environmental laws and embed green requirements into our procurement guidelines wherever viable. We also align our procurements with the Environmental Protection Department's green specifications, purchasing eco-friendly materials and products.

於匯報年度，機電署供應商名冊新增60間供應商，註冊供應商總數達至543間，年內本署的採購總額為7.615億港元，其中約1.165億港元用於採購環保產品，佔總採購金額15.3%以上，突顯我們對負責任採購的承諾。

During the reporting period, 60 new suppliers joined the EMSD Suppliers List, bringing the total to 543 registered suppliers. Our total purchase volume for this year was HK$761.5 million. Over 15.3% or HK$116.5 million was spent on green products, demonstrating our commitment to responsible sourcing.

社會成效
SOCIAL PERFORMANCE

機電署作為政府部門及牽頭的機電工程服務供應商，我們以擔當着獨特而重要的角色深感自豪，竭誠為社會和業界服務。除了為市民提供機電服務，我們也通過可持續的作業方法及專業知識，致力倡導各界履行社會責任，助業界創出卓越表現。

As a government entity and leading electrical and mechanical (E&M) engineering service provider, we take pride in our unique role in serving the community and industry. At the EMSD, we believe that our work goes beyond providing E&M services to the community. We are committed to fostering social responsibility and industry excellence through our sustainable practices and professional expertise.

對聯合國可持續發展目標的貢獻
Contribution to United Nations Sustainable Development Goals

- 確保健康的生活方式，促進各年齡段人羣的福祉。
  Ensure healthy lives and promote well-being for all at all ages.
- 確保包容和公平的優質教育，讓全民終身享有學習機會。
  Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- 促進持久、包容性和可持續的經濟增長，充分的生產性就業和人人獲得體面工作。
  Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- 建設具有適應力的基礎設施，促進包容性和可持續的工業化，推動創新。
  Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.
- 建設包容、安全、有抵禦災害能力和可持續的城市和人類住區。
  Make cities and human settlements inclusive, safe, resilient and sustainable.

發揮專業睿智 建構美好社會

機電署矢志運用專業知識，為社會的發展盡一分力，我們積極提供智能機電服務，並探索創新方案，從而提高效率及優化公共服務，促進香港演進成為智慧城市。

智能機電服務連繫香港發展

機電署的服務與市民的日常生活及其他政府部門的營運息息相關，我們採用尖端技術及智能科技，竭力提供優質工程服務。

LEVERAGING PROFESSIONAL EXPERTISE FOR THE BETTERMENT OF SOCIETY

The EMSD is dedicated to utilising professional expertise for the betterment of society. We are actively involved in providing smart E&M services and exploring innovative solutions, aiming to enhance efficiency, improve public services and contribute to the advancement of Hong Kong as a smart city.

Connecting the City with Smart E&M Services

Understanding the close relationship between our services and the daily lives of people, as well as the operations of other government departments, the EMSD endeavours to provide comprehensive quality engineering services with integrated cutting-edge and intelligent technologies.

2022/23年度智能機電服務概覽
Highlights of Smart E&M Services in 2022/23

改裝普通病房 Conversion of General Wards

機電署協助醫院管理局將公立醫院部分普通病房改裝為二線隔離病房，確保過濾病房內的空氣及形成負氣壓環境，保障病人安全。

The EMSD supported the Hospital Authority in converting certain general wards of public hospitals into second-tier isolation wards to ensure air filtration in the wards and create a negative pressure environment for the maintenance of patient safety.

引入學校智慧能源監察系統 Introducing Smart Energy Monitoring System for School

機電署協助筲箕灣官立中學設立首個智慧能源監察系統，該系統可主動監測和管理能源用量。

The EMSD helped establish the first Smart Energy Monitoring System in Shau Kei Wan Government Secondary School. The system enables proactive monitoring and management of energy consumption.

無人機搭載「政府物聯通」提升定位追蹤能力 Enhancing Location Tracking with GWIN-on-Drone

機電署與消防處合作，應用無人機搭載小型「政府物聯通」基站和追蹤裝置，測試定位追蹤系統的成效。

The EMSD worked with the Fire Services Department to use a drone to carry a lightweight Government-Wide Internet of Things Network gateway (GWIN-on-Drone) and tracking devices for testing the effectiveness of the location tracking system.

落實「智慧海關藍圖」 Implementing Smart Customs Blueprint

機電署協助香港海關(海關)裝設全新電腦斷層掃描器來偵測違禁品。這套先進方案可全方位偵測違禁品，提升海關檢查工作的成效。

The EMSD helped the Customs and Excise Department to deploy new computed tomography scanners for contraband detection. These scanners can detect contraband from all angles, providing an advanced solution for enhancing detection capabilities.

推出智能操作及維修保養方案 Providing Smart Operation and Maintenance Solutions

機電署成功協助民航處實施多種智能方案，大大提升民航處總部相關設施的操作和維修保養效能。

The EMSD delivered a range of smart solutions to the Civil Aviation Department (CAD). These solutions have been successfully implemented, leading to significant improvements in the operation and maintenance of facilities at the CAD Headquarters.

升級版人流控制方案 Upgrading Crowd Control Solution

機電署協助食物環境衞生署採用高架人流統計裝置點算人數，該裝置可在各類場所監察訪客數量，有助在年宵市場管制人流。

The EMSD assisted the Food and Environmental Hygiene Department in crowd management at Lunar New Year fairs by leveraging overhead people counting devices to facilitate monitoring of visitor headcount in venues.

社會成效
SOCIAL PERFORMANCE

研究創新機電方案

我們特別重視實用的創新科技，近年不斷引入更多創新方案和加強各項公共服務，全面配合政府的政策，致力推動香港發展成為智慧城市。

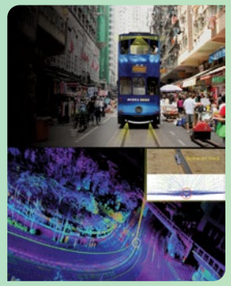
機電署致力開拓新科技，撰文之際，我們在2023年日內瓦國際發明展獲得多項殊榮，包括一項特別獎、三項金獎、七項銀獎及十二項銅獎，見證我們追求創新科技永不言倦，並在國際舞台上繼續贏得優秀的評價。獲得特別獎及金獎的項目於下表詳述。

Exploring Innovative E&M Solutions

With a focus on practical innovation and technology, the EMSD has been actively augmenting the Government's policy of transforming Hong Kong into a smart city by expanding our range of innovative solutions and enhancing public services.

Our technological advancements have been recognised with multiple honours at the International Exhibition of Inventions of Geneva 2023 at the time of writing, including one special award, three gold medals, seven silver medals and twelve bronze medals. These accolades demonstrate our dedication to technological excellence and our ability to earn global recognition. The winning projects of the special award and gold medals are described in the table below.

創新機電方案概覽
Highlights of Innovative E&M Solutions

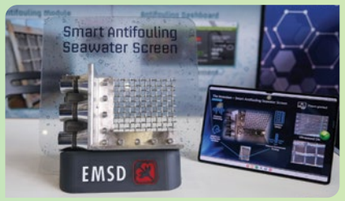


預防電車脱軌及碰撞系統(特別獎及金獎)
Tramway Derailment and Collision Prevention System (Special Award and Gold Medal)

- 全球首個應用在雙層有軌電車上的實時偵測系統。
  The world's first real-time detection system applied to double-decker trams.
- 透過防止車輪因撞到外物而導致出軌的意外，提升行車安全。
  Enhance tram safety by preventing derailment accidents due to the collision of tram wheels with other objects.

智能防污海水濾網(金獎)
Smart Antifouling Seawater Screen (Gold Medal)

- 減少吊運及清潔工作的頻率，節省近八成人力成本。
  Reduce the frequency of lifting and cleaning tasks to save nearly 80% of labour costs.
- 減低工作人員的安全及健康風險。
  Lower safety and health risks of workers.



可再生能源探索者(金獎)
Integrated Self-sustained renewable-Energy Explorer (iSEE) (Gold Medal)

- 收集氣象資料及可再生能源系統數據。
  Gather weather and renewable energy system data.
- 提供實時監察、故障診斷、預測性維修保養，以及系統優化建議。
  Provide real-time monitoring, fault diagnosis, predictive maintenance and system optimisation recommendations.

培植機電專才 支持行業持續發展

我們設有多元化的計劃及課程，積極吸納和悉心栽培人才，讓他們成為高技能機電專業人員。機電署激勵年青人不斷努力，在機電專業踏上錦繡前程，藉此鞏固機電業的實力，以應對各種挑戰，邁向可持續發展的道路。以下個案和例子見證我們矢志培植人才，支持機電業的蓬勃發展。

EMPOWERING E&M PROFESSIONALS FOR SUSTAINABLE INDUSTRY GROWTH

Through a diverse range of initiatives and programmes, we actively attract, nurture and empower individuals to become skilled professionals in the E&M field. Engaging young minds in continuous professional development, the EMSD's efforts strengthen the industry's capacity to address challenges and embrace sustainability. The following cases and examples illustrate our dedication to cultivating talents for a thriving E&M sector.

創造雄厚人力資源 為機電業培育接班人

我們主動採取多項措施，招攬有志投身機電業的人才。這方面的工作包括舉辦職業博覽會，展示機電業的多元化就業機會，同時推行青年交流計劃，鼓勵滿懷抱負的機電業專才協作和創新。

Building a Strong E&M Talent Pipeline

We have taken proactive steps to develop a talent pool that is passionate about this field. These efforts include organising career expos to showcase the diverse range of career opportunities available in E&M, as well as facilitating youth exchange programmes that encourage collaboration and innovation among aspiring professionals.

機電業博覽
E&M Expo

機電業博覽2023介紹機電業的行業發展前景和培訓機會，吸引有志年青人入行。博覽會提供了多場職業講座，邀請業界代表介紹機電業的不同工作範疇及行業資訊。

E&M Expo 2023 showcased exciting E&M career prospects and training opportunities, igniting passion among young talents to join the industry. The Expo offered career seminars where trade representatives introduced the works of various E&M fields and provided information about the industry.

機電工程署署長彭耀雄先生(前排左五)、香港機電工程商聯會會長潘樂祺先生(前排右五)與香港機電業推廣工作小組其他機構成員代表一同出席機電業博覽2023。

Mr Pang Yiu-hung, Director of Electrical and Mechanical Services (5th left, front row), Mr Rocky Poon, President of the Hong Kong Federation of Electrical and Mechanical Contractors Limited (5th right, front row), and other representatives of the Hong Kong Electrical and Mechanical Trade Promotion Working Group showed their support in attending E&M Expo 2023.

社會成效
SOCIAL PERFORMANCE

粵港澳青年科創考察交流活動
Guangdong-Hong Kong-Macao Youth Innovation and Technology Exchange

是次交流活動由廣東省科學技術協會、機電署及澳門工程師學會合辦，三地共有逾十間大學、協會和科技企業參與。

大會安排實驗室虛擬參觀行程，並邀請多位行業專家出席分享會交流心得，促進協作創新和栽培人才，協助大灣區機電業茁壯發展。

Jointly organised by the Guangdong Provincial Association for Science and Technology, the EMSD and the Macau Institute of Engineers, the exchange programme involved over ten universities, associations and technology companies from the three regions.

Through virtual laboratory visits and communication sessions with industry experts, the programme fosters collaboration and innovation, helping to drive the growth of the E&M industry in the Greater Bay Area.

機電工程署署長彭耀雄先生在粵港澳青年科創考察交流活動中發表演說。

Mr Pang Yiu-hung, Director of Electrical and Mechanical Services, delivered a speech at the Guangdong-Hong Kong-Macao Youth Innovation and Technology Exchange.

投放資源倡導持續專業發展

我們深明機電專才必須擁有精良工具，才可盡展潛能，所以我們提供多元化的學習途徑，讓他們提升技能與知識。我們安排的活動包括面授培訓班、線上研討會和培訓課程。例如，我們推出了電子平台，公眾可閱覽關於優良操作和維修作業手冊及指引。新平台反應十分理想，深受機電業、學術界及物業管理行業人士歡迎。本措施印證我們對推廣優良作業方法的貢獻，不斷提升香港機電業的水平。

此外，本署亦主辦線上「機電創科日」，宣傳我們的創新科技與得獎項目，並安排代表就「機電裝備合成法」和智慧機電應用方案分享見解，進一步提升機電專業人員的技能與知識。同場亦與三間學術機構建立策略伙伴關係，帶動整個行業蓬勃發展。

Investing in Continuing Professional Growth

We believe in providing our professionals with the tools they need to succeed. That is why we offer a range of learning opportunities designed to enhance their skills and knowledge, from in-person events to online webinars and training programmes. For example, we launched an e-platform which provides access to booklets and handbooks on operation and maintenance best practices. It was well-received by practitioners from the E&M trade, academia and the property management sector. This initiative demonstrated our unwavering dedication to promoting best practices and constantly raising the bar of Hong Kong's E&M industry.

In addition, to further enhance the skills and knowledge of E&M professionals, the EMSD's virtual E&M I&T Day highlighted innovative technologies and award-winning projects, with representatives sharing views on Multi-trade integrated Mechanical, Electrical and Plumbing Technology and Smart Engineering Solutions. The event also saw the establishment of strategic partnerships with three academic institutions, which can benefit the industry as a whole.

促進員工培訓及發展

我們用心培育員工，經常舉辦各式各樣的訓練和發展活動，確保同事擁有必要技能，緊貼業界最新的發展趨勢。此類活動包括專門講解新興科技的技能培訓，例如數碼化技術、「建築信息模擬 — 資產管理」、生成式人工智能和第三代互聯網等，我們亦提供職業安全與健康培訓、結構化管理發展課程、行政人員發展培訓、操守與誠信、國情、基本法與國安法研習班，以及其他職業和通識培訓。除此之外，我們已重新設計新僱員入職培訓課程，以配合政府加強公務員入職培訓的措施。

隨着疫情減退，我們逐漸復辦了香港境外的培訓活動。香港在2022/23財政年度前期仍面對跨境往來、疫苗政策和社交距離措施等限制，至後期，我們已開始在香港境外地區復辦培訓課程。

於2022/23財政年度，機電署共提供超過24 000日培訓，每名員工的平均培訓日數為5.10日。本匯報年度中，按性別及職系劃分的平均培訓時數[12]如下：

Championing Employee Training and Development

As part of our continuous dedication to employee growth, the EMSD offers diverse training and development activities aimed at equipping our staff with essential skills and keeping them up-to-date on industry advancements. These initiatives encompass capacity-building training on emerging technologies, such as digitised technologies, Building Information Modelling – Asset Management, Generative artificial intelligence (AI) and Web 3.0. Additionally, we provide training on occupational safety and health, structured management development programmes, executive development programmes, conduct and integrity, national studies, Basic Law, National Security Law and a wide range of vocational and generic training programmes. Furthermore, our induction programme for recruits has been redesigned to align with the Government's initiatives in strengthening Civil Service Induction Training.

As the epidemic situation improved, we gradually resumed training activities outside Hong Kong. Despite earlier restrictions on cross-boundary travel, vaccination requirements and social distancing measures, we were able to reinstate various training programmes in locations beyond Hong Kong towards the end of Financial Year 2022/23.

During the 2022/23 Financial Year, the EMSD provided more than 24 000 days of training, with an average of 5.10 training days per employee. Average training hours[12] by gender and grade during the reporting year are as follows:

2022/23年度按性別劃分的平均培訓時數
Average Training Hours by Gender in 2022/23

男性 Male	女性 Female
24.3 小時 hours	28.8 小時 hours

2022/23年度按職系劃分的平均培訓時數
Average Training Hours by Grade in 2022/23

高級管理人員 Senior Management	一般員工 General Staff
26.4 小時 hours	24.9 小時 hours

[12] 平均培訓時數是按員工培訓日數乘以每日培訓小時數(6小時)再除以員工年末總人數計算。
Average training hours were calculated by multiplying the employee training days and the training hours (6 hours) per day, and then divided it by the total number of employees at the year-end.

社會成效
SOCIAL PERFORMANCE

與公眾攜手推動可持續發展

機電署的核心目標之一，是提升公眾機電安全及節能意識。為此，我們舉辦各類公眾教育和外展計劃，廣泛接觸社會不同界別，當中尤以新一代年青人及長者為重要對象。

從這些措施可見，機電署推動機電工程服務的持續發展與創新，不遺餘力，努力建構智慧城市，令公眾享受更優質的生活。

以下是2022/23年度一些公眾活動亮點：

ENGAGING THE PUBLIC FOR SUSTAINABLE DEVELOPMENT

One of the key objectives of the EMSD is to raise public awareness and knowledge on E&M safety and energy efficiency. To achieve this, we have launched various public education and outreach initiatives to connect with different sectors of the community, especially the young generation and the elderly.

These initiatives demonstrate the EMSD's efforts to promote sustainability and innovation in E&M engineering services and smart city development, as well as improving the quality of life for the public.

Following are the highlights of events organised for the general public during the year 2022/23:

機電創科開放日2022
Inno@E&M Open Day 2022

「機電創科開放日2022」吸引約17 000人次入場，熱烈反應令人鼓舞。活動展出與機電工程服務和智慧城市發展相關的創新及可持續發展科技。年青人及市民大眾藉此認識到創新與可持續發展科技的重要作用，也了解機電署如何致力推廣科普教育、推進機電工程服務及智慧城市的發展。

The Inno@E&M Open Day 2022 attracted a remarkable turnout of approximately 17 000 visitors, showcasing the latest innovative and sustainable technologies in E&M engineering services and smart city development. The event inspired and engaged young people and the public on the importance of innovative and sustainable technologies, highlighting the EMSD's commitment to promoting popular science education and advancing E&M engineering services and smart city development.

我們舉辦了多場啟德發展區區域供冷系統導賞，讓市民可以親身了解該系統的設計及運作原理。

We have organised guided tours for the District Cooling System at Kai Tak Development for the public to learn the design and operation of the system.

場內設立了多個活動攤位，以有趣互動方式與市民分享機電安全資訊及創新方案，同時希望增加青少年的機電知識。

Various booths were set up to share E&M safety information and innovative solutions to the public in an interesting and interactive way, and to enhance teenagers' E&M knowledge.

第六屆樂齡科技博覽暨高峰會
The Sixth Gerontech and Innovation Expo cum Summit

機電署在第六屆樂齡科技博覽暨高峰會展示了團隊如何應用創新科技提升照顧長者的服務。我們希望借此機會加深公眾對有關科技的認識和關注，了解創新及可持續發展科技在疫情下發揮的作用。展覽共展出六個項目，包括非接觸式生命體徵監測系統和人工智能清潔機器人，以及我們在全港私營院舍進行的通風系統評估，該評估有助保障長者的健康。

The sixth Gerontech and Innovation Expo cum Summit showcased innovative technologies for improving elderly care services. The EMSD aimed to raise the public awareness of innovative and sustainable technologies in elderly care services, especially during the epidemic. The exhibition displayed six projects, including contactless health monitoring and AI robotic cleaning systems, and the territory-wide assessment of ventilation systems in private care homes conducted by the EMSD to protect the health of the elderly.

機電工程署署長彭耀雄先生(左五)引領特邀嘉賓團到機電署展覽攤位參觀。

Mr Pang Yiu-hung, Director of Electrical and Mechanical Services (5th left), led a distinguished group of guests to explore the EMSD exhibition booth.

為學校引入智慧能源監察系統
Implementation of Smart Energy Monitoring System for Schools

我們舉行智慧能源監察系統培訓班，教導教師和學生製作圖表，分析校內能源使用情況。

A SEMS training session was conducted to educate teachers and students on utilising graphs and charts to analyse in-house energy usage of a school.

我們為筲箕灣官立中學引入智慧能源監察系統，在科技與教育相輔相成下，讓老師和學生主動監察及管理能源用量，團隊也在校內舉行節能比賽，倡導和鼓勵學生實踐節能措施。為促進科技與教育結合，達致可持續發展，本署計劃把智慧能源監察系統推廣至全港65間官立學校。

The implementation of the Smart Energy Monitoring System (SEMS) at Shau Kei Wan Government Secondary School integrates technology and education to empower teachers and students in monitoring and managing energy consumption. An intramural energy-saving competition was organised by the team, sparking enthusiasm and inspiring students to adopt energy-saving practices. Fostering a sustainable future through the integration of technology and education, the EMSD plans to expand SEMS adoption to all 65 government schools.

社會成效
SOCIAL PERFORMANCE

職業安全與健康

機電署高度重視員工的職業安全與健康(職安健),在綜合管理系統實施ISO 45001:2018標準的職安健管理系統正正體現了我們的承諾。這套系統專責規劃、實施、評估和持續改善職安健措施與成效,此外,我們執行機電工程時也嚴格遵守機電署的安全與健康政策,將同事和承辦商員工的健康福祉放在首位。

我們的職安健策導委員會擔當關鍵的角色,負責統籌本署整體的職安健表現,確保表現達到安全標準。同時,我們也設立部別職安健委員會以作輔助,加強溝通和促進工作場所安全與健康的作業方法。

管理職安健風險和事故

保障員工(本署及承辦商)的安全與健康是本署的首要任務。我們設立完善的職安健管理系統,透過危害識別、風險評估、事故調查及跟進行動,致力降低工傷風險。

OCCUPATIONAL SAFETY AND HEALTH

Ensuring the occupational safety and health (OSH) of our staff is a paramount concern at the EMSD. Our commitment is reflected in the implementation of an OSH management system by ISO 45001:2018 within our Integrated Management System. This system oversees the planning, implementation, evaluation and continuous improvement of safety and health controls and performance. We strictly adhere to the EMSD Safety and Health Policy when delivering E&M services, prioritising the well-being of our staff and contractors.

The Steering Committee on OSH plays a crucial role in overseeing our overall OSH performance, to ensure compliance with safety standards. Complementarily, the Divisional Occupational Safety and Health Committees (DivOSHCs) strengthen communication and facilitate the successful implementation of workplace safety and health practices.

OSH Risk and Incident Management

We are dedicated to prioritising the safety and well-being of in-house staff and contractor employees by adopting a comprehensive OSH management system. Our focus extends to hazard identification, risk assessment, incident investigation and follow-up actions, all aimed at minimising occupational injuries.

職安健風險評估及防範危險事故
OSH Risk Assessment and Hazard Prevention

- 擬備《系統程序手冊》以助識別與工作相關的危害和進行風險評估。
  A System Procedure Manual is designed to identify work-related hazards and conduct risk assessments.
- 每個策略業務單位各自根據其業務性質進行風險評估。
  Individual risk assessments are conducted by each Strategic Business Unit based on its nature.
- 為員工提供必要的個人保護裝備與器材。
  The necessary personal protective equipment are provided for staff members.
- 密切監察承辦商的健康及安全成效,及時採取措施糾正不合規的表現,避免意外發生。
  Contractors' health and safety performance is actively monitored, and timely actions are taken to correct sub-standard performance and prevent accidents.

事故報告及調查
Incident Reporting and Investigation

- 一旦出現職安健事故,員工應立即停止執行職務,並向上級報告。
  Staff members should halt duties and promptly report OSH incidents to supervisors.
- 組別安全督導員或部別安全主任負責調查事故。
  The Sectional Safety Supervisor or Divisional Safety Officer will conduct investigations of incidents.
- 制訂措施保障員工免受事故相關問題困擾或遭報復。
  Measures are in place to safeguard staff from incident-related issues and protect against reprisals.

宣傳職業安全及評估表現
Safety Communication and Performance Evaluation

- 定期舉行會議,評估職安健表現和檢討內部措施。
  Regular meetings are held to evaluate OSH performance and review internal measures.
- 職安健策導委員會及部別職安健委員會負責監督評估程序。
  The Steering Committee on OSH and DivOSHCs oversee the evaluation process.
- 定期進行內部審核,持續優化職安健管理系統。
  Periodic internal audits are conducted to drive continuous improvement of the OSH management system.

推廣職安健意識及鼓勵參與

為推廣職安健意識,以及讓同事和承辦商掌握處理事故的必要技能,機電署舉辦多項安全培訓課程與活動,包括研討會、比賽及必修培訓班,主題包括基本安全訓練和安全督導員培訓。與此同時,我們也透過數碼平台向全體員工傳遞安全訊息,例如部門內聯網、內部刊物及電郵等,另亦制訂承辦商的職安健規定,確保全面監督所有安全事務。

OSH Awareness and Active Engagement

To enhance safety awareness and equip both staff and contractors with necessary OSH incident handling skills, the EMSD offers a range of safety training programmes. These include seminars, competitions and mandatory training sessions, such as Basic Safety Training and Safety Supervisor Training. Through digital channels like the department intranet, internal publications and email communication, safety messages are effectively delivered to all staff members. Contractors are also subject to specific OSH requirements to ensure a comprehensive approach to safety.

安全培訓
Safety Training

內部員工
Internal Staff

- **強制性基本安全訓練**
  Mandatory Basic Safety Training
- **一般職安健培訓**
  General OSH Training
- **安全督導員培訓**
  Safety Supervisor Training
- **研討會**
  Seminars
- **比賽**
  Competitions

承辦商
Contractors

- **承辦商研討會**
  The EMSD Contractors Forum
  推廣最新的安全標準和相關措施。
  Promoting the latest safety standards and relevant measures.
- **政府合約**
  Government Contract
  《工地安全特別規格》訂明承辦商必須為工地工人提供必要的安全培訓。
  Stipulating in Particular Specifications on Site Safety that contractors must provide necessary safety training for their site workers.

關懷員工

機電署明白員工是推進可持續發展的動力,因此我們高度重視員工所作出的重大貢獻。

本署連續第九年獲頒發「同心展關懷」的殊榮,以表揚我們不斷推動多元共融的工作環境而作出努力,對此我們引以為傲,未來定必繼續為社會創造裨益。

CARING FOR EMPLOYEES

Recognising the substantial role played by its workforce in advancing sustainable development, the EMSD holds in high regard the significant contributions made by employees.

Having been awarded the Caring Organisation Logo for nine consecutive years, we are proud of our ongoing efforts in promoting a diverse and inclusive workplace, and we strive to continue making a positive impact on society.

5 years+ 同心展關懷 caringorganisation
Awarded by The Hong Kong Council of Social Service 香港社會服務聯會頒發

連續五年或以上獲香港社會服務聯會頒發「同心展關懷」標誌
The 5 Years Plus Caring Organisation Logo awarded by the Hong Kong Council of Social Service

社會成效
SOCIAL PERFORMANCE

員工福利

機電署員工只要符合政府公務員聘用條款及非公務員合約僱員計劃列明的資格，便可享有一系列福利，包括醫療服務和房屋福利等，有關條文已列明於《公務員事務規例》及公務員事務局發出的通告和通函。本署也支持員工履行他們的家庭責任，因此給予適當的育嬰假，幫助員工在追求事業發展與照顧家庭之間取得平衡。

我們也十分關注員工的健康福祉，在疫情期間更列為優先要項。與此同時，我們亦照顧同事的心理健康，特設員工熱線以提供心理支援服務，並且持續簽署《精神健康職場約章》，落實全方位保健方針。這一系列的措施，彰顯我們切實履行承諾，致力營造理想的工作環境、保障員工的心理健康。

員工統計

截至2023年3月，機電署共有5 837名員工（2021/22年度共有5 924名員工），包括全職、常任制及合約制員工，年內並無聘用兼職員工。本匯報年度的新入職率為7.6%，離職率為8.8%。

Staff Welfare

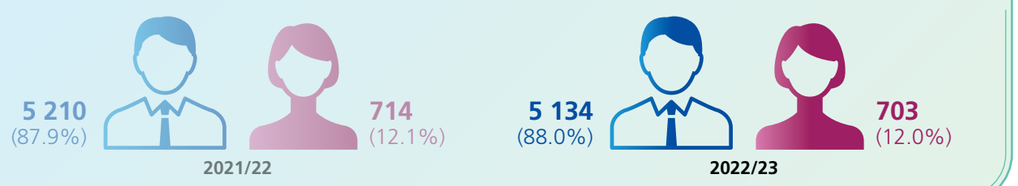
Those who meet the criteria under the Government's Civil Service and Non-Civil Service Contract Staff Schemes are eligible for a variety of benefits. Ranging from medical services to housing benefits, these provisions are extended in alignment with the regulations outlined in the Civil Service Regulations and the Civil Service Bureau Circulars and Circular Memoranda. The EMSD also supports employees in fulfilling their family responsibilities. We provide adequate parental leave to help our colleagues strike a balance between pursuing career advancement and caring for their families.

At the EMSD, ensuring the well-being of our people, especially during epidemic times, is our top priority. Moreover, our support for the well-being of employees extends to their mental health. We have launched a dedicated helpline to offer psychological support. As a testament to our holistic approach, we are proud to be a signatory of the Mental Health Workplace Charter. This underscores our commitment to fostering a workspace centred on mental health promotion and substantiates our dedication to this essential cause.

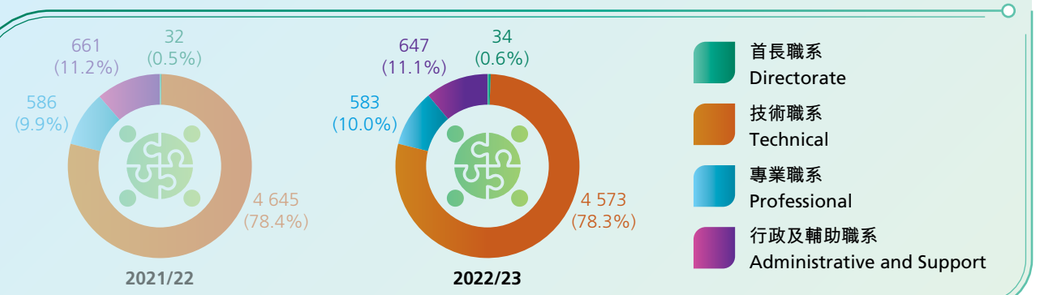
Staff Statistics

As of March 2023, the EMSD had a total workforce of 5 837 employees, encompassing both full-time, permanent and contract staff (compared to 5 924 staff members in 2021/22). No part-time employees were accounted for within this time frame. In terms of workforce dynamics, the rate of new employee recruitment was 7.6%, and the turnover rate stood at 8.8% for the current reporting year.

按性別劃分
Breakdown by Gender



按職系劃分
Breakdown by Grade



平等機會與多元化

機電署矢志為轄下團隊營造彼此支持和多元共融的工作環境，堅決承諾所有員工可享有公平及公正的待遇，並且嚴格推行政策，絕不容許工作場所出現歧視、騷擾和誹謗行為。我們也採取多項積極措施，推動有特殊需要的人士就業，確保他們享有平等機會。本署一直是《有能者．聘之約章》及共融機構嘉許計劃的參與機構。

我們提倡尊重人權和奉行公義原則的工作環境，這是署方的文化核心價值，也是我們一直堅守的承諾。例如，我們絕不容忍任何形式的強迫或強制性勞工。本匯報年度裏，本署的整體運作及供應商網絡均無發現任何涉及歧視的事件或違反關於童工或強迫勞工有關法律法規的情況。

員工溝通

機電署十分重視員工的意見和建議，深明此乃持續提升營運效率的關鍵。為了促進有效的內部溝通，我們設立了一系列渠道，包括：

Equality and Diversity

With a focus on creating a supportive and diverse workplace, the EMSD is resolute in its commitment to equitable and fair treatment of every staff member. Underpinning this dedication is a strict policy against workplace discrimination, harassment, and vilification. The EMSD also takes active steps to encourage employment opportunities for individuals with special needs, participating in initiatives such as the Talent-Wise Employment Charter and the Inclusive Organisations Recognition Scheme.

At the core of our organisational culture is a commitment to safeguarding human rights and promoting a work environment grounded in principles of justice. This deep-rooted commitment is exemplified by our resolute zero-tolerance stance against any form of forced or compulsory labour. Throughout the reporting year, it is of significance that there were no recorded instances of discrimination or violations of laws and regulations related to child or forced labour within the broader scope of the EMSD's operations or among our network of suppliers.

Staff Communication

We hold our staff members' opinions and suggestions in high regard, recognising their crucial role in improving our operational efficiency. To foster effective internal communication, we have established a range of channels, including:

委員會及工會
Committees and Unions

我們設有四個部門協商委員會和五個部別協商委員會，作為員工與管理層之間的交流平台，以加強內部交換意見與建議。

員工可以自由選擇加入機電署11個部門工會或部門外的政府員工組織，表達意見和關注議題。

To strengthen our internal communication further, we have established four departmental consultative committees and five divisional consultative committees, which serve as platforms for exchanging ideas and views between our staff and management.

Our staff members are free to join the 11 departmental staff unions or government staff unions outside the EMSD to express their views and concerns.

會議及分享會
Meetings and Sharing Sessions

管理人員通過不同渠道定期與員工會面，互相坦誠溝通，包括每年的署長簡報會、親善大使探訪、部門協商委員會及工會會議。

機電署推出新措施之前，在情況許可下會透過員工關係組或簡報會/工作坊諮詢員工，聽取同事的建議及看法。同事可在活動中獲悉機電署的最新動態和分享意見。

The management meets with our staff through various channels to maintain open and regular communication, including annual DEMS Briefing, ambassador visits, meetings with departmental consultative committees and staff unions.

We strive to conduct staff consultations before launching new practices whenever possible through the Staff Relations Unit or briefings/workshops, which enable us to gauge advice and input from our staff. Colleagues can understand the latest developments within the EMSD and share their ideas during these interactions.

「好人好事嘉許計劃」
"Good People, Good Deeds Commendation Scheme"

本計劃的目標是激勵員工實踐機電署的目標，建構一隊專業、創新、高效和摯誠服務的團隊，同心貢獻社會。

We aim to motivate our staff to achieve the EMSD's goals and build a professional, innovative, productive and dedicated team that serves the community.

員工投訴程序
Staff Complaints Procedure

本署設有正式的員工投訴程序，讓員工的投訴可妥善處理，同事可舉報任何不當待遇及表達不滿。

We put in place an established mechanism which allows colleagues to report any mistreatment or dissatisfaction, ensuring that such staff complaints are handled appropriately.

社會成效
SOCIAL PERFORMANCE

員工活動

機電署員工康樂會在本年度籌備多類體育活動，包括保齡球、羽毛球及乒乓球賽或同樂日，歡迎同事攜帶家人一同參與，以維繫緊密的關係，同時提倡健康好動的生活模式。

Staff Activities

The EMSD Staff Club organised a range of sports activities throughout the Financial Year, including competitions or fun day on bowling, badminton and table tennis. These activities were open to colleagues and their families, fostering stronger relationships while promoting a healthy and active lifestyle.

員工體育活動
Sports Activities for Staff

機電署員工康樂會舉辦林林總總的體育活動。

A glimpse into the vibrant array of sports activities organised by the EMSD Staff Club.

不少機電署員工亦踴躍參加各種體育活動，包括「愛跑」籌款活動、發展局籃球錦標賽、建造業五人足球比賽、「建造業開心跑」和維港渡海泳，有助他們培養健康的運動習慣。

Our colleagues actively participated in various athletic events, such as the Lifewire Run, the Development Bureau basketball championship, the Construction Industry 5-a-side Football Competition and Construction Industry Happy Run as well as the Cross Harbour Race, helping them develop work out habits.

機電署賽隊在2022年「愛跑．東涌呀」慈善跑的五公里企業賽贏得亞軍。

The EMSD running team was the first runner up in the five-kilometer corporate race at the Lifewire Run 2022 – Tung Chung.

隨着疫情減退，我們也復辦許多實體慈善活動。同事很高興參與公益金舉辦的港島、九龍區百萬行，為家庭和兒童福利服務籌款。這些慈善活動不但讓我們的員工強身健體，同時能夠為弱勢社羣作出貢獻。

As the epidemic situation improved, we resumed many face-to-face charitable activities. Our colleagues were delighted to participate in the Community Chest's Hong Kong and Kowloon Walk for Millions, raising funds for the family and child welfare services. These charitable activities allowed our staff members to contribute to the betterment of the underprivileged while also promoting their own well-being.

同事完成公益金舉辦的2022/23年度港島、九龍區百萬行後合照，留住難忘一刻。

Our colleagues came together to capture a memorable group moment after having successfully completed the Hong Kong and Kowloon Walk for Millions 2022/23 organised by the Community Chest.

除了體育和康樂活動，我們也舉辦了「機電廚神大比拼」比賽，讓同事上載美食照片或短片及提供食譜，並由員工及評審團選出得獎作品。

Alongside sports and recreational activities, we hosted the "EMSD Master Chef" competition where colleagues submitted recipes and concepts together with cuisine photos or videos. The winning entries were selected by both colleagues and the judging panel.

同事以聖誕節及健康食材為主題，設計了精美的食譜。

With the theme of Christmas and healthy food, our colleague designed a delicious recipe.

展望未來，我們會繼續以員工的福祉為先，籌備更多活動促進員工身心健康。擁有健康的工作團隊，才可以達成促進可持續發展及改善社會的目標。我們將繼續致力保障員工健康，期待為同事帶來更多有意義的活動。

As we move forward, the EMSD will continue to prioritise the well-being of our staff and organise initiatives that promote a healthy lifestyle. A healthy workforce is essential to achieving our sustainability goals and contributing to the betterment of society. We remain committed to promoting staff well-being, and we look forward to more engaging activities for our colleagues.

全球報告倡議組織內容索引
GRI CONTENT INDEX

GRI CONTENT INDEX ESSENTIALS SERVICE 2023

機電工程署根據全球報告倡議組織標準編製本報告，匯報期為2022年4月1日至2023年3月31日期間的內容。對於本報告的英文版，全球報告倡議組織透過「內容索引 – 必要服務」確認本報告已按符合其標準的方式清晰表述內容索引，以及標示「一般披露」2-1 至2-5、3-1及 3-2的相應位置。

Electrical and Mechanical Services Department (EMSD) has reported in accordance with the GRI Standards for the period from 1 April 2022 to 31 March 2023. For the Content Index – Essentials Service, GRI Services reviewed that the GRI content index is clearly presented, in a manner consistent with the Standards, and that the references for Disclosures 2-1 to 2-5, 3-1 and 3-2 are aligned with the appropriate sections in the body of the report. The service was performed on the English version of this Report.

GRI標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
GRI 1: 基礎 2021 GRI 1: Foundation 2021					
General Disclosures 一般披露					
GRI 2: 一般披露 2021 GRI 2: General Disclosures 2021	**2-1**	組織詳細資訊 Organisational details	部門簡介及架構 Organisational Profile and Structure	封面內頁 Inner Page of Cover	✓
			關於本報告 About this Report	P.176	
	2-2	機構可持續報導包含的單位 Entities included in the organisation's sustainability reporting	關於本報告 About this Report	P.176	✓
	2-3	匯報期、頻率及聯絡點 Reporting period, frequency and contact point	關於本報告 About this Report	P.176-179	✓
	2-4	重整信息 Restatements of information	基於數據調整和校閱，上年度報告中以下資料作出更正： Based on updated data and further review, the following information in the report last year is restated: 機電署總部大樓自2013年開始使用啟德區域供冷系統服務，截至2021/22年度估計共節省約4 000萬千瓦小時電力，相當於每年減少27 000公噸碳排放。 For the EMSD Headquarters Building, the Kai Tak District Cooling System came into operation from 2013. The total estimated electricity savings by the year 2021/22 amounted to about 40 million kWh, which is equivalent to reducing 27 000 tonnes of carbon emissions per annum. 在匯報年度，我們的建築物及其基礎設施比2018/19年度的能源表現提高約3.2%。 During the reporting period, energy performance of our buildings and infrastructure facilities was up about 3.2% on 2018/19.		✓

GRI標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
			2021/22年度與基準年相若運作情況下的總能源用量為3006.8萬千瓦小時。 Total energy consumption in 2021/22 under comparable operating conditions was 30.068 million kWh.	P.196	
			2021/22年度女性員工平均培訓時數為25.6小時。 In 2021/22 reporting year, the average training hours of female staff was 25.6.	P.233	
	2-5	外部認證 External assurance	關於本報告 About this Report	P.176	✓
			獨立保證意見聲明書 Independent Assurance Opinion Statement	P.235-236	
	2-6	業務活動、價值鏈和其他業務關係 Activities, value chain and other business relationships	部門簡介及架構 Organisational Profile and Structure	封面內頁 Inner Page of Cover	✓
			可持續發展管理方針 Sustainability Management Approach	P.182	
	2-7	僱員 Employees	社會成效 Social Performance	P.205	✓
			統計資料摘要 Summary of Statistics	P.230-231	
	2-8	僱員以外的工作者 Workers who are not employees	報告年度內以非公務員合約聘請了101個實習生。 During the reporting year, 101 interns were employed under non-civil service contract.		✓
	2-9	管治架構及組成 Governance structure and composition	我們的管理層 Our Management	P.12-13, 16-17, 118-121	✓
			我們的管治架構及組成載於本署網站：https://www.emsd.gov.hk/tc/about_us/our_organisation/ Our governance structure and composition are listed on our website at: https://www.emsd.gov.hk/en/about_us/our_organisation/		
	2-10	最高治理單位的提名與遴選 Nomination and selection of the highest governance body	可持續發展管理方針 Sustainability Management Approach	P.183	✓
	2-11	最高治理單位的主席 Chair of the highest governance body	我們的管理層 Our Management	P.12-13, 16-17, 118-121	✓
			可持續發展管理方針 Sustainability Management Approach	P.182-183	
			我們的高層管理人員載於：https://www.emsd.gov.hk/tc/about_us/our_organisation/ Our senior management is listed on our website at: https://www.emsd.gov.hk/en/about_us/our_organisation/		

全球報告倡議組織內容索引
GRI CONTENT INDEX

GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	2-12	最高治理單位於監督影響管理的角色 Role of the highest governance body in overseeing the management of impacts	可持續發展管理方針 Sustainability Management Approach	P.182-183	✓
	2-13	為管理影響的責任授權 Delegation of responsibility for managing impacts	可持續發展管理方針 Sustainability Management Approach	P.182	✓
	2-14	最高治理單位於可持續報告的角色 Role of the highest governance body in sustainability reporting	關於本報告 About this Report 可持續發展管理方針 Sustainability Management Approach	P.177-178 P.182-183	✓
	2-15	利益衝突 Conflicts of interest	可持續發展管理方針 Sustainability Management Approach	P.183	✓
	2-16	溝通關鍵重大事件 Communication of critical concerns	關於本報告 About this Report	P.177-179	✓
	2-17	最高治理單位的集體知識 Collective knowledge of the highest governance body	品質、環境及生產力策導委員會及環保管理委員會由包括高級管理層在內的員工參與，帶領關於可持續發展的措施，同時發放及記錄有關的集體知識。 The Quality, Environmental & Productivity Steering Committee and Green Management Committee led the sustainability related activities of EMSD with participation of senior management staff where collective knowledge is shared and recorded.		✓
	2-18	最高治理單位的績效評估 Evaluation of the performance of the highest governance body	可持續發展管理方針 Sustainability Management Approach 作為政府部門的機電工程署，工作表現管理制度詳情載於：https://www.csb.gov.hk/tc_chi/admin/pm/173.html EMSD acts as a government department and the details of performance management system are listed on the website at: https://www.csb.gov.hk/english/admin/pm/173.html	P.182-183	✓
	2-19	薪酬政策 Remuneration policies	可持續發展管理方針 Sustainability Management Approach 作為政府部門的機電工程署，薪酬政策載於：https://www.csb.gov.hk/tc_chi/admin/pay/38.html The EMSD acts as a government department and the pay policy is listed on the website at: https://www.csb.gov.hk/english/admin/pay/38.html	P.182-183	✓
	2-20	薪酬決定流程 Process to determine remuneration	可持續發展管理方針 Sustainability Management Approach 作為政府部門的機電工程署，年度薪酬調整載於：https://www.csb.gov.hk/tc_chi/admin/pay/55.html EMSD acts as a government department and the annual pay adjustment mechanism is listed on the website at: https://www.csb.gov.hk/english/admin/pay/55.html	P.182-183	✓

GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	2-21	年度總薪酬比率 Annual total compensation ratio	可持續發展管理方針 Sustainability Management Approach 作為政府部門的機電工程署，總薪級表載於：https://www.csb.gov.hk/tc_chi/admin/pay/42.html EMSD acts as a government department and the master pay scale is listed on the website at: https://www.csb.gov.hk/english/admin/pay/42.html	P.182-183	✓
	2-22	可持續發展策略的聲明 Statement on sustainable development strategy	署長的話 Message from the Director 規管服務業務概覽 — 服務回顧 Regulatory Services Achievements Overview – Operations Review 機電工程營運基金報告 — 業務回顧與前瞻 EMSTF Report – Operations Review and Outlook 可持續發展管理方針 Sustainability Management Approach	P.2-11 P.18-27 P.122-127 P.182-185	✓
	2-23	政策承諾 Policy commitments	抱負、使命、信念 Vision, Mission, Values 可持續發展管理方針 Sustainability Management Approach 促進環境可持續發展 Environmental Sustainability 社會成效 Social Performance 我們的企業政策載於：https://www.emsd.gov.hk/tc/about_us/corporate_policies/index.html Our corporate policies are shown on our website at: https://www.emsd.gov.hk/en/about_us/corporate_policies/index.html	P.15,117 P. 182-191 P.192-199 P.200-213	✓
	2-24	融合政策承諾 Embedding policy commitments	可持續發展管理方針 Sustainability Management Approach 促進環境可持續發展 Environmental Sustainability 社會成效 Social Performance	P.182-191 P.192-199 P.200-213	✓
	2-25	補救負面影響的程序 Processes to remediate negative impacts	可持續發展管理方針 Sustainability Management Approach 社會成效 Social Performance	P.183 P.211	✓
	2-26	尋求建議和提出疑慮的機制 Mechanisms for seeking advice and raising concerns	可持續發展管理方針 Sustainability Management Approach 社會成效 Social Performance	P.183 P.211	✓
	2-27	遵守法律及法規 Compliance with laws and regulations	可持續發展管理方針 Sustainability Management Approach	P.183	✓

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GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	2-28	機構參與的協會的會員資格 Membership associations	機電工程署屬於以下協會的成員： 1) 保障資料主任聯會 2) 歐洲標準委員會 3) 綠十字會 4) 香港職業安全衛生協會 5) 英國燃氣專業學會 6) 國際纜車監管機構會議 7) 國際鐵路安全議會 The EMSD holds membership in the following associations: 1) Data Protection Officers' Club 2) European Committee for Standardisation 3) Green Cross Group 4) Hong Kong Occupational Safety and Health Association 5) Institution of Gas Engineers and Managers 6) Internationale Tagung der Technischen Aufsichtsbehörden (International Meeting of Technical Authorities for Cableways) 7) International Railway Safety Council		✓
	2-29	持份者參與的方針 Approach to stakeholder engagement	關於本報告 About this Report 可持續發展管理方針 Sustainability Management Approach	P.177-179 P.182-183	✓
	2-30	集體談判協議 Collective bargaining agreements	共有11個機電工程署工會由員工以自願性質參與，另有九個員工協商委員會代表不同職系及職級的機電工程署員工就員工福利與部門溝通。全體的員工（100%）都受集體談判協議的保障。 There are 11 EMSD staff unions which can be joined on voluntary basis. There are also nine departmental consultative committees who are representatives of all grades and ranks of the EMSD staff to liaise with the Department for the well-being of the staff. All of our employees (100%) are covered by collective bargaining agreements.		✓
重要議題 **Material Topics**					
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-1**	重要議題決定的流程 Process to determine material topics	關於本報告 About this Report	P.177-179	✓
	3-2	重要議題清單 List of material topics	關於本報告 About this Report	P.179	✓

GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	經濟成效（財務表現） **Economic Performance (Financial Performance)**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
GRI 201: 經濟績效 2016 GRI 201: Economic Performance 2016	**201-1**	機構所產生及分配的直接經濟價值 Direct economic value generated and distributed	機電工程營運基金報告 EMSTF Report 機電工程營運基金報告 — 業務回顧與前瞻 EMSTF Report – Operations Review and Outlook	P.116-173 P.122-127	✓
	201-2	氣候變遷所產生的財務影響及其他風險與機會 Financial implications and other risks and opportunities due to climate change	促進環境可持續發展 Environmental Sustainability	P.192-199	✓
	201-3	固定福利計劃義務與其他退休計劃 Defined benefit plan obligations and other retirement plans	作為政府部門的機電工程署，退休計劃載於：https://www.csb.gov.hk/tc_chi/admin/retirement/183.html As a government department, the retirement policy of the EMSD is listed on: https://www.csb.gov.hk/english/admin/retirement/183.html		✓
	201-4	取自政府之財務補助 Financial assistance received from government	不適用於作為政府部門的機電工程署。 Not applicable to the EMSD as a government department.		✓
	間接經濟影響 **Indirect Economic Impacts**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
GRI 203: 間接經濟影響 2016 GRI 203: Indirect Economic Impacts 2016	**203-1**	基礎設施投資與支援性服務 Infrastructure investments and services supported	規管服務業務概覽 — 服務回顧 Regulatory Services Achievements Overview – Operations Review 機電工程營運基金報告 — 業務回顧與前瞻 EMSTF Report – Operations Review and Outlook	P.18-27 P.122-127	✓
	203-2	重大間接經濟影響 Significant indirect economic impacts	規管服務業務概覽 — 服務回顧 Regulatory Services Achievements Overview – Operations Review 機電工程營運基金報告 — 業務回顧與前瞻 EMSTF Report – Operations Review and Outlook 社會成效 Social Performance	P.18-27 P.122-127 P.200-213	✓

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GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	採購實務（部門的採購政策） **Procurement Practices (Departmental Procurement Practices)**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
GRI 204: 採購實務 2016 GRI 204: Procurement Practices 2016	**204-1**	本地供應商採購的支出比例 Proportion of spending on local suppliers	可持續發展管理方針 Sustainability Management Approach	P.188	✓
	物料（物料使用） **Materials (Use of Materials)**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			促進環境可持續發展 Environmental Sustainability	P.198-199	
GRI 301: 物料 2016 GRI 301: Materials 2016	**301-1**	所用物料的重量或體積 Materials used by weight or volume	統計資料摘要 Summary of Statistics	P.228	✓
	301-2	使用回收再利用的物料 Recycled input materials used	統計資料摘要 Summary of Statistics	P.228	✓
	301-3	回收產品及其包材 Reclaimed products and their packaging materials	不適用於機電工程署的日常營運。 Not applicable to the EMSD's operations.		✓
	能源（節約能源） **Energy (Energy Conservation)**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			促進環境可持續發展 Environmental Sustainability	P.192-197	
GRI 302: 能源 2016 GRI 302: Energy 2016	**302-1**	機構內部的能源消耗量 Energy consumption within the organisation	促進環境可持續發展 Environmental Sustainability	P.192-197	✓
			統計資料摘要 Summary of Statistics	P.227	
	302-2	機構外部的能源消耗量 Energy consumption outside of the organisation	不適用於機電工程署的日常營運。 Not applicable to the EMSD's operations.		✓
	302-3	能源強度 Energy intensity	統計資料摘要 Summary of Statistics	P.227	✓
	302-4	減少能源的消耗 Reduction of energy consumption	促進環境可持續發展 Environmental Sustainability	P.192-197	✓
	302-5	降低產品和服務的能源需求 Reductions in energy requirements of products and services	不適用於機電工程署的日常營運。 Not applicable to the EMSD's operations.		✓

GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	水與污水（節約用水，污水處理） **Water and Effluents (Water Conservation, Effluents Treatment)**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			促進環境可持續發展 Environmental Sustainability	P.198	
GRI 303: 水資源與污水 2018 GRI 303: Water and Effluents 2018	**303-1**	共享水資源之相互影響 Interactions with water as a shared resource	促進環境可持續發展 Environmental Sustainability	P.198	✓
	303-2	管理與排水相關的影響 Management of water discharge-related impacts	促進環境可持續發展 Environmental Sustainability	P.198	✓
	303-3	取水量 Water withdrawal	機電工程署的用水主要來自水務署管理的供水來源。按來源細分用水量的披露方法，例如地表水、地下水等，並不適用。 The water consumed by the EMSD's operations comes from the sources managed by Water Supplies Department. Disclosure on the breakdown of water withdrawn by source, e.g. surface water, groundwater, etc. is considered to be not applicable.		✓
	303-4	排水量 Water discharge	促進環境可持續發展 Environmental Sustainability	P.198	✓
			統計資料摘要 Summary of Statistics	P.227	
			各項目排放的水均輸往所在城市的市立廢水系統。 100% of water discharged from our operations was transported to municipal wastewater systems in the cities where we operate.		
	303-5	耗水量 Water consumption	促進環境可持續發展 Environmental Sustainability	P.198	✓
			統計資料摘要 Summary of Statistics	P.227	
			香港沒有特定地區遭受缺水威脅。 No specific regions are water-stressed in Hong Kong.		

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GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	生物多樣性（生態保育） Biodiversity (Ecological Conservation)				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
GRI 304: 生物多樣性 2016 GRI 304: Biodiversity 2016	**304-1**	機構所擁有、租賃、管理的營運地點或其鄰近地區位於環境保護區或區外的具有重要生物多樣性價值的地區或其毗鄰地區 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	機構所擁有、租賃、管理的營運地點均不在環境保護區或區外的具有重要生物多樣性價值的地區或其毗鄰地區。 No operation sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.		✓
	304-2	業務活動、產品及服務，對生物多樣性方面的顯著影響 Significant impacts of activities, products and services on biodiversity	不適用於機電工程署的日常營運。 Not applicable to the EMSD's operations.		✓
	304-3	受保護或復育的棲息地 Habitats protected or restored	不適用於機電工程署的日常營運。 Not applicable to the EMSD's operations.		✓
	304-4	受營運影響的棲息地中，已被列入IUCN紅色名錄及國家保育名錄的物種 IUCN Red List species and national conservation list species with habitats in areas affected by operations	不適用於機電工程署的日常營運。 Not applicable to the EMSD's operations.		✓
	排放物（廢氣控制） Emissions (Emissions Control)				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			促進環境可持續發展 Environmental Sustainability	P.197	
GRI 305: 排放 2016 GRI 305: Emissions 2016	**305-1**	直接溫室氣體排放（範圍一） Direct GHG emissions (Scope 1)	促進環境可持續發展 Environmental Sustainability	P.197	✓
			統計資料摘要 Summary of Statistics	P.227	
	305-2	能源間接溫室氣體排放（範圍二） Energy indirect GHG emissions (Scope 2)	促進環境可持續發展 Environmental Sustainability	P.197	✓
			統計資料摘要 Summary of Statistics	P.227	
	305-3	其它間接溫室氣體排放（範圍三） Other indirect GHG emissions (Scope 3)	促進環境可持續發展 Environmental Sustainability	P.197	✓
			統計資料摘要 Summary of Statistics	P.227	
	305-4	溫室氣體排放強度 GHG emissions intensity	促進環境可持續發展 Environmental Sustainability	P.197	✓
			統計資料摘要 Summary of Statistics	P.227	
	305-5	溫室氣體減排量 Reduction of GHG emissions	促進環境可持續發展 Environmental Sustainability	P.196-197	✓
	305-6	臭氧層破壞物質的排放 Emissions of ozone-depleting substances (ODS)	匯報年度中記錄的製冷劑不屬於臭氧層破壞物質。 The recorded refrigerants during the reporting year are not ODS.		✓
	305-7	氮氧化物、硫氧化物及其他重大的氣體排放 Nitrogen Oxides (NOx), Sulfur Oxides (SOx), and other significant air emissions	統計資料摘要 Summary of Statistics	P.229	✓
	廢棄物（廢物處理） Waste (Waste Treatment)				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			促進環境可持續發展 Environmental Sustainability	P.198-199	
GRI 306: 廢棄物 2020 GRI 306: Waste 2020	**306-1**	廢棄物的產生與廢棄物相關的重大影響 Waste generation and significant waste-related impacts	促進環境可持續發展 Environmental Sustainability	P.198-199	✓
	306-2	廢棄物相關的重大影響管理 Management of significant waste-related impacts	促進環境可持續發展 Environmental Sustainability	P.198-199	✓
	306-3	產生的廢棄物 Waste generated	促進環境可持續發展 Environmental Sustainability	P.198-199	✓
			統計資料摘要 Summary of Statistics	P.229	
	306-4	廢棄物的處置移轉 Waste diverted from disposal	促進環境可持續發展 Environmental Sustainability	P.198-199	✓
			統計資料摘要 Summary of Statistics	P.229	
	306-5	廢棄物的直接處置 Waste directed to disposal	促進環境可持續發展 Environmental Sustainability	P.198-199	✓
			統計資料摘要 Summary of Statistics	P.229	
	供應商環境評估（評估供應商/承辦商的環境表現） Supplier Environmental Assessment (Supplier/Contractor Environmental Assessment)				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.179	✓
GRI 308: 供應商環境評估 2016 GRI 308: Supplier Environmental Assessment 2016	**308-1**	按照環境準則篩選的新供應商 New suppliers that were screened using environmental criteria	促進環境可持續發展 Environmental Sustainability	P.199	✓
	308-2	供應鏈對環境的負面影響，以及所採取的行動 Negative environmental impacts in the supply chain and actions taken	促進環境可持續發展 Environmental Sustainability	P.199	✓

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GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	僱傭關係(員工政策及統計數據) Employment (Employment Policy and Statistics)				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	3-3	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			社會成效 Social Performance	P.209-210	
GRI 401: 僱傭關係 2016 GRI 401: Employment 2016	401-1	新入職員工及員工離職率 New employee hires and employee turnover	統計資料摘要 Summary of Statistics	P.230-231	✓
	401-2	提供給全職員工(不包含臨時或兼職員工)的福利 Benefits provided to full-time employees that are not provided to temporary or part-time employees	社會成效 Social Performance	P.209-210	✓
	401-3	育嬰假 Parental leave	統計資料摘要 Summary of Statistics	P.234	✓
	職業健康與安全 Occupational Health and Safety				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	3-3	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			社會成效 Social Performance	P.208-211	
GRI 403: 職業健康與安全 2018 GRI 403: Occupational Health and Safety 2018	403-1	職業健康與安全管理體系 Occupational health and safety management system	社會成效 Social Performance	P.208	✓
	403-2	危險辨識、風險管理及事故調查 Hazard identification, risk management, and incident investigation	社會成效 Social Performance	P.208	✓
	403-3	職業健康服務 Occupational health services	社會成效 Social Performance	P.208-210	✓
	403-4	有關職業健康及安全之工作者參與、諮詢與溝通 Worker participation, consultation, and communication on occupational health and safety	社會成效 Social Performance 部別職安健委員會及職安健策導委員會代表規管及營運服務,即是機電署的全體員工。部別職安健委員會每三個月開會一次,而職安健策導委員會每三至六個月開會一次。 Both Regulatory and Trading Services of the EMSD, which represented the whole workforce of the EMSD, represented by the Divisional Occupational Safety and Health Committees and Steering Committee on Occupational Safety and Health. The Divisional Occupational Safety and Health Committees meet every three months, while Steering Committee on Occupational Safety and Health meets every three to six months.	P.208-211	✓
	403-5	有關職業健康及安全之工作者培訓 Worker training on occupational health and safety	社會成效 Social Performance	P.209	✓
	403-6	促進工作者健康 Promotion of worker health	社會成效 Social Performance	P.209-210	✓
	403-7	預防和減緩與業務關係直接相關之職業健康及安全的影響 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	社會成效 Social Performance	P.208-209	✓
	403-8	職業健康安全管理系統所涵蓋之工作者 Workers covered by an occupational health and safety management system	職業健康及安全管理是機電署綜合管理系統的有機組成部分,有效確保員工和承辦商的作業健康與安全。其中機電工程營運基金已獲得ISO 45001:2018認證。 Occupational health and safety management is part of the EMSD's Integrated Management System, ensuring the workplace health and safety for our staff and contractors. In particular, EMSTF has been certified with ISO 45001:2018.		✓
	403-9	工傷 Work-related injuries	統計資料摘要 Summary of Statistics	P.232	✓
	403-10	職業病 Work-related ill health	統計資料摘要 Summary of Statistics	P.232	✓
	培訓與教育(員工培訓及發展) Training and Education (Employee Training and Education)				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	3-3	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			社會成效 Social Performance	P.205	
GRI 404: 培訓與教育 2016 GRI 404: Training and Education 2016	404-1	每名員工每年接受培訓的平均小時數 Average hours of training per year per employee	社會成效 Social Performance	P.205	✓
			統計資料摘要 Summary of Statistics	P.233	
	404-2	提升員工職能及過渡協助方案 Programmes for upgrading employee skills and transition assistance programmes	社會成效 Social Performance	P.205	✓
	404-3	定期接受成效及職業發展評估的員工百分比 Percentage of employees receiving regular performance and career development reviews	報告期內,100% 的機電署員工接受工作表現評估及培訓需要評估。 100% of the EMSD's employees received performance review as well as evaluation on training needs during the reporting period.		✓

全球報告倡議組織內容索引
GRI CONTENT INDEX

GRI 標準 GRI Standards	披露 Disclosure		參照/直接解釋 Reference/Direct Answer	頁數 Page No.	外部認證 External Assurance
	多元化與平等機會 **Diversity and Equal Opportunity**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			社會成效 Social Performance	P.211	
GRI 405: 多元化與平等機會 2016 GRI 405: Diversity and Equal Opportunity 2016	**405-1**	管治機構及員工多樣性 Diversity of governance bodies and employees	社會成效 Social Performance	P.211	✓
	405-2	女性對男性基本薪資加薪酬的比率 Ratio of basic salary and remuneration of women to men	釐定公務員薪酬的政策和安排並不涉及任何性別因素的考慮，並且完全遵守《性別歧視條例》現有框架下對同值同酬的要求。女性對男性基本薪資加薪酬的比率為1：1。 The policy and practice for the determination of civil service pay is gender neutral by design and is in full compliance with the requirements for equal pay for work of equal value under the existing framework as provided for under the Sex Discrimination Ordinance. Ratio of basic salary and remuneration of women to men is 1:1.		✓
	反歧視（非重要議題） **Non-discrimination (Not Material Topic)**				
GRI 406: 反歧視 2016 GRI 406: Non-discrimination 2016	**406-1**	歧視事件及組織採取的改善行動 Incidents of discrimination and corrective actions taken	社會成效 Social Performance	P.211	✓
	強迫或強制勞動（防止強迫或強制勞動） **Forced or Compulsory Labour (Prevent Forced or Compulsory Labour)**				
GRI 3: 重要議題 2021 GRI 3: Material Topics 2021	**3-3**	重要議題的管理 Management of material topics	可持續發展管理方針 Sustainability Management Approach	P.182-187	✓
			社會成效 Social Performance	P.211	
GRI 409: 強迫或強制勞動 2016 GRI 409: Forced or Compulsory Labour 2016	**409-1**	具強迫或強制勞動事件重大風險的營運據點和供應商 Operations and suppliers at significant risk for incidents of forced or compulsory labour	社會成效 Social Performance	P.211	✓

統計資料摘要
SUMMARY OF STATISTICS

環境
Environment

		單位 Unit	2020/21	2021/22	2022/23
能源 Energy					
柴油 Diesel		千兆焦耳[13]（GJ）[13] （升L）	3 917 (108 802)	4 909 (136 360)	4 713 (130 909)
汽油 Gasoline		千兆焦耳[13]（GJ）[13] （升L）	9 094 (275 564)	8 540 (258 801)	8 363 (253 420)
太陽能發電系統所生產的可再生電力[14] Renewable electricity generated from solar photovoltaic system[14]		千兆焦耳[13]（GJ）[13] （千瓦小時 kWh）	902 (250 684)	630 (174 933)	516 (143 285)
購買電力使用總量[15] Total purchased electricity consumption[15]		千兆焦耳[13]（GJ）[13] （'000千瓦小時 '000 kWh）	129 049 (35 847)	141 947 (39 430)	148 109 (41 141)
購買電力使用強度 Purchased electricity consumption intensity		千瓦小時/員工 kWh/employee	5 937	6 656	7 048
水 Water					
水 Water		立方米 m^3	16 177	14 703	14 983
溫室氣體排放[16] GHG Emissions[16]					
直接排放（範圍一） Direct emissions (Scope 1)	燃油 Fuel	公噸二氧化碳當量 tCO_2e	1 046	1 062	1 047
	製冷劑 Refrigerant	公噸二氧化碳當量 tCO_2e	1 298[17]	593	1 526
	乙炔[18] Acetylene[18]	公噸二氧化碳當量 tCO_2e	0.07	0	0.05
能源間接排放（範圍二）[19] Energy indirect emissions (Scope 2)[19]		公噸二氧化碳當量 tCO_2e	13 434	15 518	14 863
其他間接排放（範圍三） Other indirect emissions (Scope 3)		公噸二氧化碳當量 tCO_2e	18[20]	29[20]	305[21]
總排放量[19] Total emissions[19]		公噸二氧化碳當量 tCO_2e	15 796	17 202	17 741

[13] 系數的單位統一換算成千兆焦耳：柴油(0.036千兆焦耳/升)、汽油(0.033千兆焦耳/升)、電力(0.0036千兆焦耳/千瓦小時)。
Conversion factors used to standardise the units to gigajoules (GJ): diesel (0.036GJ/L), gasoline (0.033GJ/L), electricity (0.0036GJ/kWh).

[14] 產生的可再生電力，只供內部使用。
The generated renewable electricity is for internal use only.

[15] 購買電力使用總量包括中電、港燈和區域供冷系統產生的電力。
The total purchased electricity consumption included the electricity generated from CLP Power Hong Kong Limited, HK Electric, and District Cooling System (DCS).

[16] 參考《香港建築物（商業、住宅或公共用途）的溫室氣體排放及減除的審計和報告指引》(由環境保護署及機電工程署發布)，溫室氣體包括二氧化碳、甲烷、氧化亞氮及氫氟碳化物。
Made reference to the Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings of Commercial, Residential or Institutional Purposes in Hong Kong (by Environmental Protection Department and the EMSD), GHG types include CO_2, CH_4, N_2O and HFCs.

[17] 2020/21年度製冷劑數據經審查後新增其溫室氣體排放。
In 2020/21, refrigerant consumption was available after data review, its associated GHG emission was newly included.

[18] 參考《香港中小企業碳審計工具箱》(由香港大學及香港城市大學發布)。
Made reference to the Carbon Audit Toolkit for Small and Medium Enterprises in Hong Kong (by The University of Hong Kong and City University of Hong Kong).

[19] 排放量不包括由區域供冷系統產生的電力。
The electricity generated from DCS is not included in the emission.

[20] 棄置到堆填區的廢紙和公務旅行已納入2021/22年度的範圍三排放數據計算中，然而由於2019冠狀病毒病的情況下，2020/21年度起沒有公務旅行的排放數據記錄。
It included paper waste disposal and business travelling in 2021/22. There was no overseas travelling recorded started from 2020/21, due to the COVID-19 epidemic.

[21] 數據包括處置廢紙、公務旅行、處理食水和污水時耗用的電力。
It included waste paper disposal, business travelling, electricity used for fresh water and sewage processing.

統計資料摘要
SUMMARY OF STATISTICS

	單位 Unit	2020/21	2021/22	2022/23
物料 Material				
不可再生材料 Non-renewable materials				
油漆及溶劑 Paint & solvent	升 L	18	30	6
潤滑油 Lubrication oil	升 L	1 992	2 546	2 395
油脂 Grease	公斤 kg	32	22	20
工業用氣體 Industrial gas	立方米 m^3	61	0	44
蓄電池電解液 Battery electrolyte	升 L	0	0	0
原子車胎 Tubeless tyre	條 No.	197	232	312
外車胎 Outer cover tyre	條 No.	0	0	0
車胎內膽 Inner tube	條 No.	0	0	0
可再生材料 Renewable materials				
紙張[22] Paper[22]	令 ream	28 224	28 826	28 380

[22] 機電署購買和使用再造紙張。
At the EMSD, we purchase and consume paper with recycled content.

	單位 Unit	2020/21 妥善棄置 Properly Disposed	2020/21 由承辦商處理 Handled by Contractors	2021/22 妥善棄置 Properly Disposed	2021/22 由承辦商處理 Handled by Contractors	2022/23 妥善棄置 Properly Disposed	2022/23 由承辦商處理 Handled by Contractors
污水及廢物 Effluents and Waste							
無害廢物[23] Non-hazardous waste[23]							
廢紙 Waste paper	公斤 kg	3 670	34 117	3 178	36 039	2 284	26 123
鋁罐及金屬罐 Aluminium and metal cans	個 No.	0	10 563	0	10 625	0	11 625
膠樽 Plastic bottles	個 No.	0	5 219	0	5 313	0	6 092
即棄電池 Disposable batteries	公斤 kg	38	138	59	94	26	55
金屬廢料 Metal scraps	公斤 kg	6 780	250	21 340	1 550	33 957	0
有害廢物[24] Hazardous waste[24]							
可充電電池 Rechargeable batteries	公斤 kg	–	282	–	447	–	428
廢油（潤滑油） Waste oil (Lubrication oil)	升 L	–	2 844	–	2 391	–	2 357
舊車胎 Used vehicle tyres	條 No.	–	197	–	232	–	312
舊光管/含水銀照明燈 Spent fluorescent / mercury lamps	盞 No.	–	5 279	–	1 847	–	3 947

	單位 Unit	2020/21	2021/22	2022/23
車輛的排放[25] Emissions from Vehicles[25]				
氮氧化物 Nitrogen Oxides (NOx)	克 g	–[26]	2 897 743	3 215 632
硫氧化物 Sulfur Oxides (SOx)	克 g	–[26]	4 523	5 825
顆粒物 Particulate Matter (PM)	克 g	–[26]	214 162	238 300

[23] 廢物處置方法根據本地政府要求處理。產生的無害廢物由合資格承辦商收集以作回收或妥善棄置。
Disposal method determined based on compliance with local government requirements. Non-hazardous waste is collected through licensed contractors for recycling or disposal to the landfills.

[24] 廢物處置方法根據本地政府要求處理。產生的有害廢物由合資格承辦商收集以作回收或妥善棄置。可充電電池、廢油（潤滑油）、舊車胎及舊光管/含水銀照明燈沒有棄置量數據記錄。
Disposal method determined based on compliance with local government requirements. Hazardous waste is collected by licensed contractors for recycling or disposal to the landfills. There were no data record keeping for disposal of rechargeable batteries, water oil (lubrication oil), used vehicle tyres and spent fluorescent/mercury lamps.

[25] 參考《如何編備環境、社會及管治報告 — 附錄二：環境關鍵績效指標匯報指引》（由香港交易所發布）的計算方法。
Made reference to the calculation method in the How to prepare an ESG Report-Appendix 2: Reporting Guidance on Environmental KPIs (by Hong Kong Exchanges and Clearing Limited).

[26] 2020/21數據沒有記錄。
No data record keeping in 2020/21.

統計資料摘要
SUMMARY OF STATISTICS

社會
Social

僱員人數[27] Employees Statistics[27]

	截至2022年3月31日（百分比） As of 31 March 2022 (Percentage)	截至2023年3月31日（百分比） As of 31 March 2023 (Percentage)
總人數 Total number	5 924	5 837
男女分佈 By gender		
男性 Male	5 210 (87.9%)	5 134 (88.0%)
女性 Female	714 (12.1%)	703 (12.0%)
合約類型分佈 By employment type		
常任制 Permanent		
男性 Male	3 540 (86.3%)	3 488 (86.4%)
女性 Female	560 (13.7%)	551 (13.6%)
合約制 Contract		
男性 Male	1 670 (91.6%)	1 646 (91.5%)
女性 Female	154 (8.4%)	152 (8.5%)
年齡分佈 By age group		
50歲或以上 Aged 50 or above	1 724 (29.1%)	1 695 (29.0%)
30 – 49歲 Aged 30-49	2 774 (46.8%)	2 785 (47.7%)
29歲或以下 Aged 29 or under	1 426 (24.1%)	1 357 (23.2%)

2022/23新入職員工 2022/23 New Hires

	截至2022年3月31日（百分比） As of 31 March 2022 (Percentage)	截至2023年3月31日（百分比） As of 31 March 2023 (Percentage)
總人數 Total number	552 （佔總員工9.3%） (9.3% of total employee)	444 （佔總員工7.6%） (7.6% of total employee)
年齡分佈 By age group		
50歲或以上 Aged 50 or above	80 (14.5%)	81 (18.2%)
30 – 49歲 Aged 30-49	151 (27.4%)	88 (19.8%)
29歲或以下 Aged 29 or under	321 (58.2%)	275 (61.9%)
男女分佈 By gender		
男性 Male	486 (88.0%)	399 (89.9%)
女性 Female	66 (12.0%)	45 (10.1%)

[27] 機電署並無聘用任何非僱員的工人，所有員工均在香港執勤。
The EMSD does not employ workers who are not employees. All staff are based in Hong Kong.

2022/23離職員工 2022/23 Turnover

	截至2022年3月31日（百分比） As of 31 March 2022 (Percentage)	截至2023年3月31日（百分比） As of 31 March 2023 (Percentage)
總人數 Total number	527 （佔總員工8.9%） (8.9% of total employee)	514 （佔總員工8.8%） (8.8% of total employee)
年齡分佈 By age group		
50歲或以上 Aged 50 or above	244 (46.3%)	287 (55.8%)
30 – 49歲 Aged 30-49	93 (17.6%)	71 (13.8%)
29歲或以下 Aged 29 or under	190 (36.1%)	156 (30.4%)
男女分佈 By gender		
男性 Male	481 (91.3%)	468 (91.1%)
女性 Female	46 (8.7%)	46 (8.9%)

管理層的結構 Composition of Senior Management

	截至2022年3月31日（百分比） As of 31 March 2022 (Percentage)	截至2023年3月31日（百分比） As of 31 March 2023 (Percentage)
總管理層人數 Total number of senior management staff	186 （佔總員工3.1%） (3.1% of total employee)	191 （佔總員工3.3%） (3.3% of total employee)
年齡分佈 By age group		
50歲或以上 Aged 50 or above	115 (61.8%)	113 (59.2%)
30 – 49歲 Aged 30-49	71 (38.2%)	78 (40.8%)
29歲或以下 Aged 29 or under	0 (0%)	0 (0%)
男女分佈 By gender		
男性 Male	162 (87.1%)	165 (86.4%)
女性 Female	24 (12.9%)	26 (13.6%)

統計資料摘要
SUMMARY OF STATISTICS

職業健康及安全指標 Occupational Health and Safety Indicators

機電署員工 For EMSD employees		2021/22	2022/23
死亡 Fatalities	數字 Number 比率 Rate	0 0	0 0
嚴重工傷[28] High-consequence work-related injuries[28]	數字 Number 比率 Rate（按每200 000工時計算） (number per 200 000 man-hours)	2 0.03	2 0.03
工傷[29] Recordable work-related injuries[29]	數字 Number 比率 Rate（按每200 000工時計算） (number per 200 000 man-hours)	22 0.37	15 0.26
工作小時 Number of hours worked	小時 Hour	11 978 096	11 697 712
職業病所造成的死亡數量 Number of fatalities as a result of work-related ill health	數字 Number	0	0
可記錄之職業病的案件數量 Number of cases of recordable work-related ill health	數字 Number	0	0

機電署承辦商 For EMSD contractors		2021/22	2022/23
死亡 Fatalities	數字 Number 比率 Rate	0 0	0 0
嚴重工傷[28] High-consequence work-related injuries[28]	數字 Number 比率 Rate（按每200 000工時計算） (number per 200 000 man-hours)	0 0	3 0.05
工傷[30] Recordable work-related injuries[30]	數字 Number 比率 Rate（按每200 000工時計算） (number per 200 000 man-hours)	13 0.26	12 0.22
工作小時 Number of hours worked	小時 Hour	9 979 456	11 001 611
職業病所造成的死亡數量 Number of fatalities as a result of work-related ill health	數字 Number	0	0
可記錄之職業病的案件數量 Number of cases of recordable work-related ill health	數字 Number	0	0

[28] 嚴重工傷（不包括死亡）指因工作而導致的損傷，從而使員工不能/不可/預計未能於六個月內回復傷前的健康狀態。
High-consequence work-related injuries (excluding fatalities) refer to work-related injury that results in an injury from which the worker cannot, does not, or is not expected to recover fully to pre-injury health status within six months.

[29] 報告涉及機電署人員工作時的任何意外，包括未導致給予受傷人員病假的意外。2022/23年度機電署員工工傷主要類型是滑倒、絆倒或在同一高度跌倒、撞到固定或靜止物體、高處墜下或受困於物件之內或物件之間。
Any accident involving the EMSD personnel on duty reported, including those accidents which have not resulted in the granting of any sick leave to the injured person. Main types of work-related injury reported in 2022/23 for the EMSD employees were injured due to slip, trip or fall on the same level, striking against fixed or stationary object, fall of person from height, or trapped in or between objects.

[30] 2022/23年度機電署承辦商工傷主要類型是撞到固定或靜止物體、滑倒、絆倒或在同一高度跌倒，及受困於物件內或物件之間。
Main types of work-related injury reported in 2022/23 for the EMSD contractors were striking against fixed or stationary object, slip, trip or fall on the same level, or trapped in or between objects.

培訓與教育 Training and Education

	單位 Unit	2021/22	2022/23
平均受訓時數 Average training hours			
男女分佈 By gender			
男性 Male	小時 Hour	23.6	24.3
女性 Female	小時 Hour	25.6	28.8
職系分佈 By grade			
高級管理層[31] Senior management[31]	小時 Hour	25.2	26.4
一般員工[32] General staff[32]	小時 Hour	23.8	24.9

[31] 高級管理層指首長職系員工。
Senior management refers to directorate grade staff.

[32] 一般員工指技術職系、專業職系和行政及輔助職系員工。
General staff refers to technical, professional, administrative and support staff.

統計資料摘要
SUMMARY OF STATISTICS

育嬰假 Parental Leave

	2021/22	2022/23
享有育嬰假的員工總數 Total number of employees that were entitled to parental leave		
男女分佈 By gender		
男性 Male	4 845	5 134
女性 Female	660	703
實際使用育嬰假的員工總數 Total number of employees that took parental leave		
男女分佈 By gender		
男性 Male	103	88
女性 Female	23	22
休完育嬰假後，在匯報年度內復職的員工總數 Total number of employees that returned to work in the reporting period after parental leave ended		
男女分佈 By gender		
男性 Male	98	80
女性 Female	15	19
休完育嬰假且復職後12個月仍在職的員工總數 Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work		
男女分佈 By gender		
男性 Male	92	78
女性 Female	15	18
復職率[33] Return to work rates[33]		
男女分佈 By gender		
男性 Male	95.1%	90.9%
女性 Female	65.2%	86.4%
留任率[34] Retention rates[34]		
男女分佈 By gender		
男性 Male	93.9%	97.5%
女性 Female	100%	94.7%

[33] 復職率是以育嬰假後實際復職的員工總數除以育嬰假後應該復職的員工總數再乘100%計算。
Return to work rate is calculated as the total number of employees who did return to work after parental leave divided by total number of employees due to return to work after taking parental leave, and then multiplied by 100%.

[34] 留任率是以育嬰假結束後且復職後12個月仍在職的員工總數除以上個報告期內育嬰假結束後復職的員工總數再乘100%計算。
Retention rate is calculated as the total number of employees retained 12 months after returning to work following a period of parental leave divided by total number of employees returning from parental leave in the prior reporting period(s), and then multiplied by 100%.

獨立保證意見聲明書
INDEPENDENT ASSURANCE OPINION STATEMENT

HKQAA
HONG KONG QUALITY ASSURANCE AGENCY
香 港 品 質 保 證 局

核實聲明

範圍及目的
香港品質保證局已對機電工程署(以下簡稱「機電署」)的社會及環保報告2022/23(以下簡稱「報告」)的內容進行獨立驗證。該報告涵蓋機電署在2022年4月1日至2023年3月31日期間於可持續發展表現的數據和資料。

此核實聲明的目的是對報告所記載之內容提供合理保證。報告是根據全球報告倡議組織(GRI)標準2021的要求編製。

保證程度和核實方法
香港品質保證局的核實程序是參照國際審計與核證準則委員會(International Auditing and Assurance Standards Board)發布的《國際核證聘用準則3000(修訂版),歷史財務資料審計或審閱以外的核證聘用》(International Standard on Assurance Engagements 3000 (Revised), Assurance Engagements Other Than Audits or Reviews of Historical Financial Information)執行。核實過程是基於風險考慮和為獲取恰當的合理保證意見和結論而制訂。核實的範圍是按照 GRI 標準 2021 而定。

我們的驗證重點包括數據管理機制、編製報告過程和檢閱有關數據和資料樣本的原始數據和支持證據。並與負責處理資料和編製報告的代表進行面談。

獨立性
我們的驗證工作是絕對獨立和公正。核實過程嚴格遵守香港品質保證局有關誠信、公正和保密的紀律守則。

結論
基於是次的驗證結果，香港品質保證局對報告作出合理保證並總結：
- 報告是按照 GRI 標準 2021 編製；
- 報告平衡、具比較性、清晰、一致和適時地將重要的可持續發展表現範疇和議題作出闡述；及
- 報告內的數據和資料準確、可靠和完整。

總括而言，報告清楚地表達機電署在可持續發展方面的承諾、管理和表現。

香港品質保證局代表簽署

丁國滔
運營總監
2023年12月

獨立保證意見聲明書
Independent Assurance Opinion Statement

HKQAA
HONG KONG QUALITY ASSURANCE AGENCY
香 港 品 質 保 證 局

VERIFICATION STATEMENT

Scope and Objective
Hong Kong Quality Assurance Agency ("HKQAA") has conducted an independent verification for the Social and Environmental Report 2022/23 (hereafter referred to as "the Report") of the Electrical and Mechanical Services Department (hereafter referred to as "EMSD"). The Report covers the sustainability performance data and information of the EMSD from the period of 1 April 2022 to 31 March 2023.

The aim of this verification is to provide reasonable assurance on the reliability of the Report. The Report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards 2021.

Level of Assurance and Methodology
HKQAA's verification procedure has been conducted with reference to the International Standard on Assurance Engagements 3000 (Revised), Assurance Engagements Other Than Audits or Reviews of Historical Financial Information issued by the International Auditing and Assurance Standards Board. Our evidence gathering process is risk-based driven and has been designed to obtain a reasonable level of assurance as set out in the standard for the purpose of devising the verification conclusion. The extent of this verification process covers the criteria set in the GRI Standards 2021.

The focus areas of our verification are the data management mechanisms, report compilation processes and reviewing relevant raw data and supporting information of the selected samples. Also, representatives with accountability for handling the information and preparing the Report were interviewed.

Independence
Our verification activities are independent and impartial. HKQAA's Code of Conduct with regard to integrity, impartiality and confidentiality has been strictly followed.

Conclusion
Based on the verification results and in accordance with the verification procedures undertaken, HKQAA has obtained reasonable assurance and is in the opinion that:
- The Report has been prepared in accordance with the GRI Standards 2021;
- The Report illustrates the sustainability performance of the material aspects and topics in a balanced, comparable, clear, consistent and timely manner; and
- The data and information disclosed in the Report are accurate, reliable and complete.

In conclusion, the sustainability commitments, stewardship and performance of the EMSD are expressed legibly in the Report.

Signed on behalf of Hong Kong Quality Assurance Agency

K T Ting
Chief Operating Officer
December 2023

鳴謝
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The EMSD would like to express its sincere thanks to the following departments and organisations for their support and co-operation in the course of preparing this annual report (list in alphabetical order).

漁農自然護理署	Agriculture, Fisheries and Conservation Department
香港機場管理局	Airport Authority Hong Kong
建築署	Architectural Services Department
土木工程拓展署	Civil Engineering and Development Department
香港建造業議會	Construction Industry Council
懲教署	Correctional Services Department
香港海關	Customs and Excise Department
教育局	Education Bureau
環境保護署	Environmental Protection Department
食物環境衞生署	Food and Environmental Hygiene Department
政府產業署	Government Property Agency
香港消防處	Hong Kong Fire Services Department
香港警務處	Hong Kong Police Force
香港旅遊發展局	Hong Kong Tourism Board
醫院管理局	Hospital Authority
康樂及文化事務署	Leisure and Cultural Services Department
香港鐵路有限公司	MTR Corporation Limited
海事處	Marine Department
昂坪360	Ngong Ping 360
山頂纜車有限公司	Peak Tramways Company Limited
伊利沙伯醫院	Queen Elizabeth Hospital
香港電車有限公司	The Hongkong Tramways Limited
運輸署	Transport Department
屯門醫院	Tuen Mun Hospital
職業訓練局	Vocational Training Council

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