

規管服務業務概覽

REGULATORY SERVICES ACHIEVEMENTS OVERVIEW



● 抱負 **VISION**

我們的抱負，是要成為促使香港在機電安全及善用能源方面，都達到世界首要都會水平的政府機構。

Our vision is to be the government agency that makes Hong Kong a top-ranking city in E&M safety and in the utilisation of energy.

● 使命 **MISSION**

我們的使命，是確保機電及能源科技均以安全、可靠、經濟及環保的方式得以善用，並藉此促進社會的安全及提升生活質素。

Our mission is to enhance the safety and the quality of life of our community by ensuring that E&M and energy technologies are harnessed in a safe, reliable, economical and environment-friendly manner.

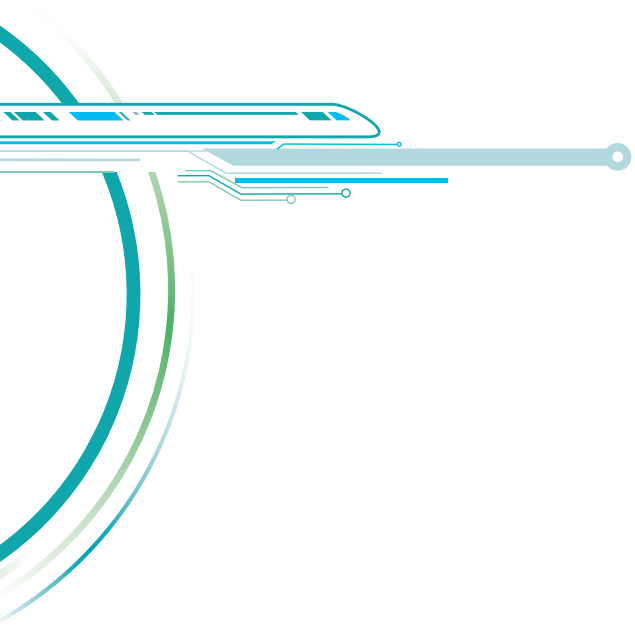
● 信念 **VALUES**

專業才能 **EXPERTISE**

誠信 **INTEGRITY**

可靠 **RELIABILITY**

承擔 **COMMITMENT**



高層管理人員

Senior Management

1 薛永恒太平紳士
Mr Sit Wing-hang, Alfred, JP
機電工程署署長
Director of Electrical and Mechanical Services

2 賴漢忠太平紳士
Mr Lai Hon-chung, Harry, JP
副署長 / 規管服務
Deputy Director/Regulatory Services

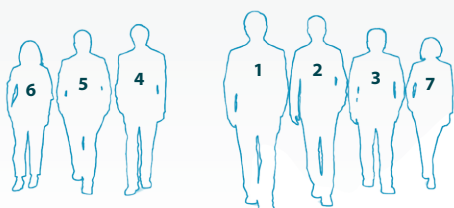
3 陳秋發先生
Mr Chan Chau-fat
助理署長 / 鐵路
Assistant Director/Railways

4 黃奕進先生
Mr Vy Ek-chin
助理署長 / 電力及能源效益
Assistant Director/Electricity and Energy Efficiency

5 潘國英先生
Mr Poon Kwok-ying, Raymond
助理署長 / 氣體及一般法例
Assistant Director/Gas and General Legislation

6 羅皓宜女士
Ms Law Ho-ye, Sharon
部門會計師
Departmental Accountant

7 袁秀明女士
Ms Yuen Sau-ming, Anna
主任秘書
Departmental Secretary



- * 彭耀雄太平紳士出任助理署長 / 氣體及一般法例至二零一八年九月十一日
Mr Pang Yiu-hung, JP was Assistant Director/Gas and General Legislation up to 11 September 2018
- * 潘國英先生出任助理署長 / 電力及能源效益至二零一九年二月二十八日
Mr Poon Kwok-ying, Raymond was Assistant Director/Electricity and Energy Efficiency up to 28 February 2019
- * 羅肇嫻女士出任主任秘書至二零一九年二月二十七日
Ms Lo Siu-han, Cynthia was Departmental Secretary up to 27 February 2019



服務回顧

Operations Review

賴漢忠太平紳士

Mr Lai Hon-chung, Harry, JP

機電工程署副署長/
規管服務

Deputy Director/
Regulatory Services, EMSD



在2018/19年度，規管服務各方面的工作都有穩健進展。在拓展國際視野與建立區域連接方面，也在往年的基礎上更進一步。年內，規管服務在科技發展和區域與國際層面合作上取得三項重要成果，尤其矚目。

攜手推動重新校驗

重新校驗是透過定期檢查建築物的能源表現，調整相關機電系統和設備，以達致最佳能源效益，降低營運成本，對已運作多年的建築物尤其有效。政府已計劃率先為主要政府建築物進行重新校驗。為配合推動重新校驗，我們推出了《重新校驗技術指引2018》更新版本，廣納專業團體和持份者的意見，為業界提供最新技術指引。

除了在本港推動重新校驗外，本署於2018年11月舉辦題為「共創智慧未來」研討會期間，跟六個來自本港、澳門和內地其他城市的綠色建築、機電維修保養及節能科研領軍機構，簽署了《粵港澳大灣區建築物重新校驗（再調適）合作備忘錄》。香港自上世紀六七十年代城市化發展以來，不少現有商用建築物的機電系統已運作多年，因此我們開展重新校驗工作的時間，也比其他內地城市為早，希望日後能把相關經驗逐步推廣至粵港澳大灣區，以收互惠互利之效。

上述各簽署機構於2019年3月在北京舉行全體大會，成立了三個工作小組，分別負責編撰技術指引、提升業界專業能力和宣傳推廣工作。簽署機構承諾會互相分享相關知識和經驗、合作提供培訓，以及鼓勵業界把重新校驗作為提升建築物能源效益的新方案，長遠目標是在大灣區的城市鼓勵更多建築物進行這方面的工作。

與海關總署簽訂合作協議

機電工程署早於2003年已與前國家質量監督檢驗檢疫總局（國家質檢總局）簽訂合作安排，十多年來在機電安全和能源效益的相關課題上都合作無間，主要工作包括安全推廣、經驗交流、事故通報和人才培訓等，並每年舉行年會商討各方面的進展。

Regulatory Services sustained progress in all areas of work in 2018/19. We built on our success in expanding our international horizons and establishing regional connections. Our significant achievements in three specific aspects of Regulatory Services, related to technological development as well as regional and international relations, were particularly notable.

Joint Promotion of Retro-commissioning

Retro-commissioning (RCx) is a process involving regular inspection of a building's energy efficiency performance and fine-tuning the electrical and mechanical (E&M) systems and equipment to achieve optimal energy efficiency and lower operation costs. It is especially beneficial for older buildings. The Government has planned to take the lead to conduct RCx in major government buildings. In preparation for the initiative, we introduced an updated version of the Retro-commissioning Technical Guidelines 2018, incorporating feedback from professional bodies and stakeholders, to serve as an updated technical guide for the trade.

In addition to local implementation of RCx, we signed a Memorandum of Co-operation (MoC) on Retro-commissioning of Buildings in the Guangdong-Hong Kong-Macao Greater Bay Area with six organisations from Hong Kong, Macao and other mainland cities at the EMSD Symposium themed "Co-creating a Smart Future" held in November 2018. Among the signatories were leading organisations involved in green building, E&M maintenance and repair, and energy conservation research. The E&M systems of many commercial buildings in Hong Kong have been in operation for decades, since the urbanisation of Hong Kong in the 1960s and 1970s. Therefore, we have embarked on RCx sooner than mainland cities. We are keen to share our experience to promote RCx in the Greater Bay Area and achieve mutual benefits.

The signatories of the MoC held a plenary meeting in Beijing in March 2019, at which three working groups were formed for compiling technical guidelines, enhancing professional expertise of the industry and carrying out publicity work respectively. The signatories undertook to share knowledge and experiences, co-operate on training, and encourage the trades to adopt RCx as a new solution for achieving higher building energy efficiency, with the long-term goal of promoting RCx to more buildings in the Greater Bay Area.

Co-operation Agreement with the General Administration of Customs

Since signing a co-operation agreement with the former General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) in 2003, we had been working closely with the AQSIQ for more than a decade on E&M safety, energy efficiency and other relevant issues. The major areas of work included safety promotion, experience sharing, incident reporting and talent training, etc. Annual meetings were also held to review the progress in all aspects.

服務回顧

Operations Review

由於國家質檢總局已於2018年3月併入海關總署，因此我們於同年9月在重慶與海關總署簽訂了新的合作安排，訂明雙方日後會在電氣產品、氣體爐具、升降機與自動梯及能源效益這四方面繼續合作。

除了與內地合作之外，我們也在2019年1月與澳門經濟局的牌照及稽查廳建立了新的協作機制，雙方會就不安全的電氣產品及氣體爐具互通通報，做好信息互通。這是機電工程署與澳門政府部門的首次協作安排，為大灣區合作邁進重要一步。

在亞太經合組織擔當新角色

年內的一項突破，是機電工程署代表首次於亞太經濟合作組織（亞太經合組織）能源工作組轄下的能源效益及節能專家小組出任主席，在區域以至國際層面推動能源效益的工作發揮更大影響力。近年，我們積極參與亞太經合組織的工作，先後多次與環境局合作，以東道主身份在香港舉辦能源工作組及其專家小組的會議。能源效益及節能專家小組是能源工作組轄下的四個專家小組之一，我們的助理署長/電力及能源效益於2019年3月獲選擔任該專家小組主席，是部門首次有代表晉身亞太經合組織能源工作組的領導崗位。此外，我們更代表中國香港接受亞太經合組織可持續能源中心邀請，加入亞太經合組織低碳及節能城市合作網路，以期落實低碳能源轉型和城市可持續發展。我們正積極與亞太經合組織建立更緊密多邊聯繫，希望藉此提升香港在國際能源合作的地位，進一步擴闊網絡，加強能源資訊和經驗的交流，從而推動節能減排和可再生能源的發展，為減緩氣候變化的影響注入動力。

應對挑戰

我們在應付新工作及挑戰的同時，亦不時反思如何把規管服務做得更好。

2018年發生了兩宗嚴重升降機事故，涉及尚未進行優化的舊式升降機。我們除了深入調查事故和作出跟進外，亦檢討和收緊了對所有尚未優化的舊式升降機的保養要求，以策安全。

Following the AQSIQ's integration into the General Administration of Customs of the People's Republic of China (GACC) in March 2018, we signed a new co-operation agreement with the GACC in Chongqing in September 2018 to continue our collaboration in four areas, namely electrical products, gas appliances, lifts and escalators and energy efficiency.

In addition to collaboration with the mainland of China, we also set up in January 2019 a new collaboration mechanism with the Licensing and Inspection Department of Macao Economic Bureau on mutual notification of unsafe electrical products and gas appliances, aiming at better information exchange. As the first collaboration arrangement between the EMSD and a Macao government department, this made a significant stride in the Greater Bay Area collaboration.

New Role in APEC

A breakthrough achieved during the year was that an EMSD representative was elected chairperson of the Expert Group on Energy Efficiency and Conservation (EGEE&C) of Asia-Pacific Economic Cooperation (APEC) for the first time, giving us the platform to have a greater influence on energy efficiency promotion at regional and international level. In recent years, we have actively taken part in APEC programmes. We co-hosted a number of the APEC Energy Working Group and Associated Meetings with the Environment Bureau (ENB) in Hong Kong. EGEE&C is one of the four expert groups under the APEC Energy Working Group. Our Assistant Director/Electricity and Energy Efficiency was elected chairperson of the expert group in March 2019. It is the first time a representative from our Department has taken a leadership role in the APEC Energy Working Group. Besides, at the invitation of the APEC Sustainable Energy Centre, we represented Hong Kong, China, to join the APEC Cooperative Network for Low Carbon Energy Efficient Cities. This will facilitate our transition to the low-carbon energy and sustainable city model. We are actively establishing closer and multilateral ties with APEC, through which we hope to elevate Hong Kong's position in international energy co-operation and further expand our network to strengthen the exchange of energy information and experiences, thereby giving us impetus to promote energy conservation, emission reduction and renewable energy development to mitigate the impact of climate change.

Overcoming Challenges

While embracing new initiatives and challenges, we continued to deliberate on how Regulatory Services could perform even better.

Two major lift incidents occurred in 2018, involving aged lifts that had not yet been modernised. Apart from carrying out detailed investigation into the incidents and follow-up work, we also reviewed and tightened the maintenance requirements for the lifts that have yet to undergo modernisation to ensure safety.

此外，政府為提升全港舊式升降機安全而投入25億元推出的「優化升降機資助計劃」，已於年內開始接受申請。該計劃旨在資助有需要匱乏的舊式升降機擁有人進行優化工程。我們的同事會繼續為市區重建局和升降機業界提供有關的技術及協調支援，以助推行該計劃。

在鐵路安全方面，同事忙於應付年內新鐵路綫（包括廣深港高鐵香港段）投入運作的事宜。與此同時，部分現有鐵路綫亦正進行運作系統更新。由於系統更新期間曾發生嚴重事故，因此我們必須進一步加大相關的審核力度。

去年，我們就港鐵公司的安全管理系統及資產管理系統進行了全面而有系統的審核，又委託獨立顧問公司在資產管理審核期間審視港鐵的鐵路信號系統和電力系統，並檢討港鐵公司以往處理事故的手法，目的是藉此督促港鐵公司制訂更有效的方法，確保鐵路安全。

能源效益新發展

機電工程署轄下的能源效益事務處於1994年成立，今年已踏入25周年，一直帶領香港推動各種能源效益、節能減排和可再生能源的計劃、活動和立法建議，從而鼓勵各行各業和市民大眾採取更高效能的綠色低碳營運和生活方式，成績有目共睹，也贏得不少國際獎項和廣泛認同。

隨着兩家電力公司推行上網電價計劃，機電工程署與環境局於2019年年初推出了「採電學社」計劃。這是一項推動可再生能源的新舉，旨在提供一站式服務，協助合資格的中小學、幼稚園和非政府福利機構申請參加上網電價計劃，並為其設計和安裝太陽能光伏系統和進行測試工作，而費用由「採電學社」計劃支付，希望學校和福利機構更積極加入推動可再生能源的行列。「採電學社」擬於2019-20至2023-24財政年度推行，為期五年。首批申請的反應非常踴躍。本署計劃於本財政年度內為約50間學校和機構進行安裝工程，有關工程已於8月中展開，預計首批光伏系統將於10月完工。

Applications for the \$2.5 billion Lift Modernisation Subsidy Scheme (LIMSS), which was launched by the Government to enhance the safety of aged lifts in the territory, began during the year. The LIMSS aims to give financial aid to owners in need so that they can proceed with modernisation of their aged lifts. Our colleagues will continue to provide relevant technical and co-ordination support for the Urban Renewal Authority and the lift industry to facilitate the implementation of the scheme.

Regarding railway safety, our colleagues were busy with preparations for the inauguration of new railway lines (including the Guangzhou-Shenzhen-HongKong High Speed Rail Hong Kong Section) during the year, while some railway lines were undergoing operation system renewal. As a major incident occurred during the system renewal, we must further step up our monitoring efforts.

Last year, we conducted a comprehensive and systematic audit of the safety management system and the asset management system of Mass Transit Railway Corporation Limited (MTRCL). We also appointed independent consultants to examine MTRCL's railway signalling system and electrical system during the course of the asset management audit and review its handling of past incidents. The goal was to compel MTRCL to establish more effective means to ensure railway safety.

New Development for Energy Efficiency

Established in 1994, the Energy Efficiency Office of the EMSD will be celebrating its 25th anniversary this year. It has all along taken a leading role in implementing various programmes, activities and legislative proposals to promote energy efficiency, energy conservation and emission reduction as well as renewable energy, thereby encouraging people from all trades and all walks of life to adopt green and low-carbon business operations and lifestyles with higher energy efficiency. Its remarkable achievements have also won numerous international awards and wide recognition.

Following the introduction of the Feed-in Tariff (FiT) Scheme by the two power companies, the EMSD and the ENB launched Solar Harvest in early 2019. As a new initiative for promoting renewable energy, Solar Harvest aims to provide one-stop support to assist eligible primary and secondary schools, kindergartens and welfare non-governmental organisations (NGOs) in applying to join the FiT Scheme, designing and installing solar photovoltaic (PV) systems and carrying out system testing. The cost will be covered by the Solar Harvest scheme. This is intended to encourage more schools and welfare NGOs to adopt renewable energy. Solar Harvest is planned to last for five years from the financial year 2019-20 to 2023-24. The response to the first round of applications was enthusiastic. We have planned to carry out installation work at about 50 schools within the current financial year. The work has begun in mid-August and the installation of the first batch of solar PV systems is scheduled for completion in October 2019.

服務回顧

Operations Review

規管服務的策略方向

近年，規管服務的策略方向重點是加強對公眾、業界和同事三方面的工作，從而提升規管機電安全和促進能源效益的成效，讓市民大眾使用機電設施時更加安心，並讓我們進一步落實節能減排的承諾。每個策略方向分別由一位助理署長負責，以期以互相協調的方式推展規管服務的工作。

在公眾方面，我們正準備推出一個流動應用程式，讓公眾可隨時獲得機電工程署的規管服務所提供的有用資訊，例如最新的法規要求、各類承辦商的名單或符合安全規格及能源標籤規定的電氣產品型號等。另一方面，部門的「機電青少年大使計劃」今年已踏入第十個年頭，會員人數也突破了一萬大關。除了參觀不同場地外，我們也會按青少年的興趣，舉辦較富技術性的機電安全和能源效益知識講座及星章計劃等活動，鼓勵會員充分發揮大使的作用，並協力推廣「科學、技術、工程及數學」(STEM)的教育工作。

在業界方面，我們已聯同營運服務的同事開始編寫一套《香港機電設施操作及保養大全》，內容會按冷氣、電氣、氣體、消防裝備、屋宇裝備等各類機電設施，羅列維修保養的最佳作業方法、相關的規管框架和實務守則等，作為機電業界從業員的一站式參考文件，預計2020年年初可推出第一冊。

在同事方面，我們的首要工作是做好培訓。規管服務的工作涉及大量有關如何解讀法例和執法的專門知識，因此我們為新加入規管服務的同事提供基本規管知識入門課程，並安排資深同事親自教授，好讓新同事能盡快掌握規管工作的正確概念。

感恩道謝

首先，我要感謝規管服務全體同事在過去一年努力不懈，應對各種挑戰，克服不少困難。規管服務現時的服務範圍相當廣闊，新工作又不斷增加，但新增資源及人手卻有限。儘管如此，但同事們仍能羣策羣力，靈活應對，並做出好成績，我委實心存感激。

Strategic Directions of Regulatory Services

In recent years, the strategic directions of Regulatory Services have been mainly about strengthening programmes targeting the general public, the trade and our colleagues, so as to enhance the effectiveness of E&M safety regulation and energy efficiency promotion. This is designed to give the general public peace of mind when using E&M facilities and to fulfill our commitment to further achieving energy conservation and emission reduction. Each policy direction is spearheaded by an Assistant Director with a view to taking the work of Regulatory Services forward in a cohesive manner.

With regard to the general public, we are preparing for the launch of a mobile app to enable members of the public to have useful information about Regulatory Services of the EMSD at their fingertips. The information encompasses the latest regulatory requirements, lists of contractors in different categories, and the models of electrical products that comply with safety and energy label requirements. On the other hand, the E&M Young Ambassador Programme entered its 10th year in 2019 and its membership has grown to more than 10 000 people. In addition to visits to different venues, we also organise such activities as seminars on E&M safety and energy efficiency of a more technical nature and introduction of a badge programme to suit youngsters' interests, encouraging them to give full play to their role as ambassadors and assist in promoting STEM (science, technology, engineering and mathematics) education.

As for the trade, we have begun the compilation of a comprehensive guide to operation and maintenance of E&M facilities in Hong Kong in conjunction with our colleagues in Trading Services. The guide will detail the best practices for proper maintenance of key E&M facilities, relevant regulatory frameworks and codes of practice for different categories of E&M facilities, such as air-conditioning, electrical, gas, fire services and building services installations. It will also serve as a one-stop reference document for trade practitioners. The first volume is expected to be released in early 2020.

For our colleagues, our primary task is to deliver training. The work of Regulatory Services involves extensive professional knowledge about the interpretation of legislation and law enforcement. For new members of Regulatory Services, we provide courses on basic regulatory knowledge and personal mentorship by experienced colleagues to help familiarise them with proper regulatory concepts.

Gratitude and Thanks

First of all, I wish to thank all colleagues of Regulatory Services for their hard work over the past year, addressing challenges and overcoming difficulties. The remit of Regulatory Services is very extensive, and new work is constantly added to our portfolio. Our colleagues, though with limited new resources and manpower, are still able to work together to respond flexibly and deliver great results. For this, I am truly grateful.

在此，我也想向所有持份者，包括各決策局、其他政府部門、業界朋友、學者、專業團體、非政府機構、培訓機構和大眾市民衷心致謝，特別是出任本署各個諮詢及技術委員會成員的人士，他們為業界作出無私奉獻，十分難得。此外，多個本港、海外、大灣區及內地其他城市的機構與我們簽署合作安排，並經常合辦交流活動，讓我們能開拓視野，與內地、亞太區及國際社會的伙伴接軌，實在非常感恩。

我很幸運在機電工程署工作30多年，見證了部門不同階段的發展和創新，特別是規管服務近年的茁壯成長。我盼望各位同事在未來繼續精益求精，緊守服務市民的信念，加強與業界的聯繫，在創科新世代把機電安全和能源效益的工作做得更好。



賴漢忠
機電工程署副署長/規管服務

I would also like to express my heartfelt gratitude to all stakeholders, including the policy bureaux, other government departments, trade partners, academia, professional bodies, NGOs, training institutions and the general public. Special thanks go to all members of our advisory and technical committees for their valuable and selfless contributions to the trades. I am also very grateful that we have signed co-operation agreements with a host of organisations from Hong Kong, overseas, the Greater Bay Area and other cities of the mainland of China, and worked with them on regular exchange activities. These partnerships and exchanges have broadened our horizons and connected us to our partners in the mainland of China, the Asia Pacific region and the world.

I am truly blessed to have witnessed the development and innovation journey of the EMSD in different stages during my 30-plus years of service, especially the flourishing growth of Regulatory Services in recent years. I wish all our teams continue to deliver exceptional services to strengthen our connections with the trade, as well as leverage innovation and technology to enhance E&M safety and energy efficiency, in line with our ethos of serving the public.



Lai Hon-chung, Harry
Deputy Director/Regulatory Services, EMSD

年度亮點

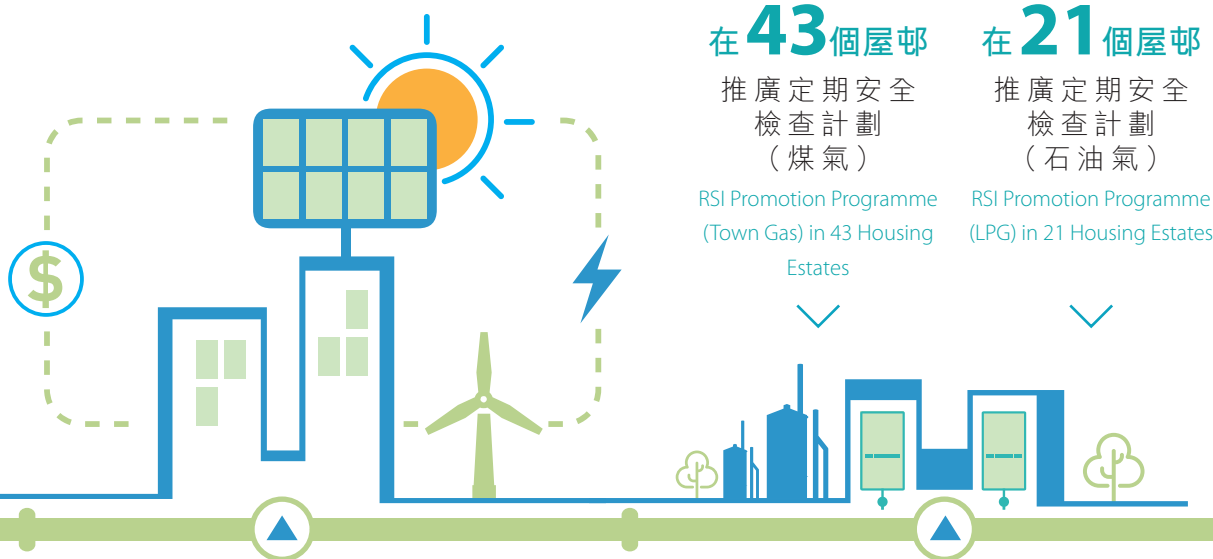
Highlights of the Year

上網電價計劃宣傳工作

Publicity for Feed-in Tariff Scheme

隨着兩家電力公司實施上網電價計劃，我們也開展了全新的工作範疇，包括訂立相應的註冊及執法措施和展開宣傳工作，並舉辦配合市民和業界需要的宣傳活動和研討會，以透過該計劃推動更廣泛採用可再生能源。

With the introduction of the Feed-in Tariff Scheme by the two power companies, we have embarked on a new era of work, including the formulation of corresponding measures on registration and enforcement and the commencement of publicity. Various publicity initiatives and seminars have been organised for the trade and the public to promote the wider adoption of renewable energy via the Scheme.



在 **43** 個屋邨

推廣定期安全
檢查計劃
(煤氣)

RSI Promotion Programme
(Town Gas) in 43 Housing
Estates

在 **21** 個屋邨

推廣定期安全
檢查計劃
(石油氣)

RSI Promotion Programme
(LPG) in 21 Housing Estates

定期安全檢查計劃擴展至屋邨的石油氣用戶 Regular Safety Inspection Programme Extended to LPG Households in Housing Estates

專為「長期沒接受安全檢查服務」用戶而設的定期安全檢查計劃，年內不單涵蓋香港房屋委員會(房委會)和香港房屋協會(房協)轄下43個屋邨共5 280個長期沒接受安全檢查的煤氣用戶，更擴展至房委會和房協轄下21個屋邨共540個長期沒接受安全檢查的石油氣用戶。以上屋邨用戶過去五年的定期安全檢查成功率高達99%，成績令人鼓舞。

During the year, the Regular Safety Inspection (RSI) programme for long-time-no-service (LTNS) households covered not only 5 280 LTNS town gas households in 43 housing estates under the Hong Kong Housing Authority (HKHA) and the Hong Kong Housing Society (HKHS), but was also extended to cover 540 LTNS LPG households in 21 housing estates under the HKHA and HKHS, with an encouraging RSI success rate of 99% in the past five years.

政府推出優化升降機資助計劃 Lift Modernisation Subsidy Scheme Launched

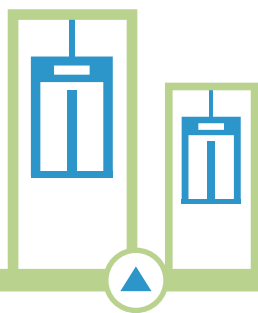
為加強舊式升降機安全，政府推出 25 億元的「優化升降機資助計劃」，資助符合相關資格的私人住宅或綜合用途（商住）樓宇業主為其舊式升降機進行優化工程。全港約有 13 000 部舊式升降機符合資助資格。我們的目標是在未來六年為約 5 000 部舊式升降機進行優化工程。

To enhance the safety of aged lifts, a \$2.5 billion Lift Modernisation Subsidy Scheme was launched to subsidise eligible owners of private residential buildings or composite (commercial and residential) buildings to carry out lift modernisation works. About 13 000 aged lifts in Hong Kong are eligible for the Scheme. Our target is to modernise about 5 000 aged lifts over the next six years.

為 **5 000** 部

舊式升降機
進行優化工程

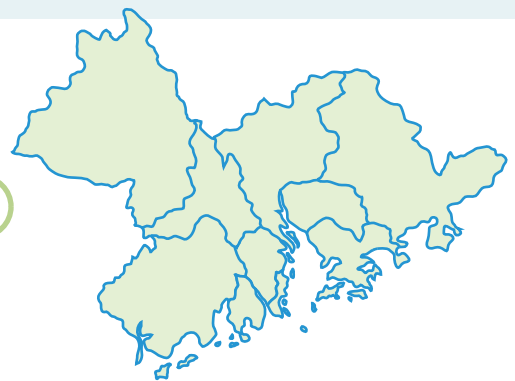
Modernise 5 000 aged lifts



於政府建築物及大灣區推廣重新校驗 Promoting Retro-commissioning in Government Buildings and the Greater Bay Area

為了提升現有建築物的能源效益，近年我們積極推動重新校驗，並計劃於未來七年為 200 多幢政府建築物進行重新校驗，務求為社會帶來示範作用。我們也於 2018 年 11 月牽頭與來自香港、澳門及大灣區其他城市的六個機構，簽署《粵港澳大灣區建築物重新校驗（再調適）合作備忘錄》，在大灣區合力推廣重新校驗。

To enhance energy efficiency in existing buildings, we have been actively promoting retro-commissioning (RCx) in recent years and aim to conduct RCx in more than 200 government buildings in the next seven years to set an example for the community. We also took the lead to sign a Memorandum of Co-operation on Retro-commissioning of Buildings in the Guangdong-Hong Kong-Macao Greater Bay Area in November 2018 with six organisations from Hong Kong, Macao and other cities in the Greater Bay Area (GBA) to jointly promote RCx in the GBA.



高鐵香港段順利通車

Smooth Opening of High Speed Rail Hong Kong Section

籌備多年的廣深港高鐵香港段已於 2018 年 9 月正式通車，為香港接通內地高鐵網絡立下里程碑。籌備期間，我們進行了大量安全測試和涉及多方的緊急應變演練。在中港兩地跨部門協作下，新鐵路綫終於順利通車。

The Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong High Speed Rail (HSR) was opened in September 2018 after years of preparation, marking a milestone in speed rail connection between Hong Kong and the Mainland. Numerous safety tests and multi-party emergency response drills were held during preparation. With inter-departmental collaboration across the border, we finally saw the smooth opening of the new railway line.

重要數字

Key Figures

電業工程人員 ELECTRICAL WORKERS

註冊電業工程人員
REGISTERED ELECTRICAL WORKERS

2017
78 304 名
NOS.
2018
79 716 名
NOS.



電業承辦商 ELECTRICAL CONTRACTORS

註冊電業承辦商
REGISTERED ELECTRICAL
CONTRACTORS

2017
12 169 間
NOS.
2018
13 097 間
NOS.



升降機及自動梯 LIFTS AND ESCALATORS

升降機
LIFTS

2017
66 735 部
NOS.
2018
68 177 部
NOS.



自動梯
ESCALATORS

2017
9 502 部
NOS.
2018
9 709 部
NOS.



燃氣供應 GAS SUPPLY

氣體喉管網路總長
TOTAL LENGTH OF GAS PIPE
NETWORK

2017
3 636 公里
KM

2018
3 660 公里
KM



車輛維修技工 VEHICLE MECHANICS

註冊車輛維修技工
REGISTERED VEHICLE MECHANICS

2017
9 359 名
NOS.

2018
9 333 名
NOS.



車輛維修工場 VEHICLE MAINTENANCE WORKSHOPS

註冊車輛維修工場
REGISTERED VEHICLE MAINTENANCE
WORKSHOPS

2017
1 942 間
NOS.

2018
2 071 間
NOS.



鐵路 RAILWAY

鐵路年度載客量
RAILWAY ANNUAL PATRONAGE

2017
1 945 百萬
MILLION

2018
1 984 百萬
MILLION



保障公眾安全

Protecting Public Safety

電力安全

電力相關事故持續減少

電力相關事故連續三年減少，由2016年的151宗，減至2017年的130宗，至2018年進一步減至115宗。事故與固定電力裝置、家用電氣產品及第三者損壞供電電纜有關。在這三類事故當中，第三者損壞供電電纜事故數目更持續下降，由2016年的44宗，減至2017年的34宗，至2018年再跌至25宗，是《供電電纜(保護)規例》自2001年實施以來的記錄新低。

整體電力相關事故減少，實有賴同事共同努力和業界通力合作，並針對問題所在，以目標為本方式進行規管。隨着事故數字降低，我們可投放更多資源於巡查及宣傳工作，建立良性循環。



實務守則陸續更新

我們不時檢討並修訂有關《電力條例》及其附屬規例的工作守則及指南，以切合不斷轉變的實務需要，與時並進。新版《有關在供電電纜附近工作的實務守則》已於2018年12月29日起生效。實務守則概述「工作安全方式」，要求施工者向電力公司索取電纜圖則、聘請合資格人士確定地下供電電纜位置，以及在地下供電電纜附近進行工程時採取安全措施，避免損毀地下供電電纜。新版實務守則亦要求在工地保存一份地下供電電纜探測報告的副本，以方便前線工人參考。

《電氣產品(安全)規例指南》旨在為電氣產品供應商提供重要參考，使其了解相關規例的詳細要求。我們已於2018年開展更新這份指南的工作，目的除了更新指南內容外，還會加入一個新的簡化章節，以協助小型零售商更易掌握規例的基本要求。至於更新的內容，將包括市場上出現的新家用電氣產品，以及相關的最新國際和國家安全標準等。我們已於2018年12月至2019年2月期間，就修訂建議廣泛徵詢公眾及業界的意見。我們亦已與業界商會、專業團體、公用事業機構、大專院校、政府部門等成立工作小組，就指南的修訂細節進行討論，並一併考慮在諮詢期間所接獲的意見和建議。

Electrical Safety

Electrical Incidents Continued to Decline

The number of electrical incidents has continued to decline over the past three years, falling from 151 cases in 2016 to 130 in 2017, and further to 115 in 2018. The incidents were related to fixed electrical installations, household electrical products and electricity supply lines damaged by third parties. Among them, the number of incidents involving supply lines damaged by third parties fell from 44 cases in 2016 and 34 in 2017 to 25 in 2018, a record low since the implementation of the Electricity Supply Lines (Protection) Regulation in 2001.

The overall reduction in the number of electrical incidents is attributable to the concerted efforts of our colleagues and the co-operation of the trade, coupled with the target-oriented approach to address the problem in our regulatory work. With the decrease in electrical incidents, more resources can be deployed to carry out inspection and publicity work, thereby creating a virtuous circle.



Revisions to Codes of Practice and Guidance Notes

We review and update the codes of practice and guidance notes related to the Electricity Ordinance and its subsidiary regulations from time to time to meet the ever-changing operational needs and keep pace with the times. The revised Code of Practice on Working Near Electricity Supply Lines, effective since 29 December 2018, outlines the "Safe Working Mode" which requires the working party to obtain electricity cable plans from the power companies, engage Competent Person to detect cable locations, and adopt safety measures to avoid damaging electricity supply cables when carrying out work near underground electricity supply lines. The revised Code of Practice also stipulates that a copy of underground cable detection report must be kept at the work site for easy reference by frontline workers.

The Guidance Notes for the Electrical Products (Safety) Regulation provide an important reference for electrical product suppliers to understand the relevant regulatory requirements. Updating of the Guidance Notes began in 2018 and is now underway with various revision proposals as well as the addition of a new and concise chapter that serves as a handy guide to facilitate better understanding of the basic regulatory requirements by small retailers. The revised version will also cover new types of electrical products at the market and the latest relevant national and international safety standards, etc. Members of the public and the trade were widely consulted on the proposed revisions during the period from December 2018 to February 2019. A working group was also established with trade associations, professional bodies, public utility companies, tertiary institutions and government departments to discuss the detailed revisions of the Guidance Notes taking into account the feedback and recommendations collected during the consultation exercise.

此外，我們已於2018年開始籌劃《電力(線路)規例工作守則》的檢討及修訂工作，而檢討方向已獲電氣安全諮詢委員會確認。我們將於2019年年中成立一個由20多位代表組成的工作小組，進行檢討及修訂工作。新版本預計可於2020年公布。

展開與上網電價計劃相關的工作

隨着兩家電力公司實施上網電價計劃，我們預計不少太陽能發電裝置擁有人需要為其發電設施註冊，因此已開展一個新的工作範疇，加緊訂立相應的註冊、宣傳及執法措施。我們於2018年製作了中英文版本的宣傳單張，提醒有興趣安裝太陽能發電設施的人士了解相關的法例要求，例如需要辦理註冊和進行維修保養以確保裝置安全。我們也向業界進行密集式宣傳教育，例如向註冊電業承辦商及註冊電業工程人員講解太陽能發電裝置的法規要求及註冊需要等，務求透過他們向用家傳達相關訊息。

年內，我們舉辦了四場技術研討會及註冊電業工程人員持續進修講座，共約1 540名業界人士參與。這些活動為業界提供有關上網電價計劃的資訊，並講解註冊發電設施的法規要求。

宣傳策略以目標為本

近年，市面上越來越多小型零售商店兼售拖板、萬能插蘇以至其他小型家用電氣產品。然而，這些零售商店很多對相關法例所訂的要求卻不太清楚，因此我們特別為其推行了一個外展計劃，加強宣傳相關法例的工作。我們派員主動接觸小型商戶，講解售賣電氣產品必須符合《電氣產品(安全)規例》的要求，單是2018年就到訪了8 000多家小型零售商店進行宣傳工作，成效顯著，不少商店已明白相關法例的要求，並主動向上游的電氣產品供應商索取產品的符合安全規格證明書。我們在2019年會繼續進行有關工作，目標是到訪另外4 000家所在位置較為分散的小型商店。

村屋的電力安全也是我們關注的範疇。過去幾年，村屋出現零星的電力安全事故，例如室內固定電力裝置因缺乏維修而發生漏電事故等。為免再生意外，我們已加強村屋巡查工作，2018年的巡查次數達到1 900次，較2017年增加了30%。此外，我們亦在巡查時向住戶派發宣傳單張，加強他們對電力裝置安全的意識。

Preparations for reviewing and updating the Code of Practice for the Electricity (Wiring) Regulations also began in 2018, with the direction of review endorsed by the Electrical Safety Advisory Committee. A working group comprising over 20 representatives will be formed in mid-2019 to conduct the review and update. The new edition is expected to be published in 2020.

Work Related to Feed-in Tariff Scheme Commenced

With the introduction of the Feed-in Tariff (FiT) Scheme by the two power companies, it was foreseen that many owners of solar power generating installations would have to complete registration for their generating facilities. Therefore, we have embarked on a new area of work by expediting the formulation of corresponding measures regarding registration, publicity and enforcement. Publicity flyers, in both English and Chinese, were produced in 2018 to remind those interested in installing solar power generating facilities to understand the relevant regulatory requirements, such as the need to complete registration for their installations and carry out maintenance work to ensure the safety of their installations. We also arranged intensive publicity and education for the trade, such as briefing registered electrical contractors and registered electrical workers on the statutory and registration requirements for solar power generating installations, so that they would pass the relevant messages to users.

During the year, four technical seminars and continuing education talks for registered electrical workers were held, with the participation of about 1 540 members of the trade. The events provided information about the FiT Scheme as well as the regulatory requirements for registered generating facilities.

Target-oriented Promotion Strategy

In recent years, small retailers which also sell extension units, adaptors and other small household electrical products have been on the rise, but many of them are not familiar with the relevant regulatory requirements. Therefore, a tailor-made outreach programme has been launched to step up publicity on the relevant laws. In 2018, we paid visits to more than 8 000 small retail shops to explain to them that the sale of electrical products shall comply with the requirements of the Electrical Products (Safety) Regulation. The programme has proven effective as many retailers have got to know the regulatory requirements and taken the initiative to ask their upstream suppliers for certificates of safety compliance of their household electrical products. We will continue with the efforts in 2019, targeting at 4 000 more small retail shops scattered across the territory.

Electrical safety at village houses is another area of our concern as there were a number of electrical incidents such as electricity leakage arising from inadequate maintenance of the fixed electrical installations over the past few years. To prevent recurrence of the incidents, we have stepped up inspections to village houses in 2018 and made 1 900 visits, representing an increase of 30% compared with 2017. During the inspections, we also disseminated information leaflets to residents so as to raise their awareness of the safety of their fixed electrical installations.

村屋巡查工作
Inspections to village houses

30% ↑

1 900 次

2017

2018



保障公眾安全

Protecting Public Safety

另外，我們去年也增加使用圖像，使宣傳工作更到位。舉例來說，在《有關在供電電纜附近工作的實務守則》新版於2018年6月刊憲後，我們用連環圖形式製作了有關實務守則的宣傳單張，讓前線工人更易掌握重點。此外，我們又派發可張貼在工地告示板或手機等工具上的標貼和二維碼，方便工人隨時查閱單張或收看短片，快速找到安全施工資訊，以減低損毀供電電纜的風險。

Last year, we also made use of more visual images and illustrations in our promotional materials to enhance the effectiveness of our promotion work. For example, after the updated version of the Code of Practice on Working near Electricity Supply Lines was gazetted in June 2018, we have published promotional leaflets in the form of serial diagrams to facilitate the frontline workers, in getting the salient points of the Code of Practice. Furthermore, stickers with QR codes, which can be easily placed on worksite notice boards, mobile phones or other tools, have also been distributed to allow workers to view the leaflets or watch the video clips any time for quick access to information on how to work safely so as to reduce the risk of damaging electricity supply lines.

與內地合作揭開新篇章

機電工程署與原國家質量監督檢驗檢疫總局（國家質檢總局）自15年前開始合作以來，在機電氣安全和能源效益方面的推廣、經驗交流、事故通報和人才培訓方面一直合作無間。由於國家質檢總局由2018年3月起已併入海關總署，機電工程署已於2018年9月在重慶與海關總署簽訂了新的合作協議，訂明雙方會繼續在家用電氣產品、氣體爐具、升降機與自動梯安全、能源效益這四個範疇合作。

A New Chapter in our Collaboration with Mainland China

The EMSD worked closely with the former General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) for 15 years to promote electrical, mechanical and gas safety and energy efficiency, share experiences, report incidents and nurture talents. Following the integration of the AQSIQ into the General Administration of Customs of the People's Republic of China (GACC) in March 2018, we signed a new co-operation agreement with the GACC in Chongqing in September 2018. It provides that both parties will continue to collaborate in four areas, namely safety in household electrical products, gas appliances, lift and escalator safety, and energy efficiency.

機電工程署與中國海關總署於2018年9月在重慶簽訂了新合作協議，是部門與前國家質檢總局合作15年的延續。

The EMSD signed a new co-operation agreement with the GACC in Chongqing in September 2018, a continuation of our 15-year co-operation with the former AQSIQ.



至於在粵港澳大灣區的合作，我們去年開始已與澳門的牌照及稽查廳建立了新的協作機制，就家用電氣產品及氣體爐具，互相通報當地發現的不安全產品，力求做好信息互通。2019年1月，澳門的牌照及稽查廳廳長更率領代表人員來訪機電工程署。我們的技術人員也於2019年3月前赴澳門、廣州和深圳等地進行技術和法規交流，並參觀當地測試機構，有助於大灣區逐步建立合作關係。

As regards collaboration in the Guangdong-Hong Kong-Macao Greater Bay Area, we set up a collaboration mechanism with the Licensing and Inspection Department (LID) of Macao last year on mutual notification of unsafe household electrical products and gas appliances found in the local market, aiming at better information exchange. In January 2019, the head of the LID led a delegation to visit the EMSD. In March 2019, some of our technical staff travelled to Macao, Guangzhou and Shenzhen to share and exchange technical and regulatory insights, in addition to visiting local testing organisations. This helps to build up our network of co-operation in the Greater Bay Area.



澳門牌照及稽查廳廳長鄭信昌先生(右)於2019年率代表團來訪機電工程署。圖為時任機電工程署副署長/規管服務賴漢忠先生(左)致送紀念品及《機電工程署七十周年紀念特刊》予鄭先生。

Mr Kong Son-cheong (right), Head of Licensing and Inspection Department of Macao led a delegation to visit the EMSD in 2019. Photo shows the then Deputy Director/Regulatory Services of the EMSD, Mr Harry Lai, presenting a souvenir and the EMSD 70th Anniversary commemorative publication to Mr Kong.



機電工程署代表與澳門牌照及稽查廳代表團成員於機電工程署總部大樓合照。EMSD representatives are pictured with delegates from the Licensing and Inspection Department of Macao at the EMSD Headquarters Building.

來年工作

《電氣產品(安全)規例指南》和《電力(線路)規例工作守則》的修訂工作，會是來年重點之一。隨着市民逐漸認識上網電價計劃，預計有關太陽能發電設施的註冊、巡查和安全宣傳工作也會隨之增加。至於電氣安全宣傳工作，無論面向業界抑或市民，我們都會繼續探索以目標對象為本並配合時代步伐的渠道及手法，包括製作新的電視宣傳短片及社交平台短片，務使宣傳工作更有效和到位。

The Year Ahead

The review of the Guidance Notes for the Electrical Products (Safety) Regulation and the Code of Practice for the Electricity (Wiring) Regulations will continue to be a key focus in the coming year. As the public awareness of the FIT Scheme grows, we anticipate that there will be an increasing demand for registration, inspection and safety publicity regarding solar power generating facilities. On electrical safety promotion, whether for the trade or the general public, we will continue to explore channels and means which are target-oriented and in sync with the times, including the production of a new series of TV announcements and video clips for social platforms, so that our messages can be delivered to target audiences more effectively.

保障公眾安全

Protecting Public Safety

「機電署發明家」傳承經驗 “EMSD Inventor” Passes on His Experience

人稱「機電署發明家」的電力法例部前電氣督察利漢堅先生由學徒出身，投身機電業47載，不時按工作需要設計別出心裁的小發明，務求把工作做得更好。漢堅在2019年3月退休後，對機電業熱誠不減，因此決定於下半年重返機電署協助培訓電氣學徒，將畢生功藝和知識傳承給新一代。

Known as “EMSD’s inventor”, Mr Lee Hon-kin, former Electrical Inspector at the Electricity Legislation Division, dedicated 47 years to the E&M trade since starting his career as an apprentice. From time to time, he designed and made small and unique inventions based on operational needs to facilitate his work. After retiring in March 2019, Hon-kin remained passionate about the E&M trade, and decided to return to the Department in the second half of the year to serve as a trainer of electrical apprentices so that he can pass on his skills and knowledge to the new generation.



漢堅效力機電署長達23年，先後參與多個工作崗位，包括肩負電力法例部的執法工作、為消防處驗收危險品倉庫和檢查機電設備，以及負責維修保養香港國際機場的機電設施等。

由於工作需要和個人興趣，漢堅不時製造各種便利工作的工具，例如測試儀錶是否運作正常的小工具、用於日常測試工作的轉接插頭、可配合安全帽使用的電筒燈夾、應付高空工作需要的伸縮檢測棍，以及方便追尋漏電源頭的測試工具等。

他說：「記得在電力法例部工作時，由於部分工作地點沒有升降機，當同事和我需要取走電器產品作調查時，只可使用樓梯搬運，非常不便。」為此，漢堅運用創新思維，設計並製造了一部與別不同的手拉車，能上落樓梯和應付高低不平的地面，用以運載日常工作所需的用具。

漢堅於2017年年中開始構思有關設計，僅以數月時間便完成手拉車。「手拉車每邊有三個車輪，可應付高低不平的地面。除了可以摺疊和方便攜帶外，設計時亦特別考慮到手拉車的承載面大小及載重量，大大減輕了日常搬運工具和電器的負擔。」他所設計的手拉車更獲部門頒發「員工建議書計劃」獎項，並奪得部門2019年度QEPPP比賽金獎。漢堅亦憑藉創作這個有助提升職安健的工具，獲職業安全健康局頒發第十屆全港傑出職安健員工嘉許計劃的「機構/企業組—管工組別」項目優異獎。

退休後，漢堅稍作休息便由2019年下半年開始執起教鞭，培訓機電署的見習技術員，將他累積近半世紀的機電知識和經驗，以及不斷思考和熱愛發明創新的工作態度，傳承下去。



Hon-kin held various positions during his 23 years of service with the EMSD, including taking on the law enforcement work of the Electricity Legislation Division, accepting dangerous good stores and inspecting E&M installations for the Fire Services Department, and carrying out maintenance of the E&M facilities at the Hong Kong International Airport, etc.

Due to needs at work and personal interest, Hon-kin made various tools to facilitate his work from time to time, such as small tools to test whether the instruments function properly, adaptors for daily testing tasks, flashlight clips which can be used with helmets, extendable inspection rods to facilitate work at height, and testing tools for tracing sources of earth leakage.

“When I was with the Electricity Legislation Division, some of the locations that my colleagues and I worked at had no lifts. It was very inconvenient when we had to take away the electrical products for investigation as we could only use the staircase,” Hon-kin recalled. He therefore applied his ingenuity to design and make a unique trolley that could go up and down the stairs and cope with uneven ground surfaces to carry tools needed for daily work.

Hon-kin began to conceive the design of the trolley in mid-2017 and completed his invention in just a few months. “There are three wheels on each side of the trolley to cope with uneven ground surfaces. It is foldable and handy to carry around, with special consideration given to the size of its carrying surface and its load capacity during the design stage, significantly reducing the daily burden of transporting tools and appliances.” The trolley he designed won an award in the Department’s Staff Suggestion Scheme and a Gold Award in the Department’s QEPPP 2019 Competition. The invention also served to enhance occupational safety and health, for which Hon-kin won a Merit Award in the 10th Outstanding OSH Employees Awards (Supervisor - Corporation and Organisation Category) organised by the Occupational Safety and Health Council.

After retirement and taking a short break, Hon-kin started to serve as a trainer of EMSD technician trainees from the second half of 2019. The E&M knowledge and experience he has accumulated for nearly half a century as well as his drive to keep thinking and passion for invention and innovation will be passed on to new generations.

氣體安全

氣體事故宗數持續下降

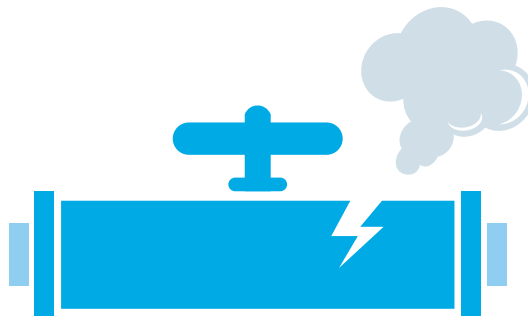
有賴業界與我們攜手合作，加強公眾對保障氣體安全的認識和參與，氣體事故整體數字在過去三年持續下降，由2016年的275宗下降至2017年的236宗，而2018年更進一步下降至195宗。另外，有關供氣主喉遭第三方損毀的事故宗數在過去幾年亦逐年下降，並在2018年錄得七宗的歷史低位。近年氣體事故數字持續下降，正好反映各持份者共同努力的成果，公眾安全亦得到更佳保障。

Gas Safety

Continued Drop in the Number of Gas Incidents

Thanks to the joint efforts of the trade and our colleagues in enhancing public awareness of and participation in protecting gas safety, the overall number of gas incidents continued to drop in the past three years, from 275 in 2016 to 236 in 2017, and further down to 195 in 2018. Furthermore, the number of incidents involving third-party damage to gas mains also gradually fell over the past few years, hitting a record low of seven in 2018. The continued drop in the number of gas incidents in recent years reflects the result of the concerted efforts among various stakeholders, leading to enhanced protection of public safety.

氣體事故整體數字
Number of
gas incidents



由2016年的**275**宗下降至2017年的**236**宗，而2018年更進一步下降至**195**宗
From **275** in 2016 to **236** in 2017, and further down to **195** in 2018

進一步提高屋邨氣體裝置定期安全檢查的覆蓋率

我們自2015年開始聯同香港房屋委員會(房委會)和中華煤氣有限公司分別在不同屋邨推廣定期安全檢查計劃，以期積極減少過去五年因工作人員未能進屋為煤氣裝置進行檢查，而「長期沒接受安全檢查服務」的煤氣用戶數目。在2018/19年度，我們在房委會轄下的30個公共屋邨推行該計劃，共涉及約4 900個目標用戶。年內，我們亦在香港房屋協會(房協)轄下的13個屋邨進行該計劃，共涉及約380個目標用戶。本年度的推廣計劃於2019年首季完成，過去五年的整體入屋檢查率達99%，成功率相當高。

Coverage of RSI of Gas Installations in Housing Estates Further Improved

We have joined hands with the Hong Kong Housing Authority (HKHA) and the Hong Kong and China Gas Company Limited (HKCG) to promote the Regular Safety Inspection (RSI) programme in different housing estates since 2015, with a view to actively reducing the number of "long-time-no-service" (LTNS) town gas households whose town gas installations were not inspected within the previous five years due to difficulties in accessing the households. In 2018/19, we implemented the RSI programme in 30 HKHA public housing estates, involving about 4 900 target households in total. During the year, the programme was also implemented in 13 housing estates under the Hong Kong Housing Society (HKHS), involving a total of about 380 target households. The RSI promotion programme for LTNS households this year was completed in the first quarter of 2019, with a very high overall access rate of 99% over the past five years.

至於使用管道石油氣的公共屋邨，我們同樣積極與各相關的註冊氣體供應公司合作，向「長期沒接受安全檢查服務」的用戶推廣該計劃。年內，該計劃在房委會管理的15個屋邨及房協管理的六個屋邨推行，共涉及約540個目標用戶。計劃推行至2019年年初，「長期沒接受安全檢查服務」的用戶數目已顯著減少，過去五年的整體入屋檢查率也達99%，成績令人鼓舞。

As for public housing estates using piped LPG, we also actively collaborated with relevant registered gas supply companies (RGSCs) to promote the RSI programme to LTNS households. During the year, the programme was implemented in 15 HKHA estates and six HKHS estates, involving a total of about 540 target households. As at early 2019, the number of LTNS households was significantly reduced, with an encouraging overall access rate of 99% in the past five years.

保障公眾安全

Protecting Public Safety

我們的外展隊伍跟工地施工人員親自接觸，宣傳最新的《避免損壞氣體喉管工作守則》第二版。新版《工作守則》已於2018年8月正式生效，目的是進一步減少供氣主喉遭第三方損毀事故。

Our outreach team approaches site workers directly to promote the latest Code of Practice on Avoidance of Damage to Gas Pipes (2nd Edition) which came into effect in August 2018 to further reduce the number of incidents of third-party damage to gas mains.



新版《避免損壞氣體喉管工作守則》

《避免損壞氣體喉管工作守則》(第二版)已於2018年8月刊憲生效。新版《工作守則》詳列安全作業的四個步驟，包括向氣體喉管擁有人/營運者索取氣體喉管設施圖則；利用喉管定位器勘測地下設施；在全面施工前挖掘試孔，確認氣體喉管位置；以及採用安全的挖掘方法。其中主要的修訂包括氣體喉管擁有人/營運者提供氣體喉管圖則的時限由28個工作天縮短至14個工作天；涵蓋更多的工程類別；界定氣體喉管和相關工程之間的距離；以及擴大「勝任人士」在氣體喉管附近地方進行工程的責任範圍。

隨着《工作守則》(第二版)生效，我們也向工程承辦商加強宣傳，並派遣同事到工地直接與施工人員接觸，講解新修訂的內容。經過多管齊下的努力，我們喜見2018年供氣主喉遭第三方損毀的事故宗數首次下降至單位數字。

加強社區層面的石油氣安全

機電署與註冊氣體供應公司於2016年年初推出「瓶裝石油氣分銷商安全表現評級計劃」，深受分銷商和用戶歡迎。分銷商可在店外展示計劃的標誌，並在店內展示評級證書，方便市民識別安全表現優異的分銷商，從而鼓勵業界進一步提升石油氣的安全水平。

2018年評級計劃的成績已於2019年3月公布，在168間參與的分銷商中，48間獲評為「金級」，較上一年度的36間增加近三成，反映瓶裝石油氣業界的安全水平日益提高，而獲評為「銀級」及「銅級」的分銷商則分別有26間及94間，顯示業界的表現正持續進步。

Updated Code of Practice on Avoidance of Damage to Gas Pipes

The Code of Practice on Avoidance of Damage to Gas Pipes (2nd Edition) was gazetted and came into effect in August 2018. The revised Code of Practice details four steps of safe system of work, which include obtaining gas pipe utility plans from gas pipe owners/operators, using pipe locating devices to survey underground utilities, digging trial holes before commencement of works to confirm the positions of gas pipes, and adopting safe excavation practices. Major revisions include shortening the time frame for gas pipe owners/operators to provide gas pipe layout plans from 28 to 14 working days, covering more types of works, defining the distances between gas pipes and associated works, and expanding the scope of responsibility of Competent Persons carrying out works in the vicinity of gas pipes.

As the Code of Practice (2nd Edition) came into force, we have stepped up promotion to contractors and dispatched colleagues to visit work sites to explain to workers the newly revised contents. With a multi-pronged effort, we are pleased to see that the number of incidents of third-party damage to gas mains was brought down to a single digit in 2018 for the first time.

Strengthening LPG Safety in the Community

Introduced by the EMSD and RGSCs in early 2016, the LPG Cylinder Distributor Safety Performance Recognition Scheme is well received by LPG distributors and users. LPG distributors may display the logo of the Scheme and certificates with ratings outside and inside their shops respectively to facilitate members of the public in identifying distributors with outstanding safety performance, thereby motivating the trade to further improve the safety standards of LPG.

The results of the Scheme for 2018 were released in March 2019. Among the 168 participating distributors, 48 attained a gold rating, an increase of nearly 30% when compared with 36 in the previous year. This reflects the improving safety standards of the LPG cylinder trade. 26 and 94 distributors received silver and bronze ratings respectively, showing that the performance of the trade has continued to improve.



瓶裝石油氣安全對社區相當重要。機電工程署同事定期巡查業界的運作情況，而「瓶裝石油氣分銷商安全表現評級計劃」則對評級表現優秀的分銷商予以表揚。

Cylinder LPG safety is important to the community. EMSD staff regularly inspect the operation of the trade, while the LPG Cylinder Distributor Safety Performance Recognition Scheme gives recognition to distributors which excel in the Scheme.



我們的同事巡查用戶的瓶裝石油氣裝置。根據「瓶裝石油氣分銷商安全表現評級計劃」，分銷商可在店鋪展示計劃的標誌和評級證書，讓市民知悉該店的安全表現。

Our colleague inspects a cylinder LPG installation of user. Under the LPG Cylinder Distributor Safety Performance Recognition Scheme, distributors may display the logo of the Scheme and certificates in their shops so that the public may get to know their safety performance.

我們除了與房委會、房協及註冊氣體供應公司合作，推動屋邨用戶進行定期安全檢查外，還特別向全港多幢「三無」樓宇的住戶加強宣傳工作，鼓勵住戶讓煤氣公司或瓶裝石油氣分銷商人員入屋進行定期安全檢查，同時提醒住戶避免儲存過量瓶裝石油氣，以及在煮食時保持室內空氣流通等。

In addition to working with the HKHA, HKHS and RGSCs to promote RSI in housing estates, we have also stepped up publicity in "three-nil" buildings in Hong Kong. The objective is to encourage households to allow personnel from HKCG or LPG cylinder distributors to conduct RSI in their premises, remind them to avoid storing excessive LPG cylinders, and maintain good ventilation when cooking, etc.

工作人員在氣體用戶屋內進行定期安全檢查，測試氣體爐具軟喉的狀態。

Checking the condition of the flexible tubing of a gas appliance during the RSI in a user's premises.



另一相關工作是加強宣傳妥善處理壓縮氣瓶(包括石油氣瓶)的正確方法，以免發生危險。年內，我們與環境保護署(環保署)、食物環境衛生署和消防處攜手編製了一系列單張及海報，呼籲公眾切勿胡亂棄置壓縮氣瓶，以及教育市民壓縮氣瓶的回收方法，鼓勵他們通報在公眾地方發現的棄置壓縮氣瓶。

Besides, we strengthened promotion of the proper handling of compressed gas cylinders, including LPG cylinders, to avoid danger. During the year, we worked with the Environmental Protection Department (EPD), the Food and Environmental Hygiene Department and the Fire Services Department to produce a series of leaflets and posters, urging the public not to improperly abandon compressed gas cylinders and educating them on the recycling methods of compressed gas cylinders. The campaign also encouraged members of the public to report abandoned compressed gas cylinders found in public places.

保障公眾安全

Protecting Public Safety

機電工程署的氣體安全大使外展團隊於星期日主動接觸外傭，宣傳氣體爐具安全。團隊也與幾個以少數族裔羣體為服務對象的社福團體合作，發放氣體安全資訊。

The EMSD outreach team of gas safety ambassadors takes the initiative to approach foreign domestic helpers on Sundays to promote gas appliance safety. The team also works with several welfare organisations serving ethnic minority groups to disseminate gas safety information.



此外，為了向少數族裔羣體推廣氣體安全，我們特別以多種語言(包括印尼文及泰文)印製宣傳單張，並透過大氣電波於少數族裔的電台頻道以印尼語、泰語及尼泊爾語分享氣體安全貼士。我們於年內繼續進行街頭外展宣傳工作，由同事擔任氣體安全大使，在星期日到訪外傭休假時聚集的熱門地點，親自向他們講解安全及正確使用住宅式氣體用具的知識，加強互動溝通。我們亦與幾個以外傭為服務對象的慈善團體合作，向外傭羣組發放有關氣體安全的資訊，務求令宣傳工作更到位和有效。

Moreover, to promote gas safety to ethnic minority groups, we have produced leaflets in different languages (including Bahasa Indonesia and Thai), and shared the tips on gas safety in Bahasa Indonesian, Thai and Nepali via radio channels dedicated to servicing ethnic minorities. During the year, we continued to conduct outreach publicity work, in which EMSD colleagues acted as gas safety ambassadors and visited popular gathering places of foreign domestic helpers on Sundays to convey to them knowledge on the safe and proper use of household gas appliances to enhance interaction and communication. We also collaborated with several charities serving foreign domestic helpers to disseminate gas safety information to helpers' groups so that our publicity work can achieve greater impact and effectiveness.



加強食肆氣體安全的宣傳工作

繼上年度我們開始加強有關食肆氣體安全的巡查及宣傳後，在2018/19年度，我們進而與數家大型商場發展商及物業管理公司協作，向旗下的食肆商戶推廣氣體安全。

我們現正與其他政府部門和業界共同商討一系列協作措施，以期進行更深入的外展宣傳，藉此向食肆負責人推廣為氣體裝置適時進行安全檢查的重要性，防患於未然。



Enhancing Gas Safety Promotion at Restaurants

Following enhanced gas safety inspection and promotion at restaurants in the previous year, we took one step further to collaborate with a number of major shopping mall developers and property management companies to promote gas safety to restaurants in their properties in 2018/19.

We are currently discussing with other government departments and the trade a series of collaborative measures in order to pursue more in-depth outreach promotion, so that we can promote to persons-in-charge of restaurants the importance of conducting safety inspections of their gas installations in a timely manner as a precautionary measure.

加強巡查石油氣車輛燃料缸

《石油氣車輛燃料缸保安封條系統工作守則》自2017年1月實施以來，已有效阻遏非法更換石油氣車輛燃料缸配件的情況。年內，專責確保石油氣車輛燃料系統維修安全的氣體安全督察更積極在車輛維修工場、石油氣加氣站和運輸署轄下的政府車輛驗車中心等地方進行突擊巡查，檢查石油氣車輛燃料缸的保安封條是否完整有效，至今並無發現違規個案，反映上述《工作守則》成效顯著。

我們預計的士業界未來會引入更多石油氣及電動混能車輛。由於新款混能車輛的內置燃料泵將更耐用，同時代理商為新款混能車輛提供長達十年的保用期，相信能進一步減低非法更換燃料泵的誘因。

車輛維修安全

車輛維修註冊組於2006年正式成立，負責推廣「車輛維修技工自願註冊計劃」及「車輛維修工場自願註冊計劃」。註冊組團隊於2018/19年度增至17人，為業界舉行各類活動，提高業內人士對車輛維修安全及品質的意識。

「車輛維修技工自願註冊計劃」自2007年推出以來，截至2019年3月底，在全港一萬多名車輛維修技工當中，有9300多人已登記為註冊車輛維修技工。而「車輛維修工場自願註冊計劃」自2015年推出以來，截至2019年3月底，在全港2800多間車輛維修工場當中，共有2071間已經註冊，創歷史新高。



氣體標準事務處轄下車輛維修註冊組的工作之一是巡查全港的車輛維修工場。

One of the duties of our Vehicle Maintenance Registration Unit under the Gas Standards Office is to inspect vehicle maintenance workshops across the territory.

Stepping Up Inspections of LPG Vehicle Fuel Tanks

The Code of Practice on Security Label System for LPG Vehicle Fuel Tanks has successfully deterred unlawful replacement of LPG fuel tank components since its implementation in January 2017. During the year, our gas safety inspectors who are dedicated to ensuring the safety of maintenance for fuel system of LPG vehicles actively conducted surprise inspections at such locations as vehicle maintenance workshops, LPG filling stations and Government Vehicle Examination Centres under the Transport Department to check if the security labels on the LPG fuel tanks were intact and valid. So far, no violations have been found, showing that the above Code of Practice is highly effective.

We anticipate that the taxi trade will introduce more hybrid vehicles running on LPG and electricity in the future. As the internal fuel pump of the newly introduced hybrid vehicle will be more durable, and the agent of this new hybrid vehicle offers a lengthy warranty of ten years, it is believed that the incentive for unlawful replacement of fuel pumps will be further reduced.

Vehicle Maintenance Safety

The Vehicle Maintenance Registration Unit was set up in 2006 to promote the Voluntary Registration Scheme for Vehicle Mechanics (VRSVM) and the Voluntary Registration Scheme for Vehicle Maintenance Workshops (VRSVMW). The team, which was expanded to 17 members in 2018/19, organised various activities for the trade to enhance the awareness of trade members on vehicle maintenance safety and quality.

Since the introduction of the VRSVM in 2007, as at end-March 2019, more than 9 300 of the 10 000-plus mechanics in Hong Kong were registered vehicle mechanics. As for the VRSVMW, since its launch in 2015 and as at end-March 2019, a record high of 2 071 out of the 2 800-plus vehicle maintenance workshops in the territory were registered.



我們的車輛維修註冊組負責推行「車輛維修技工自願註冊計劃」及「車輛維修工場自願註冊計劃」，並於2018/19年度擴大編制，進一步提升車輛維修業界的安全水平及質素。

Our Vehicle Maintenance Registration Unit, which takes charge of implementing the Voluntary Registration Scheme for Vehicle Mechanics and the Voluntary Registration Scheme for Vehicle Maintenance Workshops, was expanded in 2018/19 to further enhance the safety and quality of the vehicle maintenance trade.

保障公眾安全

Protecting Public Safety

為了加強宣傳和增添教育趣味，我們於2018年12月舉辦醒目車輛維修技工問答比賽，吸引了近90名註冊車輛維修技工參加。有關活動的頒獎典禮已於2019年3月舉行，由機電署署長主持，並邀請了車輛維修技術諮詢委員會的委員一同參與。另外，我們於2019年3月亦舉辦了四格故事攝影創作比賽，共收到50多份參賽作品，反應非常熱烈，有關比賽的頒獎典禮已於2019年7月舉行。

To step up publicity and educate the public in a more interesting manner, we organised the Smart Vehicle Mechanic Quiz Competition in December 2018, which attracted some 90 registered vehicle mechanics to take part. Officiated by the Director of Electrical and Mechanical Services, the prize presentation ceremony of the competition was held in March 2019, and members of the Vehicle Maintenance Technical Advisory Committee were also invited to join. Additionally, a Four-Panel Photo Story Telling Competition was held in March 2019 with more than 50 submissions received, a very enthusiastic response indeed. The prize presentation ceremony of the competition was held in July 2019.

我們於2018年12月舉辦醒目車輛維修技工問答比賽，吸引了近90名註冊車輛維修技工參加。圖為機電工程署車輛維修註冊組人員、業界代表和全體參賽者合照，共享歡樂一刻。

Some 90 registered vehicle mechanics took part in the Smart Vehicle Mechanic Quiz Competition which we organised in December 2018. Picture shows officers from the EMSD Vehicle Maintenance Registration Unit, trade representatives and all participants sharing a joyful time.



我們於2019年3月舉辦了四格故事攝影創作比賽，以宣揚正確維修車輛的重要性，共收到50多份參賽作品。圖為頒獎典禮情況。

A Four-Panel Photo Story Telling Competition was held in March 2019 to promote the importance of proper vehicle maintenance with over 50 submissions received. Picture shows the prize presentation ceremony.



至於培訓方面，我們與職業訓練局合作，以虛擬實境技術製作了一個車輛維修示範工場。參觀者可在虛擬世界內了解工場的日常運作和《車輛維修工場實務指引》的基本要求。同時，參觀者亦可嘗試操作虛擬的車輛升降台，為車輛進行更換機油的工作。我們希望透過虛擬實境示範工場，讓年輕一代感受到車輛維修業正緊隨社會轉變和科技發展的步伐，與時並進，持續提升車輛維修安全水平和業界對品質的要求。

In terms of training, we have built a vehicle maintenance sample workshop with virtual reality (VR) technology in collaboration with the Vocational Training Council. Visitors can learn about the daily operation of a vehicle maintenance workshop and the basic requirements of the Practice Guidelines for Vehicle Maintenance Workshops in the virtual world. Furthermore, visitors can also try to operate the virtual vehicle lifting platform to replace engine oil for vehicles. It is hoped that the VR sample workshop will help deliver the message to young people that the vehicle maintenance trade is closely following changes in the society and keeping pace with technology development. We will keep up with the times to continuously improve the safety standards of vehicle maintenance and the quality requirements of the trade.

氣體風險評估及監督工作

機電署於年內進行了重要的氣體風險評估及監督工作。首先，就兩家電力公司將於索罟群島以東水域建造和營運海上液化天然氣接收站的工程，我們在環境影響評估中審視風險評估報告後，提出氣體安全建議，並與兩電就未來的天然氣業務和相關氣體裝置的審批展開商討。接收站的碼頭為雙泊位設計，可供一艘浮式儲存再氣化裝置的船隻（儲氣船）和一艘液化天然氣運輸船停泊。儲氣船內的液化天然氣被再氣化後，會經兩條獨立的海底天然氣輸氣管道，分別輸送至中華電力有限公司的龍鼓灘發電廠和香港電燈有限公司的南丫發電廠。工程預計於2019年年底展開，於2020年或2021年竣工，屆時將能提升天然氣供應的穩定性。配合目前兩電的燃氣發電機組，預期到2020年左右天然氣將可滿足香港大約一半的電力需求，大幅減少發電時的碳排放，增加使用清潔能源。

另外，環保署已展開有機資源回收中心的工程項目，務求減少廚餘棄置量和堆填廢物的需求，廚餘亦可透過生物處理技術（厭氧分解）產生生物氣（甲烷）而轉化成可再生能源。位於大嶼山小蠔灣的有機資源回收中心第一期已於2018年年底投入運作。為確保有機資源回收中心安全營運，我們與環保署及其承辦商緊密合作，審批有關氣體裝置、考核負責操作和保養的合資格人士、就風險評估提出建議，以及監督工程。我們亦正就有機資源回收中心第二和第三期的各項技術研究及環境影響評估工作提供有關氣體方面的意見，促使工程能夠順利進行。

Gas Risk Assessment and Monitoring

The EMSD conducted major gas risk assessments and monitoring work during the year. First, for the construction and operation of an offshore Liquefied Natural Gas (LNG) terminal by the two power companies in the waters to the east of the Soko Islands, we have made gas safety recommendations after reviewing the risk assessment report in the environmental impact assessment (EIA), and have started discussions with the two power companies about their future natural gas business and the vetting and approval of related gas installations. The terminal will enable a Floating Storage and Regasification Unit (FSRU) vessel and an LNG carrier to be moored at a double berth jetty. The regasified LNG from the FSRU vessel will be supplied to the Black Point Power Station of CLP Power Hong Kong Limited and the Lamma Power Station of The Hongkong Electric Company Limited via two separate subsea gas pipelines. The works are scheduled for commencement in late 2019 and completion in 2020 or 2021. Upon completion, the new facility will enhance the stability of natural gas supply in Hong Kong. With the existing gas-fired generating units of the two power companies, it is expected that natural gas will be able to satisfy about 50% of Hong Kong's electricity demand by about 2020, which will significantly reduce carbon emissions from power generation and increase the use of clean energy.

Meanwhile, the EPD has commenced the Organic Resources Recovery Centres (ORRCs) project to reduce the amount of food waste and minimise the need for landfill disposal. Food waste can also be converted into renewable energy through biological technology (anaerobic digestion) to produce biogas (methane). Phase 1 of the ORRC at Siu Ho Wan, Lantau Island, was commissioned in late 2018. To ensure the safe operation of the ORRC, we worked closely with the EPD and its contractor to vet and approve the gas installations, assess the qualified persons responsible for operation and maintenance, provide recommendations on risk assessment and monitor the works. We are also offering advice on gas related matters in various technical studies and EIA for Phases 2 and 3 of the ORRC to facilitate a smooth progress of the works.

我們製作了一個虛擬實境車輛維修示範工場，讓業界能更了解《車輛維修工場實務指引》的要求，協助車輛維修業跟上科技發展，與時並進。

We have developed a virtual reality vehicle maintenance sample workshop to facilitate the trade in better understanding the requirements of the Practice Guidelines for Vehicle Maintenance Workshops and help the industry to keep pace with technological advancements.



保障公眾安全

Protecting Public Safety



我們已推出新的安全使用輕度易燃雪種家用式冷氣機電視宣傳片，提醒市民大眾在安裝這類冷氣機時應注意的主要安全事項。

Our new TV announcement on "Safe Use of Mildly Flammable Refrigerant Household Air-conditioners" has gone on air to remind the public of key safety tips when installing such air-conditioners.

安全使用易燃雪種

目前市面上有四個品牌的家用冷氣機已推出新型號和採用較環保但輕度易燃的雪種。為了加強公眾對使用易燃雪種的家用冷氣機的安全意識，機電署年內已製作安全使用輕度易燃雪種家用式冷氣機的電視宣傳片，預計於2019年5月推出，提醒消費者應注意生產商所建議的房間大小和高度限制，並須委聘受過相關專業訓練的人士進行安裝和維修保養，以減低易燃雪種的潛在風險。

由機電署擔當聯絡角色的「跨部門監察易燃雪種協調小組」早於2017年已向冷氣業界及物業管理公司發信，建議大型冷氣裝置不應採用易燃雪種，而協調小組亦於2018/19年度把有關建議推廣至香港空調製冷業職工總會、保險業及物業管理從業員，並進一步提醒業界應關注使用易燃雪種的風險評估。

隨着機電署於2018年與廣州市工貿技師學院簽訂合作備忘錄，我們正聯繫學院提供有關易燃雪種冷氣機的培訓，預計於2019年下半年舉辦。

來年展望

來年，我們會繼續加強各項安全巡查和宣傳教育工作，務求以風險為本的管理方式，在有限的資源下，把各範疇的氣體安全和車輛維修安全工作做得更好。

Safe Use of Flammable Refrigerants

Four brands of household air-conditioners currently available in the market have introduced new models and adopted relatively eco-friendly but mildly flammable refrigerants. In order to enhance the safety awareness of members of the public on using household air-conditioners with flammable refrigerants, the EMSD produced a TV announcement on "Safe Use of Mildly Flammable Refrigerant Household Air-conditioners" during the year, which is expected to be launched in May 2019. It reminds consumers to pay attention to the room size and height restrictions as recommended by the manufacturers. Consumers should also engage professionally trained persons to carry out installation and maintenance so as to minimise the potential risks of flammable refrigerants.

The Inter-departmental Co-ordination Group for the Monitoring of Flammable Refrigerants, in which the EMSD takes up a liaison role, issued a letter to the air-conditioning trade and property management companies as early as 2017, recommending that flammable refrigerants should not be used in large-scale air-conditioning systems. In 2018/19, the recommendation was also disseminated to the Hong Kong Air-Conditioning and Refrigerating Trades Workers General Union, the insurance industry and property management personnel, further reminding them to pay attention to the risk assessments on the use of flammable refrigerants.

With the signing of a memorandum of co-operation with the Guangzhou Industry and Trade Technician College (GITTC) in 2018, the EMSD is liaising with the GITTC on its provision of training on flammable refrigerant air-conditioners, which is expected to take place in the second half of 2019.

The Year Ahead

We will continue to step up safety inspections and public education in the coming year, with a view to making the best use of limited resources to further improve our different areas of work on gas and vehicle maintenance safety under a risk-based management approach.

肩負確保氣體安全的使命： Dedicated to Ensuring Gas Safety:

深入社羣，走進外傭圈子，提高她們對使用氣體用具的安全意識

Enhancing the Safety Awareness of Foreign Domestic Helpers on the Use of Gas Appliances with a Personal Touch



現時香港約有30多萬名外籍家庭傭工，而她們大多會使用氣體用具煮食。因此，為了確保氣體安全，以及提高外傭對使用氣體用具的安全意識，氣體標準事務處助理機械督察潘賦翹先生及其同事不惜減少假日與家人共聚天倫的時間，主動於星期日走到外傭聚集的熱門地方，宣傳氣體用具的安全知識和進行巡查，藉此照顧不同社群的需要，把氣體安全工作做得更到位。

賦翹及其團隊的主要職責包括批核住宅式氣體用具、處理日常與氣體安全相關的查詢，以及調查意外事故的原因，例如不正確使用氣體用具。

賦翹回想：「幾年前，在我接手處理關於外籍家庭傭工不安全使用氣體用具的個案時，於巡查期間發現部分外傭在公眾地方不適當使用手提卡式氣體用具煮食，這存在一定程度的氣體安全風險。我們明白外傭在異地工作，缺乏本地氣體安全知識，於是由2017年開始，安排在假日期間到外傭休假經常聚集的熱門地點(例如灣仔駱克道、維多利亞公園、旺角道行人天橋、中環皇后像廣場及美孚葵涌道天橋底一帶)進行巡查及宣傳推廣活動，並派發以英語、印尼語和泰語製作的宣傳單張，教導她們正確使用氣體用具的知識。」

此外，為進一步加強對外傭的宣傳推廣工作，他更主動接觸一些外傭中介公司及專門支援外傭的慈善團體，探討合作機會。他深信與相關團體協作，定能令宣傳效果事半功倍。另外，他又安排在專為少數族裔而設的電台頻道，以印尼語、泰語和尼泊爾語分享一些氣體安全小貼士。賦翹說：「我和同事會繼續努力，從多方面做好宣傳推廣工作，加強外傭和少數族裔的氣體安全意識。」

At present, there are over 300 000 foreign domestic helpers in Hong Kong, and a majority of them may use gas appliances for cooking. Therefore, in order to ensure gas safety and enhance the safety awareness of these helpers on the use of gas appliances, Assistant Mechanical Inspector at the Gas Standards Office, Mr Poon Fu-kiu, David, and his team did not hesitate to sacrifice some of their family time on holidays, and took the initiative to visit popular gathering places of domestic helpers on Sundays to promote the safety knowledge of using gas appliances and conduct inspections, thus taking care of the needs of different communities and making our work on gas safety more effective.

The major responsibilities of David and his team include approval of domestic gas appliances, handling daily enquiries related to gas safety, and investigating the causes of gas incidents, such as improper use of gas appliances.

David recalled: "A few years ago, I started to take over cases involving the unsafe use of gas appliances by foreign domestic helpers. During inspections, we found that some of the helpers improperly used portable gas cassette cookers for cooking in public places, which posed a certain level of gas safety risks. We were aware that domestic helpers were working in a foreign place and lacked local gas safety knowledge. Therefore, we have, since 2017, arranged to carry out inspections and outreach publicity programmes at popular gathering places (such as Lockhart Road in Wan Chai, Victoria Park, Mong Kok Road Footbridge, Statue Square in Central and areas under Kwai Chung Road Flyover in Mei Foo) of foreign domestic helpers during holidays. We distributed publicity leaflets in English, Bahasa Indonesian and Thai to teach them the proper use of gas appliances."

Besides, to further step up promotion and publicity to foreign domestic helpers, David proactively approached domestic helper agencies and charities that provide specialised support to helpers to explore collaboration opportunities. He believed that collaborative efforts with relevant organisations would definitely achieve a multiplying effect. In addition, he also arranged to broadcast gas safety tips in Bahasa Indonesian, Thai and Nepali on radio channels dedicated to ethnic minorities. "My team and I will continue with our promotional and publicity efforts to enhance the gas safety awareness of domestic helpers and ethnic minorities," he said.

保障公眾安全

Protecting Public Safety

機械安全

加強巡查舊式升降機以策安全

我們一直非常關注舊式升降機的安全。在2018年，我們與發展局制訂了一系列提升舊式升降機安全水平的措施，並逐步予以落實。

為加強巡查舊式升降機，我們於2018年6月成立了一支由11名督察人員組成的專責巡查隊伍，再於同年11月聘請獨立顧問公司，研究進一步擴大舊式升降機的巡查範圍和增加巡查次數。在2018年，我們單是針對舊式升降機便進行了合共4 683次巡查，預計2019年巡查舊式升降機的次數會增至約17 000次。

因應市民對升降機及自動梯安全的要求不斷增加，我們檢討並更新了2012年出版的《升降機工程及自動梯工程實務守則》(《實務守則》)。最新的2018年版《實務守則》已於2018年8月刊憲，並於2019年2月1日生效。在此次修訂中，我們引入了針對舊式升降機的「特別保養」要求，規定承辦商須為所有尚未安裝機廂上行超速保護裝置、機廂非預定移動保護裝置及雙重制動系統的舊式升降機，每年進行不少於兩次「特別保養」或採用升降機生產商建議的其他方案，以確保升降機安全運作。新措施旨在針對尚未配備最新安全設備的舊式升降機，加強其重要部件的保養，以提升其安全水平。

推行優化升降機資助計劃

為進一步加快在社區推展升降機優化工程，行政長官於2018年《施政報告》中提出投入25億元推行優化升降機資助計劃，資助符合平均應課差餉租值上限的合資格私人住宅或綜合用途(商住)樓宇業主為其舊式升降機進行優化工程。此外，相關樓宇的升降機必須欠缺該計劃訂明的最少一項「必須的安全裝置」，即雙重制動系統、機廂非預定移動保護裝置、機廂上行超速保護裝置和機廂門鎖及門刀，方可申請資助。

Mechanical Safety

Stepping Up Inspection of Aged Lifts to Ensure Safety

The safety of aged lifts has always been a key area of concern for us. In 2018, we developed a set of safety enhancement measures for aged lifts in conjunction with the Development Bureau, and had them implemented progressively.

To strengthen the inspection of aged lifts, we formed a new dedicated team consisting of 11 inspectors in June 2018. In November the same year, we further engaged independent consultants to study on expanding the coverage of aged lift inspections and increasing their frequency. A total of 4 683 inspections on aged lifts were conducted in 2018. It is expected that the number would rise to about 17 000 in 2019.

In response to ever-increasing public expectations for lift and escalator safety, we reviewed and updated the Code of Practice for Lift Works and Escalator Works (Works Code) published in 2012. The latest 2018 Edition of the Works Code was gazetted in August 2018 and came into effect on 1 February 2019. In this revised edition, the requirement to undertake "special maintenance" was introduced. Lift contractors are now required to conduct "special maintenance" at least twice a year for aged lifts that have not yet been installed with ascending car overspeed protection device, unintended car movement protection device and double brake system; or to implement the recommendations of lift manufacturers to ensure the safe operation of such lifts. The new measure is intended to enhance the maintenance of certain critical components in aged lifts that do not yet have the latest safety mechanisms, so as to raise their safety level.

Lift Modernisation Subsidy Scheme Implemented

To further expedite lift modernisation in the community, the Chief Executive announced in her 2018 Policy Address the launch of a \$2.5 billion Lift Modernisation Subsidy Scheme (LIMSS). The subsidy is available for application by owners of private residential buildings or composite (commercial and residential) buildings not exceeding a stipulated average annual rateable value. Also, the lifts concerned must be in short of at least one of the "essential safety devices" specified in the LIMSS, namely double brake system, unintended car movement protection device, ascending car overspeed protection device, and car door mechanical lock and door safety edge.

舊式升降機巡查次數
Aged lift inspections

4 683 次

2018



預計增至
Expected to rise to

17 000 次

2019

全港約有 13 000 部舊式升降機符合上述資助資格。我們的目標是在未來六年為約 5 000 部舊式升降機進行優化工程，而每部合資格升降機的資助額最高為工程費用的六成，上限為 50 萬元。年滿 60 歲或以上的長者自住業主更可獲工程費用的全數資助，上限為每個單位 50,000 元。首階段資助申請已於 2019 年 3 月 29 日至 8 月 1 日進行，市民反應踴躍，申請結果將於 2019 年第四季公布。

資助計劃旨在幫助有需要的業主為其舊式升降機進行優化工程，從而提升升降機安全水平，我們樂見其成，並會與市建局、發展局和升降機業界共同協作，為資助計劃制訂具體的實施框架和細則，發揮促成者的角色。

應用科技為自動梯安全「把脈」

年內的另一成就是成功申請創新及科技局的「科技統籌(整體撥款)」資助，以研究應用光纖光柵傳感技術，監測升降機及自動梯運作的安全及穩定性。

我們於 2018 年 9 月首度獲批撥款，為港鐵旺角站的一部升降機及兩條自動梯「把脈」，進行有關創新科技的概念驗證和可預測性警報系統先導測試。這個項目的進展良好，預計在 2019 年第三季完成。有關系統已妥為安裝，並開始經雲端的平台收集數據作分析。項目工程人員已進行多項實地故障模擬測試，把收集所得的數據與從正常運作的升降機及自動梯取得的數據作比對，從而推斷出系統故障和部件運作不良的情況，並就異常情況自動發出預警，提示有關人員進行預防性維修，避免故障和意外發生。

上述項目的第二階段將以自動梯為重點，我們正籌備有關工作，並會加入人工智能分析技術的元素，實時為自動梯「把脈」。我們更計劃在有關技術發展成熟時，把其推廣至其他政府部門、運輸設施、大專院校、商場及物業管理公司等。我們亦歡迎升降機及自動梯製造商研究為現有的產品及設施引入光纖光柵傳感技術，並與我們共同努力，透過應用科技以提高升降機及自動梯的安全水平。

About 13 000 aged lifts in Hong Kong are eligible for the LIMSS. Our target is to modernise about 5 000 aged lifts over the next six years. The subsidy will cover up to 60% of the cost of the modernisation works, subject to a cap of \$500,000 per lift. Elderly owner-occupiers aged 60 or above of eligible buildings may apply for full subsidy, subject to a cap of \$50,000 per domestic unit. Enthusiastic response from the community was received during the first round of application from 29 March to 1 August 2019. Results will be released in the fourth quarter of 2019.

The LIMSS aims to help needy building owners modernise their aged lifts, thereby improving the lift safety. We are delighted to see the implementation of the LIMSS, and will work in conjunction with the Urban Renewal Authority, Development Bureau and the lift trade to formulate its implementation framework and details, fulfilling our role as a facilitator.

Applying Technology in Escalator “Health Checks”

Another achievement during the year was our successful bid for the TechConnect (block vote) funding from the Innovation and Technology Bureau for a study on applying optical fibre Bragg grating (FBG) sensing technology to monitor the safety and reliability of lift and escalator operation.

We obtained the funding approval for the first time in September 2018 for a proof-of-concept of an innovative technology and a pilot trial of a predictive alert system on a lift and two escalators at the Mong Kok MTR station, as part of their “health checks”. The project is in good progress and scheduled for completion in the third quarter of 2019. The system was successfully installed and began collecting data via a cloud platform for analysis. Numerous on-site simulation tests of faults were conducted, with data collected and compared against data from normal lift and escalator operation. The simulation tests made it possible to predict system faults or component malfunctioning, and automatically issue early warning of abnormalities. This will prompt maintenance personnel to conduct preventive maintenance and avoid breakdowns and accidents.

Preparations for the second phase of the project focusing on escalators are underway. Artificial intelligence analytics will be added to conduct health checks on escalators in real time. We are also planning to extend the FBG sensing technology to other government departments, transport facilities, tertiary institutions, malls and property management companies, etc. when the technology matures. We welcome manufacturers of lifts and escalators to explore the use of FBG sensing technology in their existing products and facilities, and make joint efforts with us to adopt technology to enhance the safety of lifts and escalators.

光纖光柵傳感技術
Optical fibre Bragg grating sensing technology



為自動梯「把脈」
Conduct “health checks” on escalators

保障公眾安全

Protecting Public Safety

機動遊戲機審批工作

中環海濱的「歐陸嘉年華」於2018年踏入第五個年頭，場內設施包括多款大型機動遊戲機，均須先經機電工程署審批才可向公眾開放。



機電工程署人員為2018年中環海濱嘉年華的所有機動遊戲機進行安全檢測後，遊戲機才可開放給公眾使用。

All amusement rides at the Central Harbour front Carnival held in 2018 were tested to be safe before they were opened to the public.

累積了近年的經驗，主辦機構早在2018年嘉年華開幕前的半年已展開準備工作，包括根據《機動遊戲機（安全）條例》，就機動遊戲機的設計及安裝事宜向機電工程署申請「設計批准」；在機動遊戲設備運抵香港後，根據相關的風險評估結果進行無損探傷測試；在完成機動遊戲機的安裝後，安排獨立檢測員對遊戲機進行全面檢測，然後就每一台遊戲機向我們提交「使用及操作許可證」申請。

與此同時，我們亦為主辦機構所僱用的「主管人員」進行審核，他們負責維修保養機動遊戲機和確保其安全操作。我們在短短兩個多星期內已就場地的32台機動遊戲機發出「使用及操作許可證」。主辦機構對本港的相關安全法規要求和審批程序已比以往熟悉，所以安排上亦比以往暢順。活動完結後，我們收到主辦機構的感謝函，反映雙方在確保安全的大前提下，彼此各司其職，合作無間，讓市民及遊客在節慶假期樂享安全的遊樂節目。

Vetting and Approval of Amusement Rides

The Great European Carnival was held at the Central Harbourfront for the fifth year in 2018. All amusement rides at the Carnival, including a variety of large-scale ones, must be vetted and approved by the EMSD before they could be opened to the public.



累積了近年經驗，我們在短短兩個多星期內已完成所有審批和檢查工作，並就場地的32部機動遊戲機向嘉年華營運商發出「使用及操作許可證」。

With the benefit of experience in recent years, we completed all vetting and checking work and issued to the operator of the Carnival the "Permit to Use and Operate" for the 32 rides at the venue within just two weeks or so.

With the experience from the past few years, the organiser began their preparations as early as six months prior to the event. Among other things, they applied to the EMSD for "design approval" regarding the design and installation of the amusement rides in accordance with the Amusement Rides (Safety) Ordinance. Upon arrival of the ride equipment in Hong Kong, the organiser conducted non-destructive testing based on the results of risk assessments. When the installation of the rides was completed, the organiser engaged an independent surveyor to conduct a comprehensive examination of the rides before submitting the application for "Permit to Use and Operate" for every single amusement ride.

At the same time, we also carried out assessment of the competent persons employed by the organiser, who were responsible for the maintenance and safe operation of the amusement rides. For the Carnival in 2018, we managed to issue the "Permit to Use and Operate" for the 32 rides at the venue within just two weeks or so. As the organiser had become more familiar with the relevant statutory safety requirements and vetting procedures in Hong Kong, the arrangements ran smoother than previous years. The organiser sent an appreciation letter to us after the event this year, indicating that with the common goal of ensuring public safety, both the organiser and we have played our part and collaborated well in bringing an enjoyable and safe event to the general public and tourists during the festive holidays.

每年由亞洲不同城市輪流舉行的亞洲遊樂設施博覽會，今年6月在香港灣仔會議展覽中心舉行。博覽會共有393個參展單位，展示最新的主題樂園產品及服務，包括21個機動遊戲機。博覽會可供展品安裝的時間極短，參展商需要在展會前短短三日內完成安裝機動遊戲機，並向我們申請使用和操作相關設施的許可證。在我們團隊盡力支援和協助及參展商的配合下，活動最終得以安全順利地進行。

The Asian Attraction Expo, an annual event that different Asian cities take turns to organise, took place at the Hong Kong Convention and Exhibition Centre in June 2018. The event attracted 393 exhibitors to showcase their latest products and services for theme parks, including 21 amusement rides. As the time available for installation of exhibits was very short, exhibitors had to complete the work for the rides and apply to the EMSD for permits to use and operate within a window of three days prior to the Expo. With full support and facilitation from our team, together with co-operation from the exhibitors, the event was held safely and smoothly.

香港迪士尼樂園的全新重點機動遊戲機「蟻俠與黃蜂女：擊戰特攻！」，已於2019年3月底對外開放。這是樂園近年的多個擴展項目之一，由原址的「巴斯光年星際歷險」改建而成。我們的團隊就這項重大改裝工程如期完成了安全審批，讓新設施可順利啟用。

The new ride “Ant-Man and The Wasp: Nano Battle!” at the Hong Kong Disneyland was opened to the public at the end of March 2019. As one of the theme park’s ongoing expansion projects in recent years, the ride was re-developed from the previous “Buzz Lightyear Astro Blasters” in the same location. Our team completed the vetting and approval of this major alteration in line with its launch schedule.



我們為香港迪士尼樂園全新的「蟻俠與黃蜂女：擊戰特攻！」機動遊戲機進行的安全審批工作已順利完成，讓新設施可於2019年3月如期向公眾開放。

The safety approval of the new ride “Ant-Man and The Wasp: Nano Battle!” at the Hong Kong Disneyland was completed smoothly, in line with its launch schedule in March 2019.

新機動遊戲機的所有機械設施都必須經過檢測和審批，才可正式投入運作。

All mechanical devices of the new ride must be tested and approved before commencement of operation.

保障公眾安全

Protecting Public Safety

昂坪 360

港珠澳大橋於2018年10月開通後，昂坪360的每日乘客量大幅上升。我們因應系統使用率的增加，加緊了對纜車系統的安全巡查工作，確保營運商按照生產商的要求及本署相關實務守則的指引進行定期維修保養，使系統能暢順穩妥地運作。在2019年1月，營運商順利更換了附設在纜車系統的標號纜索。該標號纜索為飛越上空前往進行拯救工作的飛行服務員作警示用途，防止飛機撞到纜車系統。我們為該標號纜索的新設計進行審批，並派員實地監察更換工程，確保纜車系統安全運作。

Ngong Ping 360

The daily visitor traffic at Ngong Ping 360 rose dramatically following the opening of the Hong Kong-Zhuhai-Macao Bridge in October 2018. In view of the heightened usage of the cable car system, we stepped up the safety inspection of the attraction to ensure that the operator carried out regular maintenance in accordance with the requirements of the manufacturer and the guidelines of the EMSD's code of practice so as to maintain smooth and reliable system operation. In January 2019, the operator successfully replaced the marker cable adjacent to the cable car system. The cable serves the purpose of setting up beacons alerting aircrafts to avoid collision against the cable car system when flying over for rescue services. We vetted and approved the new design of marker cable and sent inspectors to monitor the replacement work onsite to ensure the safe operation of the cable car system.



營運商採用了創新的先進技術，以架空式的自動化機械工作平台取代傳統以人手垂直吊運的方法，大大縮短了更新標號纜索的實地施工時間。

The operator has adopted innovative and advanced technology to replace the traditional manual vertical lifting method with an overhead automated mechanical working platform, which has greatly shortened the time for on-site replacement of the marker cable.



因應昂坪360纜車系統乘客量上升，我們加緊了對系統的巡查工作，以確保其運作保持暢順可靠。

We have stepped up the safety inspections of the Ngong Ping 360 Cable Car System to ensure its smooth and reliable operation in view of its rising visitor traffic.

未來工作

來年的重點工作之一是與市建局及發展局一起推廣優化升降機資助計劃，進一步落實執行細節，鼓勵更多合資格的業主參與計劃。早前我們在多區舉行了11場簡介會，共有一千多人參加。來年我們會繼續舉辦宣傳活動，讓業主加深認識計劃所帶來的益處。

我們會繼續致力於升降機及自動梯的安全規管工作，如監察《實務守則》新版的實施情況和審視其成效，並就第二階段的光纖光柵傳感技術測試申請追加「科技統籌(整體撥款)」資助，務求持續應用嶄新科技，提高自動梯及升降機的安全水平。

The Year Ahead

A key focus for the year ahead is further promoting the LIMSS in conjunction with the Urban Renewal Authority and Development Bureau. Further implementation details will be finalised to encourage eligible property owners to take part in the Scheme. A series of 11 briefing sessions about the LIMSS were held earlier in various districts, attracting more than 1 000 participants. Such promotional activities will continue in the coming year to help property owners better understand the benefits of the LIMSS.

We will also maintain a close watch on the regulation of lift and escalator safety, such as monitoring the implementation of the revised edition of the Works Code, as well as reviewing its effectiveness. We will apply for additional funding under TechConnect (block vote) for phase two testing of the FBG sensing technology, as part of our ongoing efforts to use new technology to enhance lift and escalator safety.

鐵路安全

高鐵香港段順利開通

籌備多年的廣深港高速鐵路(高鐵)香港段於2018年9月正式通車，為香港接通內地高鐵網絡立下重要的里程碑。

由於高鐵涉及香港與內地的鐵路運作，我們早於2018年3月已開始參與香港鐵路有限公司(港鐵公司)為各個系統進行的操作及緊急應變演習，歷時半年，直至9月結束，比一般新鐵路綫開通前所需的約三個月時間多了一倍，其中部分演習涉及兩地和跨部門協作。在多方協調和共同努力下，高鐵香港段終於順利通車。

與本港其他鐵路綫相比，機電署鐵路科對高鐵香港段的監督和支援範圍更為廣闊，有關工作包括就內地營運而須進入香港段的多款高鐵列車進行安全認證、測試不同的車載信號系統，以及就內地高鐵列車車長進入香港段工作和本港高鐵列車車長進入內地段工作進行資格訂定和管理。由於香港與內地的規管體制不同，高鐵香港段在日常營運及維修保養方面均有很多具體細節須由兩地商討和審議。此外，高鐵香港段長約26公里，而內地段則超過100公里，任何路段如因天氣或機件問題而影響列車服務，兩地人員都必須馬上互相通報，進行溝通協調。上述各種安全監管事項，我們都在高鐵香港段開通前與國家鐵路局進行緊密聯繫和磋商，把問題一一解決。

經過今次籌備高鐵香港段的開通工作，我們與國家鐵路局及相關的內地持份者建立了良好工作關係，在維持鐵路安全方面也取得共識，為日後長期合作奠定牢固基礎。

Railway Safety

High Speed Rail Hong Kong Section Opened

The Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong High Speed Rail (HSR) was opened in September 2018 after years of preparation, marking a major milestone in high speed rail connection between Hong Kong and the Mainland.

As the HSR involves railway operations in Hong Kong and the Mainland, we began taking part in the operation and emergency response drills conducted by the Mass Transit Railway Corporation Limited (MTRCL) on all related systems in March 2018. The drills ran for six months until September, doubled the typically required time of three months for opening a new railway line. Some of the drills involved inter-departmental and cross-border collaborations. With the concerted hard work and multi-party co-ordination, the Hong Kong Section of the HSR was opened smoothly.

Compared to other railway lines in the territory, the Hong Kong Section of the HSR involves much broader supervision and support from the Railways Branch of the EMSD, such as safety certification for the high-speed train models deployed by the Mainland on the Hong Kong Section, testing of different train-borne signalling systems, and formulating and managing the qualifications for Mainland drivers operating high-speed trains on the Hong Kong Section, and vice versa. As Hong Kong and the Mainland have different regulatory regimes, many specific details of the daily operation and maintenance of the HSR required joint discussions and deliberations between Hong Kong and the Mainland. The Hong Kong Section of the HSR measures about 26 km, while the Mainland Section stretches more than 100 km. When any section of the railway is affected by weather or mechanical problems, the personnel in both Hong Kong and the Mainland must alert each other for immediate communication and co-ordination. All these safety regulatory issues were resolved one by one, following close communication and discussions with the National Railway Administration (NRA) of the People's Republic of China before the opening of the Hong Kong Section.

Preparations for the opening of the Hong Kong Section also helped us foster a good working relationship with the NRA and other relevant Mainland stakeholders. We built a consensus with the Mainland on maintaining railway safety, thus laying a strong foundation for long-term co-operation in the future.

保障公眾安全 Protecting Public Safety



高鐵香港段自2018年9月正式啟用後運作大致暢順。圖為港鐵公司石崗列車停放處的高鐵列車。

The operation of the HSR Hong Kong Section has been largely smooth since its opening in September 2018. Picture shows HSR rolling stock at the Shek Kong Stabling Sidings of the MTRCL.



機電工程署同事檢測高鐵列車控制室儀器。高鐵香港段開通前，我們與內地的鐵路機構進行了大量協調和聯合籌備工作。

An EMSD colleague inspecting equipment in HSR train control room. Much co-ordination and joint preparations with the Mainland railway authorities were conducted before the opening of the HSR Hong Kong Section.

高鐵香港段設有高效的安全檢測和事故處理措施，以預防和應對高鐵事故。

Effective safety inspection and remedial measures are in place to prevent and resolve incidents on the HSR Hong Kong Section.

高鐵香港段於設計時已考慮到應對各類事故及緊急情況的方案和所需設施。香港段於開通後雖曾發生數宗事故，但在各方充分協調和準備下，事故均得到妥善處理，未有對列車安全造成影響。高鐵香港段開通至今營運大致暢順，足見兩地在事前的協作和演習卓有成效。

The design of the Hong Kong Section has taken into account the solutions and facilities required for dealing with all types of incidents and emergencies. Though several incidents occurred after the Hong Kong Section was opened, they were well resolved thanks to adequate co-ordination and preparation by all parties concerned, without affecting railway safety. The operation of the Hong Kong Section has been largely smooth since its opening, reflecting the efficacy of the co-ordination and drills between Hong Kong and the Mainland during the preparations.

加強港鐵公司的安全及資產審核

過去一年，我們透過更主動和全面的方式審核港鐵公司各個管理系統，以便及早找出潛在問題，減低發生鐵路事故的風險，提高鐵路安全水平。2018年，鐵路科同事對港鐵公司的資產管理系統及安全管理系統進行全面和直接審核，在三個月的審核過程中，依據鐵路事故記錄和以風險為本方式，實地抽查鐵路系統安全關鍵部件的維修工序和記錄，找出潛在問題和可能引致事故的成因，並提出改善建議，以提升鐵路安全水平。

此外，我們亦分別就港鐵公司的資產管理系統及安全管理系統進行「主動全面審核」。我們委託了兩家獨立顧問公司，分別在資產管理方面審核港鐵公司的信號系統和供電系統，並在安全管理方面審核輕鐵列車車長的應急能力。顧問公司也從宏觀的角度，檢視各個重要鐵路系統的狀況，包括信號系統、軌道、供電系統及鐵路列車，並提出相應的改善建議。

鐵路科增加人手編制

鑑於近年港鐵公司的部分鐵路及相關設施，例如信號系統、冷氣系統、閉路電視系統等，已進入更換周期，加上《鐵路發展策略2014》所展望的未來鐵路發展正持續推展，鐵路科年內獲批准增聘20名人員，以加強鐵路安全規管和進行額外審核工作。

Stepping Up MTRCL's Safety and Asset Audits

In the past year, we took a more proactive and holistic approach to audit the various management systems of the MTRCL, in a bid to identify potential issues early on to lower the risk of railway incidents and enhance railway safety. In 2018, our Railways Branch carried out thorough and direct audits of the MTRCL's Asset Management System (AMS) and Safety Management System (SMS). Using the MTRCL's incident records and a risk-based approach as our basis, we conducted on-site spot checks of the Corporation's maintenance procedures and records of parts and components critical to railway safety in the various systems during the three-month audit. The process enabled us to identify potential problems and probable causes that might lead to incidents, and recommended improvement measures to enhance railway safety.

We also conducted a "proactive comprehensive audit" of the MTRCL's AMS and SMS. Two independent consultants were appointed to audit the MTRCL's signalling and power supply systems under the AMS and the ability of its light-rail train captains to respond to emergency situations under the SMS. The consultants also took a macro look at the condition of all major railway systems, including signalling, tracks, power supply and rolling stock, and made improvement recommendations accordingly.

Expanding our Teams

In recent years, respective railways and related facilities such as signalling, air-conditioning and CCTV systems of the MTRCL have entered their replacement age. Future railway developments envisioned in the Railway Development Strategy 2014 are also underway. In this connection, the Railways Branch obtained approval during the year to recruit 20 extra staff members to enhance our regulatory work in railway safety and conduct additional inspections.

保障公眾安全

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新增編制包括專業工程師和輔助人員。新團隊會全面審核港鐵公司的資產管理系統和安全管理系統、監察大型鐵路資產更換工程及其他相關鐵路項目，包括香港國際機場第三跑道旅客捷運系統的安全規管等。我們預計於五年內完成對港鐵公司所有鐵路線及相關系統的第一輪全面和直接審核，進一步加強鐵路安全。

The additional establishment includes professional engineers and supporting staff. The new teams will audit the MTRCL's AMS and SMS in a comprehensive manner, monitor major railway asset replacement projects and other related railway projects including regulating the safety of the Automated People Mover (APM) at the third runway of the Hong Kong International Airport. We anticipate that the first round of comprehensive direct audits of all the MTRCL railway lines and related systems will be completed in five years, further augmenting railway safety.



於屯門車廠為輕鐵新列車進行安全測試。
Safety testing of a new Light Rail train at the Tuen Mun depot.



同事在屯門車廠測試輕鐵新列車的安全操作。
Testing the safe operation of a new Light Rail train at the Tuen Mun depot.

以創科推動鐵路安全

機電署近年大力推動創新科技(創科)，鐵路科也不例外，積極推動並促成鐵路業界引進更多創科解決方案以提升安全水平。我們鼓勵港鐵公司把創科解決方案的願望清單上載至去年推出的「機電創科網上平台」，至今已有初創企業就願望清單上的數個項目提出建議方案。

我們的同事更身體力行，以「推動創科，提升鐵路安全」為題，參加2019年公務員優質服務獎勵計劃，並獲得「特別嘉許(創科應用)」獎項。得獎的創科解決方案是「建築信息模擬 — 資產管理 — 鐵路安全」，運用建築信息模擬技術協助管理鐵路資產。機電署近年一直發展建築信息模擬技術，並向機電業界推廣以此技術進行資產管理。我們十分支持鐵路業界採用這新技術提升安全水平。

Leveraging I&T for Railway Safety

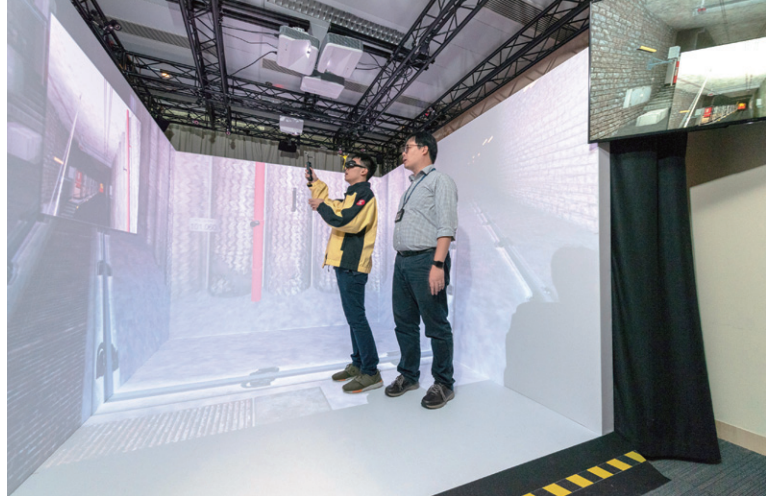
The EMSD has been promoting innovation and technology (I&T) in recent years and the Railways Branch is no exception. We are actively encouraging and facilitating the adoption of more I&T solutions by the railway sector to enhance safety. We encouraged the MTRCL to upload its wish list of I&T solutions on our E&M InnoPortal introduced last year. A few items on its wish list have already prompted start-ups to propose solutions.

Our colleagues also walked the talk and came up with a submission with the theme "Raising Railway Safety by Promoting I&T" for the Civil Service Outstanding Service Award Scheme 2019, which was awarded a "Special Citation for Application of Innovation and Technology". The award-winning I&T solution, "Building Information Modelling — Asset Management — Railway Safety" (BIM-AM-RS), uses BIM technology to assist in managing railway assets. The EMSD has been developing and promoting BIM for asset management to the E&M trade, and fully supports the railway industry to deploy this new technology to enhance safety.



我們根據真實事故個案，與培訓機構合作製作了四個虛擬實境的模擬三維立體培訓單元，供港鐵公司用以培訓員工，讓他們能正確處理突發事故。

We co-developed with training organisations four 3D VR training modules based on actual incidents for staff training by the MTRCL so that its staff can respond properly to emergency incidents.



我們的同事協助港鐵職員使用虛擬實境培訓教材。

Our colleague assisting an MTRCL staff member in using the VR training modules.

另外，我們也鼓勵港鐵公司運用虛擬實境技術加強員工培訓。年內，我們伙拍培訓機構根據真實事故個案，以虛擬實境模擬三維立體情境，製作了四個培訓單元，指導港鐵員工在發生緊急事故時應如何按正確程序處理。舉例來說，其中一個單元是模擬2018年發生的一宗工程人員因未有遵守安全工作程序而被電擊的事故。學員在受訓時置身虛擬的實境中，如遵照正確的程序，便會順利完成任務，但倘在過程中出錯，學員身穿的虛擬實境觸覺服即會產生輕微震動，使人感覺猶如被電擊，藉此加深學員的觸感記憶，緊記適當的安全程序。

鐵路系統也可運用創科以提升安全水平。舉例來說，我們早於2017年已向港鐵公司建議，在列車或車站安裝攝錄機，以監察集電弓破損、電弧或極高溫等異常情況。當發現問題時，有關系統便自動發出預警信號，提醒進行維修工作，防患於未然，而港鐵公司也隨即採納建議。在2019年，港鐵公司將引進功能更強的人工智能監察系統。該系統除可監察架空電纜外，亦可檢視支架有否出現異常或損壞。這些都是應用創科解決方案提升安全水平的好例子。

We have encouraged the MTRCL to use virtual reality (VR) technology to strengthen staff training. During the year, we developed in partnership with training organisations four 3D VR training modules based on actual incidents. The training kits aim to help the MTRCL staff to respond to emergency incidents with the proper procedures. For example, one of the units simulates an incident in 2018 when an engineering staff member suffered an electric shock arising from not adhering to safe working procedures. During the VR training, the trainees who follow the correct procedures will complete the mission successfully. However, if any trainee makes a procedural error, the haptic suit of the VR programme will produce a light vibration to simulate an electric shock, which helps reinforce the trainee's sensory memory and strengthen his recall of the proper safety procedures.

I&T can also be leveraged to enhance railway safety. For instance, we proposed to the MTRCL as early as in 2017 that cameras should be installed on trains or at stations to detect abnormalities such as damage to pantographs, arcing or excessively high temperatures. The system will automatically send out alert signals when abnormalities are identified so that maintenance work can be carried out before an incident occurs. The MTRCL promptly adopted the recommendation. In 2019, the MTRCL will introduce a more powerful monitoring system using artificial intelligence. Apart from monitoring overhead cables, it can also check the status of the supporting frames for any abnormalities or damages. These are the outstanding examples of how I&T solutions are being applied to improve safety.

保障公眾安全

Protecting Public Safety

促進國際及大灣區交流

我們非常重視與世界各地的鐵路規管機構、營運機構、鐵路專家及學者進行交流。2018年10月，助理署長/鐵路遠赴都柏林參加「國際鐵路安全議會」周年會議和主持核心小組會議，並出席在巴黎舉行的「智慧鐵路及通訊為本列車控制」世界會議。

鐵路科也定期參與國際鐵路展覽，例如2019年3月在香港舉行的「2019年亞太鐵路會議」。我們在展覽攤位跟各地同業分享了獲獎的「建築信息模擬 — 資產管理 — 鐵路安全」系統，推廣以創科促進鐵路安全的訊息。

除了繼續與國家鐵路局及中國國家鐵路集團有限公司等內地機構維持良好的工作關係外，我們也積極開拓粵港澳大灣區的聯繫機遇，尋找合作空間。舉例來說，我們在2019年4月初與澳門運輸基建辦公室舉行會議，交流兩地工作概況和了解澳門第一個鐵路項目的進展。內地在鐵路建設及營運方面的經驗相當豐富，我們期望日後繼續與大灣區不同城市就鐵路事務進行交流互訪。

來年工作

在新鐵路綫方面，明年的工作重點是為屯馬綫一期的開通進行各項系統的安全測試、巡查及演習。我們亦會繼續就《鐵路發展策略2014》內其他新鐵路綫項目和機場第三跑道項目的旅客捷運系統進行安全規管工作，以及就港鐵公司的資產管理系統及安全管理系統進行全面和直接審核。

Fostering International and Greater Bay Area Exchange

International exchange with railway regulators, operators, railway experts and the academia is very important to us. In October 2018, our Assistant Director/Railways attended the annual meeting of the International Railway Safety Council in Dublin and chaired a core group meeting. He also attended the SmartMetro and Communication-based Train Control World Congress in Paris in the same month.

The Railways Branch takes part in international railway exhibitions regularly, such as the Asia Pacific Rail 2019 held in Hong Kong in March. We showcased our award-winning BIM-AM-RS at our booth to share with the trade and promote the message of using I&T to promote railway safety.

While we continued to maintain a good working relationship with Mainland organisations such as the NRA and China Railway, we also actively explored opportunities for networking and collaboration in the Guangdong-Hong Kong-Macao Greater Bay Area. In early April 2019, for example, we held a meeting with the Transportation Infrastructure Office of Macao to discuss work in general in the two cities. We were also briefed on the progress of the first railway project in Macao. The Mainland has rich experience in railway construction and operations, and we hope to continue such visits and exchange activities with more cities in the Greater Bay Area.

The Year Ahead

In regard to new railway lines, our key focus in the coming year is safety testing, inspection and drills of all the associated systems in Phase 1 of the Tuen Ma Line in preparation for its opening. We will also continue to regulate the safety of other new railway projects under the Railway Development Strategy 2014 and the APM in the airport's third runway project, and work further on the comprehensive direct audits of the MTRCL's AMS and SMS.

開展高鐵動車組司機的安全規管工作

Embarking on the Safety Regulation of High-Speed Rail Drivers

為了加深了解內地動車組司機的培訓及相關考核程序，以開展對廣深港高鐵香港段動車組司機的安全規管工作，鐵路科工程師朱嘉輝先生於2018年年底參加了由中國鐵路總公司武漢高鐵職業技能訓練段舉辦的「高鐵動車組司機資格性理論培訓」，與百多名來自內地各鐵路局的準高鐵動車組司機一同接受為期30天的培訓。

To better understand the training and relevant assessment procedures of high-speed rail drivers in the Mainland so as to carry out safety regulation of drivers of the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong High Speed Rail (HSR), Mr Chu Ka-fai, John, Engineer of the Railways Branch, joined the high-speed rail drivers training programme organised by the Wuhan High-speed Railway Vocational Skills Training Base of China Railway Corporation in late 2018, where he received 30 days of training together with more than 100 potential high-speed rail drivers from various railway bureaux in the Mainland.



嘉輝在鐵路科的工作之一，是協助制訂高鐵香港段動車組司機的安全監管標準。他說：「我們過去主要規管鐵路的機電設施和系統安全，但由於高鐵動車組的特性，動車組司機的駕駛作業對鐵路安全十分重要。因應高鐵香港段於2018年開通，我們開展了對高鐵動車組司機駕駛操作的安全規管工作，以保障高鐵香港段的鐵路安全。」

「內地高鐵動車組司機的理論培訓內容十分豐富，除了各種理論性知識外，亦會透過模擬駕駛室，讓學員學習操控不同型號的高鐵動車組，了解其作業程序及駕駛室的實際設備和布局。」嘉輝回港後隨即為鐵路科同事舉行分享會，詳細講述所學到的知識，包括高鐵司機室的設備、布局、安全守則、運作程序等，並於港鐵的高鐵動車組為同事進行實地培訓。此外，嘉輝和負責監管高鐵安全的同事共同商討各項安全注意事項和細則，為高鐵香港段動車組司機制訂了一系列作業檢測表和標準化檢測流程，作為高鐵動車組司機的安全監管標準。

自此，鐵路科同事已多次登上在香港段營運的高鐵動車組駕駛室，執行高鐵動車組司機作業檢查，以確認司機的作業程序符合相關的安全要求。嘉輝表示，鐵路科日後會繼續為同事進行培訓，協助他們掌握作業檢查的要點，務求能更靈活調配內部資源，持續進行高鐵動車組營運監管，以保障高鐵香港段的鐵路安全。

One of John's duties in the Railways Branch is to assist in formulating the safety regulatory standards for high-speed rail drivers of the HSR Hong Kong Section. "In the past, we mainly regulated the safety of railways' E&M facilities and systems. However, the unique characteristics of the HSR make the driving practice of high-speed rail drivers critical to railway safety. Following the commissioning of the HSR Hong Kong Section in 2018, we embarked on the safety regulation of high-speed rail drivers' operation to ensure the safety of the HSR Hong Kong Section," he said.

"The Mainland's high-speed rail drivers training programme covers a wide range of contents. Besides theoretical knowledge, participants learnt to operate different models of high-speed trains in a simulated driver's compartment and became familiar with the operating procedures as well as the actual equipment and set-up in the driver's compartment." After returning to Hong Kong, John organised sharing sessions in which he explained to colleagues of the Railways Branch in detail the knowledge he had acquired, including the equipment and set-up in a high speed train driver's compartment, safety rules and operating procedures, etc. He also conducted training for colleagues on board a high speed rail train of the MTRCL. In addition, John and colleagues in charge of regulating high speed rail safety discussed together various safety guidelines and rules, and drew up a series of operation checklists and standardised testing procedures for train drivers of the HSR Hong Kong Section, which serve as the safety regulatory standards for high-speed rail train drivers.

Since then, colleagues of the Railways Branch have repeatedly boarded the drivers' compartments of high speed rail trains operating in the HSR Hong Kong Section to conduct inspections of the operations of high speed train drivers in order to confirm that they are operating in line with the relevant safety requirements. According to John, the Railways Branch will continue to provide training for colleagues in the future to acquaint them with the key elements of operational inspections. This will enable more flexible deployment of internal resources to carry out regular monitoring of high speed rail operations, thus ensuring the safety of the HSR Hong Kong Section.

推廣能源效益及節能

Promoting Energy Efficiency and Conservation



根據強制性能源效益標籤計劃第三階段，電視機也涵蓋於計劃內。計劃的第三階段已於2018年6月開始生效，並將於2019年12月全面實施。

Televisions are covered under the third phase of the Mandatory Energy Efficiency Labelling Scheme, which took effect in June 2018 and will be fully implemented in December 2019.



我們的團隊巡查零售店，確保相關電器按《能源效益(產品標籤)條例》的要求，展示正確的能源標籤。

Our team inspecting retail shops to ensure the display of proper energy labels on the relevant appliances according to the requirements of the Energy Efficiency (Labelling of Products) Ordinance.

全面實施強制性能源效益標籤計劃第三階段

年內的重要發展之一，是實施強制性能源效益標籤計劃(強制性標籤計劃)第三階段。立法會於2018年5月通過《能源效益(產品標籤)條例》的修訂建議後，強制性標籤計劃第三階段隨即於同年6月開始生效，並設有18個月寬限期讓業界做好準備，以便由2019年12月1日起全面實施。強制性標籤計劃第三階段涵蓋三類新增的電氣產品，即電視機、儲水式電熱水器及電磁爐，同時亦把強制性標籤計劃兩類現有訂明產品的涵蓋範圍擴大，包括有冷暖功能空調機的供暖部分和洗衣量超過7公斤但不超過10公斤的洗衣機。

強制性標籤計劃三個階段合共規管八類家用電器，佔全港每年住宅用電量約七成。強制性標籤計劃第三階段全面實施後，估計每年可節省約1.5億度電，相當於每年減少排放105 000公噸二氧化碳。

Full Implementation of the Third Phase of the Mandatory Energy Efficiency Labelling Scheme

One of the important developments of the year was the implementation of the third phase of the Mandatory Energy Efficiency Labelling Scheme (MEELS). Upon approval by the Legislative Council of the proposed amendments to the Energy Efficiency (Labelling of Products) Ordinance in May 2018, the third phase of the MEELS took effect in June the same year, with an 18-month grace period for the trade to prepare for full implementation which will take place on 1 December 2019. The third phase of the MEELS covers three additional types of electrical products, namely televisions, storage type electric water heaters and induction cookers. It also expands the scope of two types of existing prescribed products covered by the MEELS to include the heating performance of room air-conditioners with both cooling and heating functions, and washing machines with a rated washing capacity exceeding 7 kg but not more than 10 kg.

The three phases of the MEELS regulates eight types of household electrical appliances, which account for about 70% of the annual residential electricity consumption in Hong Kong. It is estimated that after the full implementation of the third phase of the MEELS, there will be an annual energy saving of about 150 million kWh, which is equivalent to an annual reduction of 105 000 tonnes of carbon dioxide emissions.

推廣可再生能源

隨着兩家電力公司實施上網電價計劃，我們已於2018年5月推出一站式熱線，方便市民查詢根據上網電價計劃裝設太陽能板可再生能源系統的資訊及解答相關問題。截至2019年3月底，有關熱線已接獲超過1 100宗查詢。

我們亦更新了「香港可再生能源網」，加入上網電價計劃及可再生能源證書的最新資訊，例如太陽能光伏系統承辦商的參考名冊，以方便市民參與上網電價計劃。此外，我們於2018年10月推出了《太陽能光伏系統安裝指南》，讓市民了解在村屋天台安裝太陽能光伏系統的技術要求，以及申請上網電價的程序等。市民和承辦商亦可參閱該網站的《可再生能源發電系統與電網接駁的技術指引》，了解小型可再生能源裝置與電網接駁的相關技術和申請程序。

上網電價計劃亦是提升業界可再生能源技術水平的好機會。由2018年6月至2019年3月底，機電署共舉辦和參與了31場研討會和簡介會，向供應商、承辦商及公眾講解接駁電網的裝置要求，鼓勵業界向用戶提供優質的可再生能源裝置，共有超過5 600人參加，反應踴躍。

Promoting Renewable Energy

Subsequent to the introduction of the Feed-in Tariff (FiT) Scheme by the two power companies, we launched a one-stop hotline in May 2018 to provide information to the public and handle their enquiries about the installation of solar photovoltaic (PV) renewable energy systems. As of end March 2019, the hotline received more than 1 100 enquiries.

We have also updated the HK RE Net website to include the latest information on the FiT Scheme and Renewable Energy Certificates, such as the reference list of contractors of solar PV systems to facilitate public participation in the FiT Scheme. Besides, the Guidance Notes for Solar Photovoltaic (PV) System Installation was published in October 2018 to inform the public of the technical requirements for the installation of solar PV systems on rooftops of village houses and application procedures of the FiT Scheme. The general public and contractors can also refer to the Technical Guidelines on Grid Connection of Renewable Energy Power Systems on the HK RE Net website to learn more about the technical issues and application procedures related to the grid connection of small-scale renewable energy installations.

The FiT Scheme also provides a good opportunity for the trade to raise their renewable energy technical standards. From June 2018 to end of March 2019, the EMSD held and participated in a total of 31 seminars and briefing sessions to explain to suppliers, contractors and the public the installation requirements for grid connection and encourage the trade to provide high-quality renewable energy equipment to customers. The events were well received, attracting more than 5 600 attendees.

我們的同事與講者於上網電價計劃研討會合照。該系列的研討會和簡報會共吸引了5 600多名機電業界人士和市民參與。

Our colleagues are pictured with speakers at a Feed-in Tariff Scheme seminar. The series of seminars and briefings attracted over 5 600 attendees from the E&M trade and the public.



推廣能源效益及節能

Promoting Energy Efficiency and Conservation

「採電學社」計劃是政府推動公眾採用可再生能源的另一新猷。機電署與環境局於2019年3月推出「採電學社」，為合資格的非官立和非牟利中、小學與幼稚園，以及獲社會福利署津助的非政府福利機構提供一站式服務，協助它們在其處所安裝小型太陽能光伏系統，從而能申請參加本地兩間電力公司推行的上網電價計劃。在「採電學社」下，機電署會跟進整個安裝太陽能光伏系統的過程（包括進行實地視察和技術評估、擬定太陽能光伏系統的設計、採購和安裝設備，以及進行系統測試等），而相關工作的開支將由「採電學社」支付。

「採電學社」擬於2019-20至2023-24財政年度推行，為期五年。在2019-20年度，我們依據實地視察及評估結果，選出約50間學校和機構，在其處所安裝太陽能光伏系統。為使受惠學校和機構了解該計劃的詳情及目標，「採電學社」團隊於本年3月舉行多場簡介會，向有意參加的學校和機構講解有關細節。「採電學社」於2019年5月底截止申請時，共接獲超過200份申請，反應踴躍。首批參與學校和機構已於2019年8月底開始安裝工程。

我們相信通過政府、電力公司、學校和非政府福利機構的協作，可鼓勵學生和青少年近距離認識可再生能源，一起「種電採電」。我們同時希望學校可以利用新安裝太陽能光伏系統輔助STEM（科學、科技、工程及數學）及環保方面的教學，提升學生和青少年對探索科學的興趣，並推廣低碳生活，以應對氣候變化。

以創科推動能源效益、節能及可再生能源

發展創新及科技（創科）是全球趨勢，機電署近年亦大力推動以創科提升公共服務質素，例如成立創新辦公室、推出「機電創科網上平台」，以及在機電署總部或其他合適的政府建築物提供場地，讓初創企業及大學測試創科方案的產品原型等，使政府部門和公營機構能更快獲得可行的創科方案。

此外，我們也積極探求可以推動能源效益、節能及可再生能源的創科方案。舉例來說，通過機電署與香港科技園公司於2018年6月舉行的「創新科技日2018」，我們為政府部門及初創企業成功配對了11個有利能源效益、節能及可再生能源發展的創科方案，而有關項目現正進行測試和驗證。

Solar Harvest is another new government initiative to encourage the public to adopt renewable energy. Jointly launched by the EMSD and the Environment Bureau (ENB) in March 2019, the programme provides one-stop service to help eligible non-government and non-profit-making kindergartens, primary and secondary schools and welfare non-governmental organisations (NGOs) subsidised by the Social Welfare Department install small-scale solar PV systems in their premises so that they can apply to join the FIT Scheme operated by the two power companies. Under Solar Harvest, the EMSD will follow through the entire process of solar PV system installation (including conducting site visits and technical assessments, drawing up the design of solar PV systems, procuring and installing equipment, and conducting system testing, etc.), and all the associated expenses will be fully covered by Solar Harvest.

Solar Harvest is planned to last for five years from the financial year 2019-20 to 2023-24. Fifty schools and organisations will be selected in 2019-20, based on the results of site visits and assessments, to have solar PV systems installed in their premises. To familiarise potential beneficiary schools and organisations with the programme details and objectives, the Solar Harvest team held several briefing sessions in March 2019 to explain the details to the interested schools and organisations. Response to the programme was enthusiastic, with over 200 applications received when the application period closed at end of May 2019. The first batch of participating schools and organisations began installation work in late August 2019.

We believe that through the collaboration among the Government, power companies, schools and welfare NGOs, we can encourage students and young people to get a better understanding of renewable energy, and to "cultivate" and "harvest" electricity together. We also hope that schools can make good use of the newly installed solar PV systems to enrich the teaching of STEM (science, technology, engineering and mathematics) and environmental protection education, with a view to fueling the interest of students and young people in exploring science and promoting low-carbon living to combat climate change.

Leveraging I&T to Promote Energy Efficiency, Energy Conservation and Renewable Energy

In step with the global trend of innovation and technology (I&T) development, the EMSD has been promoting the use of I&T to raise public service quality, such as setting up the Inno-Office and launching the E&M InnoPortal. We also make available the EMSD Headquarters Building and other suitable government buildings for start-ups and universities to test the prototypes of their I&T solutions. The aim is to enable government departments and the public sector to access viable I&T solutions more quickly.

Besides, we also actively explore I&T solutions that can promote energy efficiency, energy conservation and renewable energy. For example, we co-organised with the Hong Kong Science and Technology Parks Corporation the Innovative Technology Day 2018 in June 2018 where we successfully matched for government departments and start-ups 11 I&T solutions that benefit energy efficiency and conservation and renewable energy development. Testing and verification of these solutions are now in progress.

年內，我們的同事亦積極探討創新科技，其中能源效益事務處的兩位同事與另一部別的同事研發了一套名為「智能眼碌碌」的空調控制系統，透過影像分析技術收集人流數據，以及根據人流的前後變化自動調校空調風速，讓市民可在更舒適的室內環境活動，長遠亦可提升空調系統的能源效益。有關項目更贏得「香港工程師學會青年會員創意獎2019(組別II — 創新應用)優異獎」。

During the year, our colleagues actively explored I&T too. Two colleagues from the Energy Efficiency Office collaborated with a colleague from another Division to create the NeuroSmart Eyes Air-conditioning Control System which uses video analytics technology to collect data on people flow and adjust the air flow rate according to changes in the crowd density, thus providing a more comfortable environment for the public to enjoy indoor activities. In the long run, the solution can also enhance the energy efficiency of air-conditioning systems. The project won a merit award in the Hong Kong Institution of Engineers Innovation Awards for Young Members 2019 (Category II — An Innovative Application of Engineering Theories).

全民節能新動向

政府近年大力推動公眾參與節能減排活動，並視公眾參與為應對氣候變化、推動低碳轉型的重要部分。政府承諾以2005年水平為基準，於2025年將能源強度降低40%，以及於2030年將碳強度降低65%至70%。截至2017年，本港的能源強度已降低達31%，進展良好。

Updates on Energy Saving for All Campaign

In recent years, the Government has been vigorously promoting public participation in energy saving and emission reduction activities as a key element in combating climate change and transforming our lifestyle into a low-carbon one. The Government's commitment is to reduce Hong Kong's energy intensity by 40% by 2025 and carbon intensity by 65% to 70% by 2030, with 2005 as a baseline. As of 2017, Hong Kong's energy intensity was reduced by 31%, representing good progress.

環境局和機電署合辦的「全民節能」運動，是為市民和各界機構而設的每年一度旗艦綜合活動。一如往年，「全民節能2019」包括《節能約章》、《4T約章》及「慳神大比拼」，而這三項活動都有新發展。

The Energy Saving for All Campaign, jointly organised by the ENB and the EMSD, is an annual flagship programme tailored for the general public and organisations from different sectors. As in past years, the 2019 Campaign consists of the Energy Saving Charter, the 4T Charter and the Energy Saving Championship Scheme, with new developments in all three activities.



環境局和機電工程署代表出席「全民節能」運動啟動典禮。這是環境局和我們合辦的每年一度旗艦綜合活動，目的是向市民和來自多個界別的機構推廣節能。Representatives of the ENB and the EMSD at the launching ceremony of the Energy Saving for All Campaign, which is an annual flagship programme jointly organised by the ENB and the EMSD to promote energy saving to the public and organisations from a wide variety of sectors.



推廣能源效益及節能

Promoting Energy Efficiency and Conservation

繼約3 600個機構於2018年簽署《節能約章》後，在2019年簽署《節能約章》的機構有3 800多個。各機構承諾在夏季（即6月至9月）把旗下物業維持在適當的室內溫度、關掉無需使用的電器，以及選購一級能源標籤的高能效產品。當中有12間機構獲頒發嘉許獎狀，以表揚它們為《節能約章》招募參與者所作的努力。

就《4T約章》而言，已有超過1 500個場所參與，承諾訂立節能目標(target)，為此制訂行動時間表(timeline)，提高節能成效報告及建築物能源數據的透明度(transparency)，以及推動更多同行者(together)制訂及落實4T節能行動。

Subsequent to the signing of the Energy Saving Charter by about 3 600 organisations in 2018, over 3 800 organisations signed up to the same in 2019. The signatories pledged to maintain an appropriate average indoor temperature in their premises during the summer months from June to September, switch off electrical appliances when not in use and procure energy-efficient products that have Grade 1 energy labels. Among them, twelve were awarded appreciation certificates in recognition of their efforts in recruiting participants for the Charter.

With regard to the 4T Charter, more than 1 500 premises have joined and pledged to implement the 4T principles by setting an energy-saving target with an action timeline, enhancing transparency of reporting of energy efficiency results and building energy efficiency data, and encouraging more stakeholders to work together on the formulation and implementation of 4T energy-saving measures.



至於「慳神有計大比拼2018」，比賽鼓勵不同界別的機構在節能及可再生能源方面採用創科，以推動各業界節能。比賽亦新增了學生組別，以鼓勵青少年在節能和可再生能源發展方面發揮創意和想像力。新增組別的反應熱烈，共收到745份申請。

As for the Energy Saving Championship Scheme 2018, the event encouraged organisations from different sectors to adopt I&T applications in energy saving and renewable energy to promote energy conservation among various sectors. A new category for students was added to the 2018 championship to inspire the creativity and imagination of young people about energy saving and renewable energy development. The new category received enthusiastic response with 745 applications.

「慳神重新校驗大比拼2019」於2019年7月5日啟動，比賽加入新環節，推動業界推廣和採用「重新校驗」為既有建築物節能，而「新世代慳神大比拼2.0」則鼓勵青年發揮創意，就節能及可再生能源概念和技術提出新構思。

The Energy Saving Championship Scheme 2019 kicked off on 5 July 2019, adding new elements to encourage the adoption of retro-commissioning in existing buildings to save energy, while the student category aims to inspire the creativity of young people in energy saving and application of renewable energy.

《建築物能源效益守則》和《能源審核守則》最新版本

Latest Versions of the Building Energy Code and Energy Audit Code

根據《建築物能源效益條例》而制訂的《建築物能源效益守則》和《能源審核守則》2018年最新版本已於2018年11月刊憲，並分別於2019年5月和8月生效，以進一步提升建築物的能源效益。

The latest 2018 versions of the Building Energy Code (BEC) and the Energy Audit Code (EAC), which were enacted under the Buildings Energy Efficiency Ordinance (BEEO), were gazetted in November 2018 and took effect in May and August 2019 respectively to further enhance the energy efficiency of buildings.

這兩份實務守則均隨着《建築物能源效益條例》於2012年首次頒布而制訂，我們會每三年與業界進行檢討。2018年版是繼2015修訂版之後的最新版本，我們在修訂過程中已充分諮詢專業團體、業界組織、學術界及相關政府部門等各持份者的意見，也參考了最新科技及國際能源效益標準等的發展。

The BEC and the EAC were formulated along with the BEEO which was first promulgated in 2012, and they are reviewed every three years in consultation with the trades. The 2018 version, which is the latest update of the 2015 edition, was revised after full consultation with stakeholders such as professional groups, trade organisations, academia and relevant government departments. Reference to the latest technological developments and the international energy efficiency standards, etc. were made during the review process.

為政府建築物率先進行重新校驗

近年我們積極推動重新校驗，並在政府建築物率先進行，既為社會帶來示範作用，也讓政府建築物透過重新校驗而能持續慳電。

重新校驗旨在為現有的建築物「驗身」和作出各種系統調校，使屋宇裝備和機電設施以更高效和節能的模式運作，持續改善能效表現，締造成本及環保效益。繼2017年6月推出香港首份《重新校驗技術指引》後，我們於2018年12月發出《重新校驗技術指引2018》增訂版本，內容加入重新校驗的事前準備、數據管理和中央控制管理系統要求、用於持續校驗的關鍵效能指標，以及更詳細的執行測量和驗證方法。

此外，我們於2018年11月推出了全新的重新校驗資源中心網站，從多個渠道為建築物擁有人提供重新校驗的實用資訊，包括屋宇裝備系統問題的診斷技術指導說明和中央控制管理系統數據範本。資源中心提供了一個平台，讓建築物擁有人和相關持份者就重新校驗分享經驗和知識。

此外，由2019年起，我們為政府建築物率先進行重新校驗，以支持政府要在五年內節省5%用電量的目標。在未來七年，我們會為200多幢政府建築物進行重新校驗，以助進一步提升政府建築物的能源效益。

Retro-commissioning Pilots in Government Buildings

We have been actively promoting retro-commissioning (RCx) in recent years and took the lead to conduct RCx pilots in government buildings. The trials not only set an example for the community, but also enable government buildings to enjoy sustained energy savings through RCx.

The purpose of RCx is to conduct a "health checkup" for existing buildings and fine-tune various systems so that the building services and E&M facilities can operate at a more efficient and energy-saving mode and achieve continuous improvement in energy performance for cost efficiency and environmental benefits. Further to the introduction of Hong Kong's first Retro-commissioning Technical Guidelines in June 2017, we issued the Retro-commissioning Technical Guidelines 2018 Supplement in December 2018, with new information on the preparation of RCx, data management and Central Control and Monitoring System (CCMS) requirements, key performance indicators for continuous RCx as well as more detailed measurement and verification methods.

Besides, we inaugurated a Retro-commissioning Resource Centre website in November 2018 to provide multiple channels for building owners to access practical RCx information, including technical guidance notes on building services system diagnosis and CCMS data samples. The website serves as a platform for building owners and relevant stakeholders to share RCx knowledge and experiences.

Starting from 2019, we also took the lead to begin RCx work in government buildings to support the Government's target of reducing 5% energy consumption in government buildings over five years. In the next seven years, we aim to conduct RCx in more than 200 government buildings to further enhance the energy efficiency of government buildings.

重新校驗

Conduct RCx in over

200 多幢政府建築物
government buildings



推廣能源效益及節能

Promoting Energy Efficiency and Conservation

向粵港澳大灣區推廣重新校驗

鑑於重新校驗有巨大節能潛力，機電署於2018年11月牽頭與六個來自香港、澳門及大灣區其他城市並涉及綠色建築、節能科研和屋宇裝備維修工作的重要機構，簽署《粵港澳大灣區建築物重新校驗(再調適)合作備忘錄》，承諾互相分享知識及經驗、合作進行培訓，以及鼓勵業界以重新校驗作為提升建築物能源效益的新方案，日後並會逐步把重新校驗推廣至內地更多城市。

簽署機構於2019年3月在北京舉行首次全體工作會議，成立了三個分別處理技術發展、人才培訓及推廣宣傳事宜的專責小組，並已開展工作。

Promoting RCx in the Greater Bay Area

In view of the tremendous energy-saving potential of RCx, the EMSD took the lead to sign a Memorandum of Co-operation (MoC) on Retro-commissioning of Buildings in the Guangdong-Hong Kong-Macao Greater Bay Area with six key organisations in Hong Kong, Macau and other cities of the Greater Bay Area that involved in green building, energy conservation research and building services maintenance. The parties pledged to share knowledge and experiences, co-operate on training, and encourage the trades to adopt RCx as a new solution for achieving higher building energy efficiency. They also agreed to gradually promote RCx to more Mainland cities.

The MoC signatories held the first plenary meeting in Beijing in March 2019, at which three working groups were set up for technical development, capacity building and publicity matters respectively. The working groups have already come into operation.

啟德區域供冷系統(北廠)外觀。這供冷系統在2025年全面落成啟用後，會連接和服務啟德發展區內約50幢樓宇。

Exterior of the Kai Tak District Cooling System (North Plant). When this District Cooling System is fully commissioned in 2025, it will be connected to and serve about 50 buildings in the Kai Tak Development area.





為北廠內的製冷設備進行定期檢查和維修保養。
Regular inspection and maintenance of chiller equipment inside the North Plant.



同事全面監察北廠的操作情況。
Our colleague monitoring all aspects of the North Plant's operation.

擴充啟德區域供冷系統

經過多年努力，能源效益事務處為啟德發展區設計和建造的區域供冷系統已陸續投入服務，為已接駁的建築物供應空調系統用的冷凍水。現有的啟德區域供冷系統在2025年全面落成後，會連接區內約50幢樓宇，每年共可節省約8 500萬度電，相當於每年減少排放59 500公噸二氧化碳。

此外，由於區內發展密度不斷提高，例如啟德體育園及新急症醫院的發展規模均已擴大，對供冷量需求亦大幅增加，我們計劃為啟德發展區新增一個供冷量約為178兆瓦的區域供冷系統，以滿足額外需求。待立法會財務委員會審批撥款後，期望可於2020年初動工，為2022年啟用的啟德體育園供應冷凍水。

我們亦正研究為洪水橋新發展區、古洞北新發展區及東涌新市鎮擴展等提供區域供冷系統，規劃總面積超過967公頃。

Expanding the Kai Tak District Cooling System

After years of efforts, the District Cooling System (DCS) designed and constructed by the Energy Efficiency Office at Kai Tak Development has begun operating by phases and is supplying chilled water for air-conditioning in buildings connected to the DCS. When the existing DCS is fully completed in 2025, it will be connected to about 50 buildings in the district to achieve energy savings of about 85 million kWh every year, equivalent to an annual reduction of 59 500 tonnes of carbon dioxide emissions.

Besides, as the development density in the district continues to increase, e.g. the expansion of development of the Kai Tak Sports Park and a new acute hospital, the demand for cooling capacity will also increase significantly. We plan to build a new DCS at Kai Tak Development that will provide 178-megawatt cooling capacity to meet additional demand. Pending funding approval by the Finance Committee of the Legislative Council, the work on the new DCS is expected to begin in early 2020 for supply of chilled water to the Kai Tak Sports Park to be opened in 2022.

We are also conducting studies on the provision of DCSs for Hung Shui Kiu New Development Area, Kwu Tung North New Development Area and Tung Chung New Town Extension, etc. The total planning area exceeds 967 hectares.

推廣能源效益及節能

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區域供冷系統首個開放日

First DCS Open Day

區域供冷系統首個開放日已於2018年5月舉辦，向參觀者介紹區域供冷系統的能源效益及對啟德社區的益處。我們邀請了學校、青少年中心、長者中心、非政府機構、觀塘區議員及公眾人士參觀，深入了解區域供冷系統的廠房及設施，共有850多人參與。

The first DCS Open Day was held in May 2018 to showcase to participants the energy efficiency of the DCS and its benefits to the Kai Tak community. We invited schools, youth centres, elderly centres, NGOs, Kwun Tong District Councillors and the public to join the Open Day for in-depth tours of the DCS plants and facilities. More than 850 visitors attended the event.



2018年5月，機電工程署與環境局在香港合辦亞太經合組織能源工作組第55次會議和相關會議。左圖為機電工程署署長薛永恆向全體與會人士闡述香港的能源效益工作。

The EMSD hosted the 55th APEC Energy Working Group and Associated Meetings in Hong Kong in May 2018, in conjunction with the ENB. Picture on the left shows the Director of Electrical and Mechanical Services, Mr Alfred Sit, elaborating to all participants the energy efficiency work of Hong Kong.

我們也於2019年3月在香港舉辦亞太經合組織能源效益及節能專家小組第53次會議、新能源及可再生能源技術專家小組第52次會議和相關研討會。

The EMSD also hosted in March 2019 the 53rd meeting of the APEC Expert Group on Energy Efficiency and Conservation (EGEE&C), the 52nd meeting of the Expert Group on New and Renewable Energy Technologies (EGNRET) and related seminars.



拓展區域合作

機電署一直很重視在能源效益及節能方面的區域和國際合作，以提升香港在促進能源效益工作上的實力和形象。機電署於2018年5月與環境局合作，在香港舉辦亞太經濟合作組織（亞太經合組織）能源工作組第55次會議和相關會議，有來自19個亞太經合組織成員經濟體的180多名代表參與，這是有關會議第三次在香港舉辦。此外，機電署於2019年3月在香港舉辦亞太經合組織能源效益及節能專家小組第53次會議、亞太經合組織新能源及可再生能源技術專家小組第52次會議，以及相關研討會，有來自12個亞太經合組織成員經濟體的約90名政府官員和專家出席。

此外，機電署一位助理署長於2019年3月獲選為能源效益及節能專家小組的主席，機電署因而負起有關專家小組的秘書處工作，包括各種行政和政策制訂工作，以及為能源工作組和能源效益及節能專家小組的成員提供各種意見和後勤支援等。這是機電署首次有代表晉身亞太經合組織能源工作組轄下專家小組的領導崗位，實是拓展部門視野和區域聯繫的寶貴機會。

與內地合作方面，除了簽署上文所述的《粵港澳大灣區建築物重新校驗（再調適）合作備忘錄》外，機電署亦於2018年8月與廣東省科學技術協會和廣東省住房和城鄉建社廳簽訂合作備忘錄，日後將加強與大灣區內各主要持份者溝通，並把握每個機會與內地合作，推動採用創科提高區內的能源效益。

來年展望

我們在未來一年的工作重點除了繼續推行現有的各種節能計劃外，還會開始為「採電學社」計劃進行工程、進一步推廣上網電價計劃和重新校驗、展開為多幢政府建築物落實重新校驗的工作，以及為新的區域供冷系統積極進行規劃、設計和相關工作。能源效益事務處年內已進行內部調動，新增兩組人手以應付未來的工作。

Expanding Regional Collaboration

The EMSD has always attached great importance to regional and international collaboration on energy efficiency and conservation to enhance the capability and boost the image of Hong Kong in promoting energy efficiency. In May 2018, we hosted the 55th Asia-Pacific Economic Cooperation (APEC) Energy Working Group (EWG) and Associated Meetings (EWG55) in Hong Kong, in conjunction with the ENB. It was the third time Hong Kong hosted the meetings, and more than 180 representatives from 19 APEC member economies attended the meetings. Besides, we also hosted the 53rd meeting of the Expert Group on Energy Efficiency and Conservation (EGEE&C), the 52nd meeting of the Expert Group on New and Renewable Energy Technologies (EGNRET) and related seminars in March 2019, which were attended by about 90 government officials and experts from 12 APEC member economies.

Furthermore, an assistant director of the EMSD was elected as the chairperson of the EGEE&C in March 2019. Hence the EMSD has become the Secretariat of the expert group, and is responsible for such duties as handling various administrative and policy-making tasks, providing advice and logistic support for members of the EWG and the EGEE&C. This is the first time an EMSD official has taken a leadership role in an expert group under the EWG of APEC, giving the EMSD a valuable opportunity to broaden its perspectives and expand its regional connections.

As for collaboration with the Mainland, apart from the above-mentioned MoC on Retro-commissioning of Buildings in the Guangdong-Hong Kong-Macao Greater Bay Area, the EMSD also signed MoCs with the Guangdong Provincial Association for Science and Technology and the Guangdong Department of Housing and Urban-Rural Development in August 2018. In the future, we will enhance communication with key stakeholders in the Greater Bay Area and make use of every opportunity to collaborate with the Mainland in promoting the use of I&T to enhance energy efficiency in the Greater Bay Area.

The Year Ahead

In addition to continuing with the various ongoing energy saving schemes, the focus next year is to begin the construction works for Solar Harvest, further promote the FiT Scheme and RCx, kick off RCx work in a number of government buildings, and actively pursue the planning, design and related work for the new DCSs. During the year, the Energy Efficiency Office has undergone internal manpower reshuffle, with two new teams created to take on these tasks in the days to come.

推廣能源效益及節能

Promoting Energy Efficiency and Conservation

「智能眼碌碌」提升能源效益 NeuroSmart Eyes Enhance Energy Efficiency

能源效益事務處工程師彭家敏女士與兩位來自其他部別的同事，一同構思出創新的能源方案，利用影像分析技術優化大型公眾場地（例如博物館等）的空調系統，隨着人流變化而快速調節室內溫度，為參觀人士提供舒適的環境，同時提升能源效益。

Miss Pang Ka-man, Karman, Engineer at the Energy Efficiency Office, worked with two colleagues from other divisions to devise an innovative energy proposal which can optimise air-conditioning systems at large public venues (such as museums, etc.) using video analytics technology. The system can adjust indoor temperatures quickly according to changes in the crowd density, providing a comfortable environment for visitors while improving energy efficiency.



這個名為「智能眼碌碌」的空調控制系統意念方案，首先參加了機電署在2018年8月首次舉辦的內部「Inno@E&M 創新科技挑戰賽」，成功進入第二階段（實踐方案），並成立相關的「創新小隊」，其後再於2019年3月挑戰「香港工程師學會青年會員創意獎2019」，在「組別II – 創新應用」贏得優異獎。

家敏說：「影像分析系統一般用於點算人流或人群管理。我們認識這項技術後忽發奇想—可否利用影像技術去調節室內空氣，以解決現時空調系統往往不能跟隨室內短暫的人流改變而迅速調節溫度的問題呢？」

團隊的方案是透過閉路電視系統，觀察不同空間的人流密度，實時收集人流數據，把數據分析系統與空調系統連接，然後根據不同區域的人流，快速地自動調控空調系統輸出的冷空氣流量。系統會在人多時調高空調風速或調低溫度，人少時則把空調減弱，調控的速度較傳統被動式調節的空調系統更快，既為使用者打造溫度宜人的空間，亦有助提升空調系統的能源效益。系統更能顯示場所內每個區域的人流數量，有助進行人流管理。

「智能眼碌碌」空調控制系統獲獎後，現已進入第二階段，在部分政府場地率先實施和進行測試。目前，家敏除了處理日常的能源效益標籤計劃工作外，更負責實施「智能眼碌碌」項目。她說：「我們期待方案獲廣泛採納實行，在另一個層面促進社會的能源效益。」

The idea proposal of NeuroSmart Eyes, an air-conditioning control system, first participated in the EMSD's internal Inno@E&M Challenge held for the first time in August 2018. The project successfully entered the second phase (proposal realisation), with a relevant InnoTeam formed. The proposal was later submitted for consideration in the Hong Kong Institution of Engineers Innovation Awards for Young Members 2019 held in March 2019, and won a Merit Award in Category II - An Innovative Application of Engineering Theories.

Karman said: "Video analytics systems are commonly used for people counting and crowd management. We suddenly had an idea after learning about this technology – can we use video analytics to adjust indoor air so as to solve the existing problem of air-conditioning systems being unable to adjust temperatures quickly according to temporary changes in the crowd density?"

The team's proposal is to observe the crowd density at different locations through the CCTV systems and collect in real time the data on people flow. The data analysis system is linked with the air-conditioning system, enabling quick and automatic adjustment of cold air output from the air-conditioning system according to people flow in different areas. When a zone has more people, the system will increase the air flow rate or lower the temperature, and vice versa. The speed of adjustment is much faster than that by conventional means of passive adjustment. This not only creates a pleasant space with suitable temperatures for visitors, but also helps enhance the energy efficiency of air-conditioning systems. The system can also show the number of people in each area of the venue, thus facilitating crowd management."

After winning the awards, the NeuroSmart Eyes Air-conditioning Control System has progressed to the next phase of implementation and testing at selected government venues. At present, Karman has taken on the additional task of implementing the NeuroSmart Eyes project on top of her regular duties on the Energy Efficiency Labelling Scheme. "We hope that the proposal will be widely adopted and implemented to help promote energy efficiency in the society on a different dimension," she said.

區域供冷系統助理工程師

Assistant Engineer of the District Cooling System

榮獲首屆「建造業議會可持續建築大獎 — 年青從業員卓越獎」

Received the First CIC Sustainable Construction Award - Young Practitioner (Excellence Award)

羅婷丰女士於2016年完成機電署的見習工程師訓練後，加入能源效益事務處，參與實施啟德發展區區域供冷系統的工作。在機電署推薦下，她於2018年參加首屆「建造業議會可持續建築大獎」，並贏得「年青從業員卓越獎」，肯定了她在推動可持續發展方面的表現和努力。

Upon completion of the EMSD's engineering graduate training in 2016, Miss Law Ting-fung, Michelle, joined the Energy Efficiency Office and was involved in the implementation of the District Cooling System (DCS) at Kai Tak Development (KTD). She was nominated by the Department for and won the Young Practitioner (Excellence Award) of the first CIC Sustainable Construction Award, recognising her performance and efforts in promoting sustainable development.



婷丰加入能源效益事務處的啟德發展區區域供冷系統團隊後，跟隨資深工程師管理製冷機組承辦工程，同時負責準備承辦商招標文件和合約，並協助撰寫提交立法會申請撥款的文件，詳述啟德發展區區域供冷系統工程的背景和申請撥款的理據。

她說：「區域供冷系統是大型空調系統，通過地下配水管道網絡把中央供冷站的冷凍水輸送到用戶樓宇，以滿足其空調系統的冷卻需求。系統由兩個中央供冷站、海水泵房和地下冷凍水配水管道網絡組成，優點是十分節能。此外，使用區域供冷服務的用戶無須自行安裝製冷機組和相關的機電設備，不但節省空間，也免去日後的操作和維修保養問題。」

婷丰更率先在啟德發展區區域供冷系統採用「建築信息模擬 — 資產管理」系統。政府自2018年1月1日起在主要基本工程項目採用「建築信息模擬」系統。由於啟德發展區區域供冷系統的工程在2018年前開展，其實並非必須採用「建築信息模擬」系統，但婷丰認為該系統可從三維角度掌握設施的設計準繩，能及早察覺結構性問題，例如喉管之間的距離是否足夠，有助減低在施工階段出錯的風險；而其資產管理工具更可匯集維修記錄、零件更換日期等資訊，利便日後的設施管理和維修保養工作。

婷丰已把機電署研發的「建築信息模擬 — 資產管理」系統的要求，加入由她統籌的啟德發展區區域供冷系統製冷機組招標工程的合約條款，為優化區域供冷系統的工作踏出新一步。

After joining the DCS team of the Energy Efficiency Office, Michelle worked together with experienced engineers to administer contracted works for chillers. She was also responsible for preparing tender documents and contracts, and assisted in drafting papers for submission to the Legislative Council to seek funding approval, detailing the background of the DCS project at KTD and the justifications for funding application.

"The DCS is a large-scale centralised air-conditioning system which distributes chilled water from the central chiller plant to user buildings through an underground water distribution pipe network to meet the cooling demand of the air-conditioning systems of such buildings. The system comprises two central chiller plants, a seawater pump room and an underground chilled water distribution pipe network, and is highly energy efficient. Besides, DCS users do not need to install their own chillers and associated E&M equipment. This not only saves space, but also avoids future operation and maintenance problems," she said.

Michelle also took the lead to adopt the Building Information Modelling-Asset Management (BIM-AM) system in the DCS at KTD. The BIM system has been adopted in major government capital works projects since 1 January 2018. As the DCS project at KTD commenced before 2018, it was not mandatory to adopt the BIM system. However, Michelle believed that the system can provide the design parameters of facilities from a three-dimensional perspective so that any structural problems can be detected early, such as whether pipes are sufficiently spaced apart, which helps reduce the risks of mistakes at the construction stage. The asset management tools of the system can pool together information such as maintenance records and replacement dates of parts to facilitate facility management and maintenance work in future.

Michelle has already included the requirements of the BIM-AM system in the terms and conditions of the tender for the provision of chillers in the DCS at KTD under her co-ordination, which marks a new step forward in optimising the DCS.

提升公眾安全及節能意識

Raising Public Awareness of Safety and Energy Conservation

規管服務致力透過宣傳和公眾教育，推廣和提高市民對機電安全和節能的意識，防患於未然。我們多年來分別為業界和市民推出了多種宣傳教育活動和計劃，近年更引入創新科技以提高這些工作的成效，並加強國際和區域合作及聯繫。

國際和區域交流

作為多個推廣機電安全及能源效益的國際機構的成員，機電署除了參與和舉辦國際和區域會議之外，還積極承擔這些機構轄下委員會的領導工作。我們希望藉此提升香港在機電安全和能源效益方面的國際形象，向海外對口單位學習、拓闊視野，建立更廣泛的區域和國際聯繫，以提升規管服務的實力。

年內的重點交流活動之一，是2018年5月與環境局合辦亞太經濟合作組織(亞太經合組織)能源工作組第55次會議和相關會議，共有九個亞太經合組織成員經濟體的180多名代表出席。這是香港第三次舉辦有關會議，並首次於會議期間舉行「年輕人與亞太經合組織專家交流會」，讓本地中學生跟國際專家在台上交流。

Our Regulatory Services is committed to promoting and enhancing public awareness of electrical and mechanical (E&M) safety and energy conservation through publicity and public education, as prevention is better than cure. Over the years, we have implemented a diverse range of promotional and education activities and schemes for the trade and the general public. We have also adopted innovative technology in recent years to enhance the efficacy of these initiatives while strengthening international and regional collaboration and connections.

International and Regional Exchange

As a member of various international organisations promoting E&M safety and energy efficiency, the EMSD not only participates in or hosts international and regional conferences but also actively takes on leadership roles in committees of these organisations. We hope that by elevating Hong Kong's international profile in the arena of E&M safety and energy efficiency, we can learn from our overseas counterparts, widen our perspectives and extend our regional and international connections to enhance the capabilities of our Regulatory Services.

A major exchange event for the year was the 55th Asia-Pacific Economic Cooperation (APEC) Energy Working Group (EWG) and Associated Meetings jointly hosted by the Environment Bureau and the EMSD in May 2018, with attendance by more than 180 delegates from nine APEC member economies. It was the third time Hong Kong organised the meetings. Besides, the "Youth Dialogue with APEC Experts", an on-stage exchange between young people and APEC representatives, was held for the first time during the EWG meetings to let local secondary students exchange their views with international experts.



2018年5月亞太經合組織能源工作組第55次會議和相關會議進行期間，我們舉行了首個「年輕人與亞太經合組織專家交流會」，讓本地中學生跟亞太經合組織代表和國際專家在台上交流。

During the 55th APEC Energy Working Group and Associated Meetings in May 2018, we held for the first time the "Youth Dialogue with APEC Experts", an on-stage exchange between local secondary students and APEC representatives and international experts.



多位講者、學者、規管機構人員、業界代表、政府官員和商界領袖於2018年5月在香港舉辦的亞太經合組織能源工作組第55次會議和相關會議的開幕典禮上合照。

Speakers, academics, regulators, trade representatives, government officials and business leaders at the opening ceremony of the 55th APEC Energy Working Group and Associated Meetings held in Hong Kong in May 2018.

2019年3月，我們在香港舉辦亞太經合組織能源效益及節能專家小組第53次會議、亞太經合組織新能源及可再生能源技術專家小組第52次會議，以及相關研討會，有來自12個亞太經合組織成員經濟體的約90名政府官員和專家出席。

我們的助理署長/電力及能源效益於2019年3月獲選為亞太經合組織能源效益及節能專家小組的主席，機電署因而擔當有關專家小組的秘書處，負起各項行政和政策制訂工作，以及為能源工作組和能源效益及節能專家小組的成員提供各種意見和後勤支援等。這是機電署首次有代表晉身亞太經合組織能源工作組轄下專家小組的領導崗位。

與內地合作

在鐵路安全方面，我們與國際和內地的對口單位保持頻繁交流。2018年10月，助理署長/鐵路出席在柏林舉行的「國際鐵路安全議會」周年會議和核心小組會議，以及在巴黎舉行的「智慧鐵路及通訊為本列車控制」世界會議。至於內地方面，我們在籌備廣深港高速鐵路(高鐵)香港段於2018年9月開通的工作期間，與國家鐵路總局及其他持份者建立了良好的合作關係



為了更深入了解內地高鐵司機的工作，鐵路科兩位同事年內分別前往武漢及成都，參與內地高鐵司機的培訓課程。相關的知識有助我們加強高鐵香港段的安全規管工作。

During the year, two colleagues from our Railways Branch attended high-speed rail driver training programmes in Wuhan and Chengdu respectively to better understand the duties of Mainland high-speed rail drivers. The knowledge will help enhance our safety regulatory work of the HSR Hong Kong Section.

和共識。這個持續的合作關係對保持高鐵香港段的安全十分重要。

年內，我們指派兩名同事分別前往武漢及成都參加高鐵司機培訓課程，以深入了解內地高鐵司機的工作。他們從中獲得的新知識，將有助我們加強高鐵香港段的安全規管工作。

In March 2019, we hosted the 53rd meeting of the APEC Expert Group on Energy Efficiency and Conservation (EGEE&C), the 52nd meeting of the APEC Expert Group on New and Renewable Energy Technologies (EGNRET) and related seminars, which were attended by about 90 government officials and experts from 12 APEC member economies.

In March 2019, our Assistant Director/Electricity and Energy Efficiency was elected as the chairperson of the EGEE&C. Since then, the EMSD has been serving as the Secretariat for the expert group, taking charge of various administrative and policy-making duties, as well as providing advice and logistic support for members of the EWG and the EGEE&C. This is the first time an EMSD official has taken on a leadership role in an expert group under the EWG of APEC.

Collaboration with the Mainland

On railway safety, we maintain frequent communication with international and our Mainland counterparts. In October 2018, our Assistant Director/Railways attended the annual conference and core group meetings of the International Railway Safety Council in Berlin, and the SmartMetro and Communication-based Train Control World Congress in Paris. As for the Mainland, we established a good working relationship and understanding with the National Railway Administration and other stakeholders during the preparation for the opening of the Hong Kong Section



of the Guangzhou-Shenzhen-Hong Kong High Speed Rail (HSR) in September 2018. Our ongoing partnership is vital for maintaining the safety of the Hong Kong Section of the HSR.

During the year, we assigned two colleagues to attend high-speed rail driver training programmes in Wuhan and Chengdu respectively to gain a deeper understanding of the duties of Mainland high-speed rail drivers. Their newly acquired knowledge will help enhance our safety regulatory work of the Hong Kong Section of the HSR.

提升公眾安全及節能意識

Raising Public Awareness of Safety and Energy Conservation

至於我們的規管服務與內地的全國性交流合作，我們早於2003年已與前國家質量監督檢驗檢疫總局(國家質檢總局)簽訂合作協議，在機電安全和能源效益方面的安全推廣、經驗交流、事故通報和人才培訓事宜持續合作達15年。由於國家質檢總局自2018年3月起已併入海關總署，機電署於2018年9月在重慶與海關總署簽訂了新的合作協議，訂明雙方會在家用電氣產品、氣體爐具、升降機及自動梯的安全，以及能源效益這四方面繼續緊密合作。

粵港澳大灣區亦為我們帶來不少與內地合作的新機會。年內，我們與香港及大灣區多個機構(包括六個來自香港、澳門及內地其他城市，專注於綠色建築、節能科研和屋宇裝備維修工作的主要機構)簽訂合作備忘錄。2018年11月，我們與這六個機構簽署《粵港澳大灣區建築物重新校驗(再調適)合作備忘錄》，鼓勵業界在香港和內地推廣重新校驗、互相分享相關知識和經驗，以及合作進行培訓。

機電署一向十分重視培訓。我們分別於2018年6月及11月與廣州市工貿技師學院及廣州市人力資源和社會保障局簽署合作備忘錄，以加強兩地的機電業人才培訓合作，共同提升業界技術水平。我們亦計劃與廣東省科學技術協會及廣東省生產力促進中心分別簽署合作備忘錄，以推動兩地在創新及科技(創科)發展方面的協作。粵港兩地在創科人才培訓上的合作，以及資源、產品和服務方面的協作和交流，均有利我們的規管服務和香港機電業的發展，我們期待在這些範疇有更具體的合作。

至於港澳合作方面，鐵路科在年內與澳門的運輸基建辦公室舉行了首次交流會議。機電署亦與澳門的牌照及稽查廳建立了新的合作關係，雙方會就不安全的家用電氣產品及氣體爐具互作通報，加強信息互通。

與業界溝通的新發展

一如以往，我們繼續就有關機電安全和能源效益的各項法例、工作守則和最佳作業模式，舉辦業界簡報會、研討會、論壇及諮詢會，務求從多渠道向業界發布最新的機電安全和節能資訊，同時了解業界的需要和意見，以作參考。

Our Regulatory Services began nationwide exchanges with the Mainland as early as 2003 when we signed a co-operation agreement with the former General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ). The collaboration, which lasted for 15 years, covered joint safety promotions, experience sharing, incident alerts and talent training in E&M safety and energy efficiency. Following the integration of the AQSIQ into the General Administration of Customs of the People's Republic of China (GACC) in March 2018, the EMSD signed a new co-operation agreement with the GACC in September 2018 in Chongqing to continue the close collaboration in four areas, namely safety of household electrical appliances, gas appliances and lifts and escalators, and energy efficiency.

The Guangdong-Hong Kong-Macao Greater Bay Area (GBA) also brought us new collaboration opportunities with the Mainland. During the year, we signed several memoranda of co-operation (MoCs) with various Hong Kong and GBA organisations, including six leading entities from Hong Kong, Macao and other Mainland cities that focus on green building, energy conservation research and building services maintenance. In November 2018, we signed an MoC on Retro-commissioning of Buildings in the Guangdong-Hong Kong-Macao Greater Bay Area with the six organisations to encourage the trade to promote retro-commissioning in Hong Kong and the Mainland, share relevant knowledge and experiences, and collaborate on training.

Training has been an important focus area for us. We signed two MoCs with the Guangzhou Industry and Trade Technician College and the Guangzhou Human Resources and Social Security Bureau in June and November 2018 respectively to step up joint training for E&M talents and elevate the technical standards of the trade. We also plan to sign MoCs with the Guangdong Provincial Association for Science and Technology and the Guangdong Productivity Centre respectively to promote collaboration on innovation and technology (I&T) development in Hong Kong and Guangdong. Co-operation between Guangdong and Hong Kong in I&T talent training, as well as collaboration and exchange in resources, products and services will be beneficial to the development of our Regulatory Services and the local E&M trade. We look forward to more specific co-operation in these areas.

As collaboration between Hong Kong and Macao, the Railways Branch and Macao's Transportation Infrastructure Office held the first-ever exchange meeting during the year. The EMSD and Macao's Licensing and Inspection Department also formed a new partnership on mutual notification of unsafe household electrical and gas appliances, aiming to foster information exchange.

New Developments in Trade Communication

As in past years, we continued to organise trade briefings, seminars, forums and consultation sessions related to various legislations, codes of practice (CoPs) and best practices on E&M safety and energy efficiency. The objective was to disseminate the latest information on E&M safety and energy saving to the trade through multiple channels, and to understand their needs and opinions for our reference.

我們亦定期就業界運作的新趨勢進行針對性的宣傳和公眾教育工作。舉例來說，由於越來越多小商戶兼售拖板、萬能插蘇和小型家用電氣產品，我們已透過外展計劃主動派員接觸這類小商戶，講解出售電氣產品所須符合的法例要求。同時，為了避免氣體喉管及供電電纜受第三者損壞，我們亦已加強對工程承辦商的宣傳和教育工作，以及調派督察到工地，向前線工程人員講解實務守則修訂本的最新規定。我們亦派發以漫畫形式製作的單張和載有安全資訊的貼紙，以提醒工程人員安全施工。

為了加強升降機工程人員的安全培訓，我們與電梯業協會和職業訓練局合作，開發了一套應用虛擬實境技術的培訓教材。首個虛擬實境培訓單元已於2019年3月推出，內容涵蓋進入和離開升降機機廂頂及在升降機機廂頂工作的正確程序。此類虛擬實境培訓讓學員在安全的情況下體驗這些情境和熟習正確的安全程序。我們亦舉辦了一項以升降機和自動梯安全為主題的短片比賽，以提升前線人員的職業安全意識。比賽的頒獎典禮已於2019年3月舉行。

We regularly carry out targeted promotions and public education in response to emerging trends in the trade. For instance, as more and more small retailers are carrying electrical products such as extension units, adapters and small household electrical appliances in their product lines, we have initiated an outreach programme to connect with them and explain to them the statutory requirements for selling electrical products. Meanwhile, in order to prevent third-party damage to gas pipes and electricity supply lines, we have strengthened promotions and education for building contractors and deployed inspectors to work sites to explain to frontline workers the latest stipulations of the revised CoP. We also distributed leaflets featuring comic strips and stickers with safety tips to remind workers to always work safely.

To enhance the safety training for lift workers, we collaborated with the Lift and Escalator Contractors Association and the Vocational Training Council to develop a set of virtual reality (VR) training materials. The first VR training module, introduced in March 2019, covers the proper procedures for entering, leaving and working on the top of a lift car. It provides a safe environment in which trainees can experience these scenarios and practise the proper safety procedures. We also held a video competition with the theme of lift and escalator safety to enhance frontline workers' awareness of occupational safety. The award presentation ceremony of the competition was held in March 2019.



我們與電梯業協會和職業訓練局合作，推出一系列虛擬實境培訓教材。首個培訓單元是關於進入和離開升降機機廂頂及在升降機機廂頂工作，讓學員熟習相關的正確程序。

We collaborated with the Lift and Escalator Contractors Association and the Vocational Training Council to develop a series of VR training materials. The first module familiarises trainees with the proper procedures for entering, leaving and working on the top of a lift car.



虛擬實境培訓教材的模擬情境。

A simulated scenario in the VR training material.

提升公眾安全及節能意識

Raising Public Awareness of Safety and Energy Conservation



2018年度的「慳神大比拼」啟動典禮。「慳神大比拼」是一年一度「全民節能」運動的重要項目之一，2018年的比拼以創科為重點。

Launching ceremony of the Energy Saving Championship Scheme 2018. As one of the key programmes of the annual Energy Saving for All Campaign, the Scheme had a focus on I&T in its 2018 competition.

在能源效益及節能方面，我們繼續與環境局合辦一年一度的「全民節能」運動，而其中的「慳神有計大比拼2018」更引入了一項新的創科比賽。比賽要求參賽者提出節能和創新的解決方案，同時鼓勵業界為節能作出貢獻。「慳神有計大比拼」也新增了學生組別，讓小學、中學和大專學生參加，以鼓勵年輕人在節能和可再生能源發展方面發揮創意和想像力。

On energy efficiency and conservation, we continued to organise the annual Energy Saving for All Campaign in conjunction with the Environment Bureau. A new I&T competition was introduced in the Campaign's Energy Saving Championship Scheme 2018. Contestants were challenged to propose energy-efficient and innovative solutions while the trade was encouraged to contribute to energy conservation through the competition. A new category was also added to the Energy Saving Championship Scheme for students at primary, secondary and tertiary levels to encourage young people to express their creativity and imagination about energy conservation and renewable energy development.



機電工程署由2018年6月至2019年3月底，共舉辦和參與了31場有關上網電價計劃的研討會和簡介會，向供應商、承辦商及公眾講解有關計劃的接駁電網裝置要求。

From June 2018 to end of March 2019, the EMSD held and participated in a total of 31 seminars and briefing sessions to explain to suppliers, contractors and the public the installation requirements for grid connection under the Scheme.

為推動使用可再生能源，我們因應兩家電力公司於2018年推出的上網電價計劃，在2018年6月至2019年3月期間，為太陽能光伏系統供應商及承辦商舉辦了30多場簡報會。講者向業界闡述相關的規定和技術要點，並鼓勵業界為參加上網電價計劃的市民提供安全優質的可再生能源裝置。

目標為本的公眾教育

向市民大眾進行宣傳教育是規管服務的重要工作之一。事實證明，宣傳工作如以目標為本兼有清晰對象，往往能取得更佳成果。因此，除了舉辦研討會和論壇、派發宣傳單張、小冊子、海報，以及製作電視宣傳短片外，我們的機電安全大使團隊亦全年無間斷地前往全港幼稚園、小學、中學、大專院校、老人院和長者中心作外展探訪，為年輕人和長者舉辦講座和展覽，以深入淺出的方式向他們講解機電安全和節能的基礎知識，以收聚焦宣傳之效。

To promote renewable energy use and in response to the Feed-in Tariff (FiT) Scheme introduced by the two power companies in 2018, we held more than 30 briefing sessions between June 2018 and March 2019 for photovoltaic system suppliers and contractors. Speakers outlined the relevant regulations and important technical details to the trade and encouraged them to provide high-quality and safe renewable energy installations to members of the public who participate in the FiT Scheme.

Goal-oriented Public Education

Conducting public education and publicity is one of the key duties of our Regulatory Services. Goal-oriented publicity with clear target audiences has proven to be useful in delivering better results. Therefore, besides holding seminars and forums, distributing promotional leaflets, pamphlets and posters, as well as producing TV announcements, our team of E&M safety ambassadors runs an outreach programme to visit kindergartens, primary and secondary schools, tertiary institutions, elderly homes and elderly centres throughout the year. The safety ambassadors hold talks and exhibitions for both the young and elderly people on the basics of E&M safety and energy conservation in an easy-to-understand manner, for highly focused publicity.

提升公眾安全及節能意識

Raising Public Awareness of Safety and Energy Conservation

香港的少數族裔人口持續上升，當中包括不少外籍家庭傭工。礙於語言限制，他們未必容易接收到有關機電安全的資訊。我們已從氣體安全着手，向他們傳達信息。年內，我們製作和派發印尼文及泰文的宣傳單張，又以泰語、尼泊爾語和印尼語，透過少數族裔電台廣播頻道廣播語音信息，與外籍家庭傭工分享氣體安全貼士。我們亦繼續進行街頭外展宣傳工作，由我們的氣體安全大使於星期日走進外籍家庭傭工休假聚集的熱門地點，親身分享氣體安全貼士(包括正確使用住宅式氣體用具的建議)。此外，我們亦與以外籍家庭傭工為服務對象的團體協作，向外籍家庭傭工群體發放氣體安全資訊，使宣傳工作更到位有效。

The population of ethnic minority groups in Hong Kong continues to grow, and among them many are foreign domestic helpers. Due to language barriers, they may not have easy access to information about E&M safety. We have initiated communication with these groups, starting with gas safety. During the year, we shared gas safety tips with foreign domestic helpers by producing and distributing leaflets in Bahasa Indonesia and Thai, and broadcasting audio messages in Thai, Nepali and Bahasa Indonesia via radio channels for ethnic minority groups. We also continued to conduct outreach promotions on the street, with our gas safety ambassadors sharing gas safety tips (including advice about the correct handling of domestic gas appliances) with domestic helpers in person at their popular gathering points on Sundays. Furthermore, we collaborated with service organisations targeting foreign domestic helpers to disseminate gas safety information to their communities for greater impact.

我們的同事擔任氣體安全大使，於星期日到訪外傭休假聚集的熱門地點，講解正確使用家居氣體用具及卡式氣體爐具的知識，並派發以印尼文及泰文等印製的宣傳單張。

Our colleagues reach out to foreign domestic helpers as gas safety ambassadors on Sundays at their popular gathering places to explain the proper use of domestic gas appliances and portable cassette cookers, and distributed to them Leaflets in Bahasa Indonesian and Thai, etc.



由於香港的電視制式已更新，舊有的4:3制式電視宣傳短片去年已不再適用，由一系列16:9制式的電視宣傳短片取代，其中有一套新的短片提醒市民電氣產品需要經常妥善維修保養和安全使用。今年，我們會繼續製作更多有關機電安全和節能的電視宣傳短片。除了傳統的播放渠道外，我們亦會在YouTube等新媒體播放宣傳短片。

As TV formats in Hong Kong have been updated, old TV announcements in the 4:3 format were no longer applicable last year and replaced by a series of new TV announcements in the 16:9 format. These included announcements reminding the general public about the constant need for proper maintenance and the safe use of electrical products. This year, we will continue to produce more TV announcements about E&M safety and energy efficiency to be aired on new media channels such as YouTube, in addition to traditional broadcast channels.

我們亦繼續向升降機及自動梯的負責人宣傳，以鼓勵他們進行升降機及自動梯優化工程，從而提升升降機及自動梯的安全水平、可靠度和舒適度。在2019年3月底，由政府與市區重建局(市建局)共同推出的優化升降機資助計劃開始接受申請。就此，我們聯同市建局舉行了11場大型簡介會，向目標樓宇的業主宣傳和講解資助計劃。此外，我們亦在資助計劃推出之前，製作和播放該計劃的電視宣傳短片和電台聲帶，以及印製和派發該計劃的海報和小冊子，以確保全方位傳播有關信息。我們亦已製作一套有關優化自動梯的宣傳短片，讓相關負責人了解更多有關優化工程的好處。

We also continued to conduct promotions to Responsible Persons (RPs) of lifts and escalators to encourage the modernisation of their lifts and escalators for greater safety, reliability and comfort for users. The Lift Modernisation Subsidy Scheme (LIMSS), jointly introduced by the Government and the Urban Renewal Authority (URA), opened for application in late March 2019. In this regard, we initiated 11 large-scale briefing sessions in partnership with the URA to promote and explain the LIMSS to owners of targeted buildings. Additionally, before the implementation of the LIMSS, we produced and aired TV and radio announcements on the LIMSS, and distributed posters and pamphlets concerning the LIMSS to ensure the message reached a wide spectrum of the community. We also produced a promotional video about escalator modernisation to help RPs understand more about its benefits.



我們聯同市建局就「優化升降機資助計劃」舉行了11場大型簡介會，向目標樓宇的業主宣傳和講解計劃詳情。

We organised 11 large-scale briefing sessions in partnership with the URA to promote and explain the details of the LIMSS to owners of targeted buildings.

機電青少年大使計劃

機電青少年大使計劃於2019年邁進第十個年頭，並於4月在機電署總部大樓舉行周年聚會，有超過100名成員及家長出席。該計劃現有約10 000名成員，我們透過各種活動，例如參觀活動、工作坊和印製會員通訊，增加成員的機電安全和能源效益知識，使他們可以發揮大使的作用，讓身邊的親友更重視機電安全和節能。

年內，超過100名青少年大使和家長參觀了民航處教育徑、青馬管制區和立法會綜合大樓，親身了解在這些政府建築物和設施內所推行的機電安全和能源效益措施。我們亦計劃在今年安排青少年大使參觀中環灣仔繞道、港珠澳大橋、啟德郵輪碼頭，以及翻新後的香港藝術館和香港太空館等。

E&M Young Ambassador Programme

The E&M Young Ambassador (EMYA) Programme entered its 10th year in 2019 and held its annual gathering at the EMSD Headquarters in April, with more than 100 members and their parents attending. With about 10 000 members, the EMYA Programme offers activities such as visits, workshops and publication of newsletters to equip them with knowledge about E&M safety and energy efficiency. They can in turn act as ambassadors to encourage their friends and family members to be more aware of E&M safety and energy conservation.

During the year, more than 100 Young Ambassadors and their parents visited the Education Path at the Civil Aviation Department Headquarters, the Tsing Ma Control Area and the Legislative Council Complex to experience first-hand the E&M safety and energy efficiency measures implemented in these government buildings and facilities. We are also planning visits to such places as the Central-Wan Chai Bypass, Hong Kong-Zhuhai-Macao Bridge, Kai Tak Cruise Terminal, and the refurbished Hong Kong Museum of Art and Hong Kong Space Museum, for our Young Ambassadors this year.

提升公眾安全及節能意識

Raising Public Awareness of Safety and Energy Conservation

在機電青少年大使計劃十周年之際，我們推出了一個以盆栽為創作意念的全新標誌，並展開新一輪會員招募和推薦活動。我們亦在Facebook設立專頁，與年輕人互動。在來年，我們會推出義工計劃，包括大使培訓、星章計劃和在社區宣傳機電安全知識等，讓活動內容更豐富和有意義，有助加強機電署與青少年大使的聯繫。

Riding on the 10th anniversary of the EMYA Programme, we introduced a new logo for the scheme inspired by pot plants and began a new membership drive and referral programme. We also launched a dedicated Facebook page to interact with young people. In the coming year, we will launch an EMYA volunteer programme which includes ambassador training, a badge scheme and promotion of E&M safety knowledge in the community, etc. The enriched line-up of meaningful activities will serve to build stronger connections between the EMSD and our Young Ambassadors.

機電青少年大使計劃定期舉辦參觀活動，提高青少年對機電業的興趣。

Regular visits are organised under the EMYA Programme to enhance young people's interest in the E&M trade.



「樂齡科技顯愛心」再接再厲

繼於2017年與香港社會服務聯會(社聯)首次合作，順利舉辦「樂齡科技顯愛心」比賽後，我們於2018年再與社聯合辦該項比賽。

一如去年，比賽旨在鼓勵青少年運用創意、活用機電、科學及科技知識，設計出適用於長者家居生活的樂齡科技產品。這些產品會在社區和安老院舍使用，以改善長者及其照顧者的生活質素。2018年的「樂齡科技顯愛心」比賽設有小學、初中及高中組，共有來自43間學校的72支隊伍參賽，其中九隊勝出。社聯邀請所有參賽隊伍出席在2018年11月舉行的「樂齡科技博覽暨高峰會」，以及安排了30多場科技相關活動，讓參賽學生了解長者日常起居生活所面對的不便，從中發掘靈感，設計適合長者需要的科技產品。

Encore of Gerontech Youth Challenge

Once again, we co-organised with the Hong Kong Council of Social Service (HKCSS) the Gerontech Youth Challenge in 2018, following our first partnership in the Challenge held successfully in 2017.

As in the previous year, the Challenge aims at encouraging young people to apply their creativity and knowledge in E&M equipment, science and technology to design household products with technology features for the elderly. The products will be used by the community and elderly homes to improve the quality of life of the elderly and their carers. The Challenge in 2018 included categories for primary, junior secondary and senior secondary students. A total of 72 teams from 43 schools took part in the event, and nine were selected as winners. The HKCSS invited all teams to the Gerontech and Innovation Expo cum Summit held in November 2018 and organised more than 30 sessions of technology-related activities for students participating in the Challenge. The activities enabled them to better understand the challenges facing the elderly in daily life and to find inspiration for designing suitable technology products.



我們於2018年再與香港社會服務聯會合辦「樂齡科技顯愛心」比賽，鼓勵年青人關懷長者生活。

The Gerontech Youth Challenge was held in collaboration with the Hong Kong Council of Social Service in 2018 again to promote care for the elderly by the young generation.

參賽隊伍向評審介紹作品的設計概念。

A participating team elaborating the product design concept to the judges.

三組的金獎作品，分別為小學組的「智精齡」、初中組的「長者智慧健康系統」，以及高中組的「iGeri高背椅電動輔助工具及管理系統」。「智精齡」是個智能探測器，能在長者出門前檢查是否已帶齊鑰匙、錢包及手提電話等重要物品，亦能定時監察廚房有沒有關掉爐火，讓獨居長者生活更安全。「長者智慧健康系統」可讓長者在做完運動後，檢查自己的心跳脈搏、血壓、血氧濃度指數及運動時數，是監察身體狀況的有用工具。至於「iGeri高背椅電動輔助工具及管理系統」，則是一台迷你電動叉式起重裝置，其設計靈感來自物流業用於搬動重物的叉式起重車，能協助安老院舍護理人員輕易地移動體積龐大的高背椅。

“Smart Bell”, “Smart Healthcheck System”, and “iGeri Power-assisted Tool and Management System” won the Gold Award in the primary, junior secondary and senior secondary school categories respectively. The “Smart Bell” is a smart detector designed to ensure the safety of the elderly who live alone. The device can check if its user has taken vital items, such as keys, wallets, mobile phones, etc. before leaving home. It can also periodically check if the stove has been turned off to ensure home safety. The “Smart Healthcheck System”, which checks elderly people’s heart rate, blood pressure, blood oxygen level and workout duration after they have exercised, is a useful tool to monitor the user’s physical condition. The “iGeri Power-assisted Tool and Management System”, inspired by forklift trucks used for heavy lifting in the logistics industry, is a mini electric forklift device that can assist carers in elderly homes to move bulky high-back Geri chairs with ease.

提升公眾安全及節能意識

Raising Public Awareness of Safety and Energy Conservation

傳媒聚會

機電署十分重視傳媒關係，除了主動發放部門資訊和積極回應傳媒的日常查詢，確保部門工作高度透明外，亦每年舉辦傳媒聚會，讓新聞界更深入了解部門的最新動向。

最近一次傳媒聚會於2018年12月舉行，有20多個傳媒機構派員出席，主題是「同心共創 智慧之都」，由署長聯同高層管理人員主持，並帶領傳媒朋友參觀機電署總部大樓內新落成的「互動學習中心」和「機電創科專區」。參觀活動旨在展示機電署如何推動機電設施數碼化，以支援政府的智慧城市發展。機電署亦會在內部運作上更廣泛採用科技，例如使用虛擬實境和「洞穴式自動虛擬環境」系統進行員工培訓。我們計劃與所有持份者（包括政府部門和機電業界）緊密合作，迎接未來的機遇。

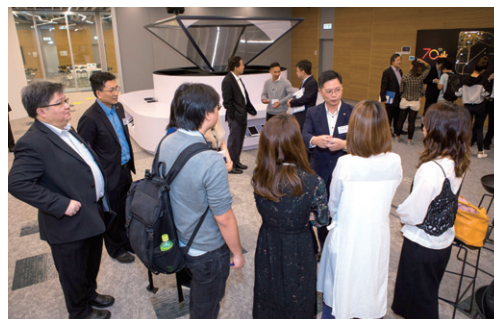
Media Gathering

The EMSD takes media relations seriously. In addition to proactively sharing departmental information with the media and responding to media enquiries so as to ensure a high degree of transparency about our work, we also organise an annual media gathering to enable the press to better understand our latest developments.

The latest media gathering was held in December 2018, attended by representatives from more than 20 media organisations. Themed “Co-creating a Smart City”, the event was hosted by our Director and senior management who took the media on a tour of our new Interactive Learning Centre and the E&M InnoZone at the EMSD Headquarters. The tour aimed to showcase our initiatives in promoting digitisation of E&M facilities in support of the Government’s smart city development. The EMSD will also adopt technology more extensively for internal operations, such as using VR and the Cave Automatic Virtual Environment system to conduct staff training. We plan to work closely with all stakeholders, from government departments to the E&M trade, to embrace future opportunities.

署長聯同高層管理人員於2018年12月舉行傳媒聚會，展示部門如何推動機電設施數碼化，以支援政府的智慧城市發展。

At the media gathering in December 2018, our Director and senior management showcased the EMSD’s initiatives in promoting the digitalisation of E&M facilities in support of the Government’s smart city development.



來自20多家傳媒機構的記者和編輯出席是次聚會，並參觀機電署總部大樓內新落成的「互動學習中心」和「機電創科專區」。

Journalists and editors from more than 20 media organisations attended the event and took on a tour of our new Interactive Learning Centre and the E&M InnoZone at the EMSD Headquarters.

運用虛擬實境技術 優化升降機人才培訓 Using VR Technology to Strengthen Lift Talent Training

機電署與職業訓練局（職訓局）及機電業界合作，自2017年年底開始籌劃和設計運用虛擬實境技術的升降機培訓項目。參與統籌工作的一般法例部高級工程師賴震暉先生認為，這次難得的合作會為整個業界帶來正面影響，不但可加強培訓行業人才，亦可吸引更多年青人了解和投身機電行業。

The EMSD has collaborated with the Vocational Training Council (VTC) and the E&M trade to plan and design lift training programmes using virtual reality (VR) technology since the end of 2017. Mr Lai Chun-fai, Alex, Senior Engineer at the General Legislation Division who was involved in co-ordinating this initiative, believed that the collaboration would have a positive impact on the entire industry. Not only would this strengthen talent training for the trade, but also attract more youngsters to learn about and join the E&M trade.



機電署、職訓局及升降機業界一直抱有共同目標，希望學徒以至在職升降機工程人員能在安全環境中體驗各種升降機情境、熟習工作安全要點，以及以正確方法應付突發情況，從而提升他們的技術水平及安全意識。

以虛擬實境技術進行升降機工作安全培訓的概念於2017年年底提出，經三方合作，至2018年年中設定八個培訓單元的內容。項目由機電署統籌，職訓局協助編寫程式，並由業界代表分享實戰經驗和意見。

三方一直緊密合作，挑選最令使用者印象深刻的情境及情況，同時取得共識，設定適用於業界各公司的操作程序。這套訓練單元能讓職訓局學員或業界工程人員在高度像真的模擬情境中，體驗安全進出升降機機廂頂的工作程序，甚至應付突發事故及機件故障的情況。

震暉指：「有別於傳統的培訓方式，今次引入虛擬實境技術作培訓，不但增加年青學員的學習興趣，更能突破傳統培訓的局限，讓學員在安全的情況下，透過完成不同情境的任務學習解決問題的方法，加深了解各項工序所需注意的地方。」

升降機工作安全虛擬實境培訓課程的擬備工作已於2019年3月完成，並已交付職訓局及業界作培訓用途。



The EMSD, the VTC and the lift trade have always shared the common goal of creating a safe environment for trainees and existing lift workers to experience various lift scenarios, familiarise themselves with the keys to work safety and deal with emergency situations in the right way, thereby enhancing their technical capability and safety awareness.

The idea of using VR technology to conduct training in respect of lift work safety was proposed in late 2017. Through collaboration of the three parties, the contents of the eight training modules were set in mid-2018. The project was co-ordinated by the EMSD, while the VTC assisted in writing programmes, and trade representatives shared their practical experience and suggestions.

The three parties have been working closely together to select scenarios and situations that are most impressive to users. They have also reached a consensus to set operating procedures that are commonly applicable to companies in the trade. This set of training modules enables VTC trainees and trade workers to experience the safe working procedures of entering and leaving the top of a lift car, or even the situations of dealing with sudden incidents and equipment failure in highly realistic simulated settings.

“Unlike conventional training methods, the introduction of VR technology for training not only enhances young trainees’ interest in learning, but also breaks the limitations of conventional training, allowing them to figure out ways to solve the problems and better grasp the details of various work processes by completing tasks under different scenarios in a safe environment,” Alex said.

The preparation for the VR lift work safety training programme was completed in March 2019. The modules were delivered to the VTC and the trade for training purposes.