IFMA Hong Kong Chapter Conference – Integrate 2024

"Navigating the Path to Sustainable Future"

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Smart Facility Management for Greener Future

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Greetings

Good afternoon, Mr Raymond KOH (President of IFMA), Mr Sidney SO (Vice President of Conference Chair), distinguished guests, ladies and gentlemen. It is indeed my great pleasure to join, to share and to learn the latest development on smart facility management from experts gathered here today. Together, we can make a significant contribution on combating climate change through the innovative adoption of technologies for buildings in Hong Kong.

Effect of climate change became significant

We have a proverb in Chinese: "未食五月粽，寒衣不入櫳". In English it means "Until it is time to eat Dragon Boat Festival's rice dumplings, don't put away your warm clothes". However, in Hong Kong, we have just experienced the hottest temperature in March of this year, hitting the record high of 31.5 degree Celsius for the month since records beginning in 1884. We also experienced the second hottest year on record in 2023 with annual mean temperature reaching 24.5 degrees Celsius. The Director of the Hong Kong Observatory said "The city will likely see another hot year". So as to say, I believe all of you have already put away your warm clothes long before the coming Dragon Boat Festival. With the effect of climate change became more significant, it is high time for us to action against the impacts through proactive decarbonisation measures.

Smart facility management for greener future

Hong Kong has set our target to achieve carbon neutrality before 2050. One of the decarbonisation strategies under our Climate Action Plan 2050 is to drive "Energy Saving and Green Buildings" and we targeted to reduce the electricity consumption in commercial buildings by 15 to 20% by 2035 compared with the operational conditions of 2015. As you may know, our stock of over forty-thousands number of buildings account

for about 90% of the Hong Kong's total electricity consumption, and attributed to over 50% of our carbon emissions. Managing and operating these buildings for greener performance is a great deal. So as to say, we must continue to work on smart facility management to identify energy saving opportunities and implement practical measures to optimize energy efficiency of buildings for our greener future.

Integrating ESG into FM operations

I realized that the IFMA already has the direction for sustainable facility management practices, that is to integrate the Environmental, Social and Governance into facility management operations. Nowadays building owners are emphasizing ESG considerations when selecting service providers. Facility management firms demonstrating commitment to sustainability and social responsibility may win more contracts and retain clients while helping our world for decarbonisation. This facility management practice realizing better ESG performance is a win-win strategy between building owners and facility management companies in co-creating our greener future.

Digitalization is one of the effective means for smart facility management

With the technology advancement nowadays, exercising smart facility management to improve the ESG performance is more convenient than ever. The use of wireless IoT technologies can equip existing buildings with network of sensors for smart facility management without substantive hard wiring works. For example, we can simply install timers in some lighting circuits to switch off lighting in sections automatically. We can also replace some light fittings with sensor control in back of house areas for energy saving while maintaining the minimum illuminance for safety. Adding standalone IoT sensors to monitor occupancy and equipment in building can also help to identify energy saving opportunities during off peak hours. Investing in these simple, digital equipment for smart facility management will have favourable payback period, in turns helping for the sustainable operation of the buildings and improve the ESG performance. Thus, digitalization is one of the effective means in realizing smart facility management, and even pave way for the further transformation to smart and green building with intelligence.

EMSD exercises E&M digitalization

We realized the importance of digitalization in smart facility management for greener

future. In EMSD, we have been exercising the E&M digitalization through IoT network and connect the field equipment to centralized server for data collection and analytics. These collected data are useful in realizing smart facility management including automatic fault detection and diagnosis, energy analysis and energy optimization. Compared with the traditional manual data collection process, these changes had successfully transformed local data silos to data driven facility management, and helped us to visualize and analyse the E&M facilities for greener performance.

Digital logbook for lifts and escalators

To help the trade in realizing the benefits of digitalization, the EMSD has developed and launched the digital logbook for lifts and escalators in 2022. Through the mobile app of the digital logbook system, works details for lifts and escalators can be uploaded to the cloud system with ease. The workers, contractors, facility managers and EMSD can access the paperless maintenance records online anytime and anywhere, saving significant time and resources in managing the maintenance of lift and escalator in buildings. The paperless operation not only enhance work efficiency but also contributes to environmental sustainability by minimizing carbon footprints.

Solar Energy Performance Management System

Another smart facility management tool developed by EMSD is the "Integrated Solar Energy Management System". It is a non-intrusive and automated photovoltaic system analysis toolkit. The system collects various operational data with IoT sensors for solar system performance analysis and fault detection. It could tell the facility manager whether the photovoltaic panels are performing efficiently. By using the smart tool, we can greatly reduce the manpower required for frequent manual checking of the photovoltaic panels and pop up earlier alert for maintenance to maximize the electricity generation efficiency.

The rise of artificial intelligence

The rapid advancement of computing technology has provided opportunity in applying artificial intelligence for smart facility management. The use of IoT sensors and devices to monitor vibration, temperature and security have been on the scene for quite a while now, but the introduction of artificial intelligence means we can do more by analysing

the collected data, such as energy optimization and predictive maintenance. AI can help handle data that is too much for the average person to look at and provide analytics based on parameters that the facility manager might be interested in, such as trends, patterns and seasonal factors. It is the new buzzword that helps facility managers drive down operation costs of assets and enhance the ESG performance of buildings.

Example of AI smart facility management – ChillStream

As one of the examples, implementing AI energy management for chiller plant will be exceptionally effective in reducing energy consumption in a building. EMSD recently developed a homemade AI chiller optimization platform called ChillStream. The system is able to predict the cooling load demand in high accuracy, and determine the most energy efficient operating sequences and chilled water supply temperature set point at a 5 minutes interval. The optimal operating sequence of the chiller plant and control set points are then send back to the building for automatic implementation. The cloud-based analytics-as-a-service platform can also pave way for large scale deployment to more buildings for greener performances.

Achievement of ChillStream

Through round-the-clock trial in an existing laboratory building in Hong Kong, ChillStream was proven to be capable to achieve an overall energy saving up to 5% at this stage. I imagine ChillStream as a virtual energy saving companion which never gets tired, and help to unlock opportunities of applying artificial intelligence for smart facility management to make buildings greener. With the continuous advancements and evolution of technologies, equipping buildings with smart features such as IoT sensors, AI-based energy optimization and intelligent fault detection will become the new normal.

I&T empowers smart facility management

The innovative adoption of technologies would contribute significantly for smart facility management. From simply digitalizing assets to the application of data analytics by artificial intelligence, the integration of technologies into smart facility management can offer automation and valuable insights to optimize facility operations, cutting cost and enhance the ESG performance of buildings. EMSD, as the HKSAR Government's innovation facilitator, actively promotes I&T by launching the "E&M InnoPortal" in 2018.

The portal pairs up I&T wishes from the government departments and public bodies with potential I&T service providers. Today, there are more than five hundred I&T wishes initiated, twelve hundred I&T solutions offered and two hundred trial projects conducted, which cover elements of smart facility management for enhancing the green performance of buildings.

Closing

Smart facility management is brimming with possibilities. It is expected to characterize by the innovative adoption of technologies. The transformation from traditional manual facility management practice to data-driven automation workflow will enhance the efficiency of building operation, leading to better ESG performance and contribute to a greener future. I'm definitely looking for data to work harder and technology to do more than it did before. Smart facility management is one of the key movements toward carbon neutrality and our collaboration is the key to make this successful. I would like to solicit your professional support in pioneering the transformation of smart facility management and co-create our greener future. Thank you.

(approx. 1,450 words, 15 mins)