HKIE Building Services Division, ASHRAE Hong Kong Chapter, CIBSE Hong Kong Branch, Department of Building Services Engineering of the Hong Kong Polytechnic University

Joint Symposium 2017 cum PolyU 80th Anniversary

Smart Journey towards Green Infinity

Opening Address by Ir Alfred SIT, JP, Director of Electrical & Mechanical Services

Good morning Chairman Yeung (Chairman of Organizing Committee), Chairman FU (Chairman of HKIE Building Services Division), President SUNG (President of ASHRAE Hong Kong Chapter), Ir. CHOW (Chair of CIBSE Hong Kong Branch), Prof. USMANI (Head of Department of Building Services Engineering), distinguished guests, ladies and gentlemen.

It is my great honour to speak to you here. First of all, I would like to take this opportunity to extend my sincere congratulations on the 80th anniversary of The Hong Kong Polytechnic University. Numerous talented individuals are nurtured in the great variety of professions which have contributed tremendously to the prosperity and continuous development of Hong Kong. I am pleased that PolyU has gone through eight decades of a proud and remarkable journey.

This long journey reminded me that, humans have experienced an evolutionary journey through aeons of time. 158 years ago today, on 24th November 1859, the masterpiece "On the Origin of Species" was published by Charles Darwin. It is considered to be the foundation of evolutionary biology. However, during our long journey of evolution, somehow, human beings have not been kind to our planet. The history of the scientific discovery of climate change began in the early 19th century; while global cooperation was initiated in 1970s. A series of national conference and cooperative actions subsequently took place to deal with this objective. Nevertheless, we are still searching for different solutions for combating the climate change. What's our next step? Do we need to walk back to ancient life? Like eating insects?

Some researchers said eating insects may be one of the solutions. Insects actually have high fat, protein, vitamin, fibre and mineral content that is often comparable to fish or livestock. They have smaller carbon footprints since they are more efficient at converting feed into body mass. For example, beef has a carbon footprint about 6 to 13

times more than mealworms per kilogram of protein. Perhaps, it is too far for us to accept the new diet. Don't worry. We still have an alternative. Since November 2016, the Paris Agreement charted a new course in the global effort to combat climate change. Its central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise below 2°C in this century above the pre-industrial levels. Being a member of the global community, we have been working quite well in this area. Hong Kong is currently the lowest energy intensity user among APEC economies. This may be the result of our service-oriented economy with virtually no heavy industry, but our efforts on energy saving should never be underrated. Hong Kong's actual final energy intensity had already been reduced by more than 20% during the last ten years using 2005 as the base year. However, there is no reason for complacency. We can still do more in combating climate change.

In January this year, the Government published the Hong Kong's Climate Action Plan 2030+ and has set an ambitious target of reducing carbon intensity by 65% to 70% by 2030, which is a comparatively aggressive pledge among the economies. To achieve this goal, the topic of "Climate Change and Energy" is being highlighted again as one of the major issues in the Policy Address 2017. The Government will drive Hong Kong's low carbon transformation towards our green infinity by taking multi-pronged approach. These measures include: adopting cleaner fuels, promoting territory‑wide energy savings, green commuting and reducing waste etc.

But today I would like to focus on the energy savings from buildings, because it accounts for about 90% of the Hong Kong's electricity consumption, which contributed to 60% of Hong Kong's total carbon emission. I believe BS professionals can contribute and make big differences in this aspect.

Starting from 2009, we have our Mandatory Energy Efficiency Labelling Scheme (MEELS) to regulate the energy consumption of plug-in appliances, which allows consumers to choose and buy more energy efficient products. There are more than 5 000 products registered under MEELS. On the building side, since 2012, we have our Building Energy Efficiency Ordinance to govern the efficiency of built-in equipment and mandate the energy audit of buildings. The cumulative electricity saving arising from the abovementioned initiatives would reach 8 billion kWh by 2025, which is equivalent to 5.6 million tons of carbon emission.

Further, we have explored the energy saving potentials in retrofitting the existing building installations too. In Hong Kong, over 65% of existing buildings were built more than 25 years ago. Global experience shows that unnecessary energy losses can still be identified during retro-commissioning even on buildings that are just a few years old. We can see plenty of room in energy saving if we can tackle the degrading efficiency of building service installations. Therefore, in 2016, EMSD initiated 6 pilot projects of retro-commissioning in government building. To enhance the comprehensibility and coverage, we partnered with Hong Kong Green Building Council (HKGBC) to extend the scheme in private property sector as well. This year, we published the first technical guidelines on retro-commissioning to share the lessons learnt and also proactively share our experiences in different seminars such as the "Code and Guidance" sub-session in the conference this morning.

Apart from the efforts we have made, engaging the industry is also addressed in our policy. The 4Ts partnership with public sector bodies, as well as with the private property sector will also help to stimulate the energy efficiency market in the immediate years ahead. In the new Scheme of Control Agreements (SCA) signed with two power companies, we would allow more funds for retro-commissioning and building-based smart technologies for both commercial and non-commercial buildings. Next year, the details of Feed-in-Tariff and RE Certificate under the new SCA will also be announced, so as to encourage the developers and community to invest more in the distributed renewable energy system.

As mentioned in the Policy Address, the Government will launch a $1.5 billion Innovation and Technology Fund for Better Living to subsidize innovation and technology projects which will bring more convenient, more comfortable and green livelihood to the public. The energy-saving targets will be achieved with minimum fuss and maximum efficiency with technology breakthrough. In the past decade, the government has been a pioneer in using new technologies and supporting renewable energy. For instance, the first two oil-free chillers were introduced to Hong Kong by us at Government House and EMSD HQ back in Year 2007. Up to now, we have already installed 82 numbers of oil-free chillers in government premises which save more than 18 million kWh annually. Besides, it is not just buildings that need reworking. With a broader regional perspective, we have adopted district-wide green technology like the District Cooling System (DCS) in Kowloon East to reduce energy consumption. The DCS is an energy-efficient air-conditioning system which consumes

35 percent less electricity compared to traditional air-cooled air-conditioning systems. Upon completion of the whole project, the estimated annual saving in electricity is about 85 million kWh. To extend its benefit, we are exploring the feasibility of introducing more DCSs in other new development areas in Hong Kong Boundary Crossing Facilities Island, Tung Chung New Town Extension and Kwu Tung North Development.

I notice that the four sub-themes of today's symposium:- Code and Guidance, Research and Innovations, Design and Applications and Post-occupancy Initiatives do perfectly tally with the strategies I mentioned earlier on our energy saving initiatives. For those overseas visitors I would like to introduce to you a Chinese proverb "英雄所見略同" which means "Great minds think alike". As such, it appears that we share the same vision and adopt similar approaches in combating climate change.

Climate change is a significant global challenge. No individuals can solve this problem alone. Nevertheless, no matter how strong the policy or how advanced the technology is, our green journey cannot go on without your effort. Perhaps we can make reference to our experience in dealing with ozone depletion since the adoption of the Montreal Protocol in 1987. With the joint international efforts, in particular the BS and AC professionals, refrigerants that containing CFCs and HCFCs had been phased out. Although it was regarded as an impossible mission, the ozone hole over Antarctica is now on the road to recovery. The maximum daily ozone hole area measured by NASA in 2017 is significantly improved when comparing with that in year 2000. We hope our journey with the Paris Agreement can lead us to reach "carbon neutrality" as successful as the Montreal Protocol and there is no need for us to adopt the bugs and worms diet in future. Finally, I would like to solicit your support in this climate change battle. Please join our 4T journey, which is to set "Timelines" and "Targets", have "Transparent" metrics to track results and work smart "Together" in our journey towards green infinity.

Thank you.

24 November 2017