香港空調及冷凍商會有限公司
THE HONG KONG AIR CONDITIONING AND REFRIGERATION ASSOCIATION LIMITED
WINTER 2016
Newsletter 會員通訊

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Awarded by The Hong Kong Council of Social Service 香港社會服務聯會頒發

Contents

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Message from the President

Ir C. F. Wu
President

As we all know, Hong Kong construction industry has exceptional reputation in rapid construction of quality skyscrapers and infrastructures. The knowledge and skill such as project management, construction method & techniques, efficiency of project delivery and client satisfaction have led Hong Kong a regional leader.

Over the years, the Hong Kong Government has been playing an important role in driving the construction industry forward. Capital Works Expenditure has long been the Government's commitment. The estimated expenditure for 2016-17 is HK$78.5 billion which is 6.4% higher than the HK$73.8 billion for 2015-16. With numerous major projects launched, the estimated annual expenditure for the next few years will remain at high level, and will likely reach to HK$100 billion. We are, however, concerned about the LegCo filibuster action, resulting in a mounting backlog of funding proposals and delayed commencement for public works. Initial project plan and design have been interrupted, and university graduates are facing more difficulties in securing employment than before. A healthy development of the industry relies on sustainable and stable volume of works. Thus, we appeal our members to support "no filibuster" for avoiding any further negative impact to the industry and livelihood of practitioners.

The Development Bureau has completed public consultations on a new and significant legislation for the construction industry known as Security of Payment Legislation (SOPL). Our members anticipate having this SOPL for encouraging fair payment, rapid dispute resolution and increasing in cash flow.

Hong Kong is renowned as one of the freest economies in the world with deep roots of competition established while the Competition Ordinance has come into full force since December 2015 to allow all parties to compete equally. Effective competition benefits all consumers including our members by having better prices, more choices and higher quality of products and services.

Workers Registration is the major manpower policy of the construction industry. The Construction Workers Registration Ordinance (CWRO) ensures the quality of construction works, raise workers' career status, reduce employment disputes, and combat illegal employment to protect the employment opportunity of local workers. The "Construction Workers Registration (Amendment) Ordinance 2014" commenced on 1 April 2015, under which the requirement of "Designated workers for designated skills" will begin on 1 April 2017. By then, workers must register as Registered Skilled or Semi-skilled Workers of designated trade divisions to carry out the relevant works at site. Workers will be required to take trade tests to register as skilled workers. Though, senior workers possessing ten or more years of skilled work experience were eligible to directly register as skilled workers through the "Senior Workers Registration Arrangement" without taking any trade test by the end of September 2016.

ACRA has been supporting HKFEMC in conducting survey on Estimation of Shortage of E&M Workers and Demand of E&M Apprentice for providing data to government and other stakeholders for planning related training and support in the industry. As well, ACRA actively fosters talents with the support of our members. We have various trainings provided to students & candidates under different schemes organized by CIC, VTC and EMSD in which most of our supporting members could enjoy subsidy from the associated organizing bodies.

Concerns about climate change have led to worldwide efforts to reduce greenhouse gas emissions. An outcome was the attention to the global warming potential (GWP) of hydrofluorocarbon (HFC) refrigerants. Alternative refrigerants are under development while a few is already on the market, include those classified as being mildly flammable; they can be used safely with proper handling, servicing and storage. ACRA has set up a Taskforce promoting the new refrigerant from closely liaising with Government Departments for regulating measures, training of workers and identification of working time frame with stakeholders, etc.

Lastly, construction cost in Hong Kong is ranked the 3rd highest in the world, following New York and London. We need enhanced construction process that suits our environment. The Chief Executive Policy addresses about "re-industrialization", which hopefully, they can be the catalyst to promote high-value-added technology industry and manufacturing process. We look forward to having these developments and opportunities to support our industry.

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Momentous Achievements and Commitment

Since 1961, the Hong Kong Air Conditioning and Refrigeration Association (ACRA) has been dedicated to serve the air conditioning and refrigeration industry by promoting cohesiveness within the industry, developing a better working environment and acting as a communication platform between members, government departments and related organizations for the well-being of the industry. ACRA is mounting every year with increasing size in corporate membership, comprising of over 170 companies from across the industry in which their collective expertise makes ACRA's work possible. Great appreciation shall be sent to the past presidents, council members, and subcommittees for the tremendous exertion devoted to the effective operation of ACRA. As a significant milestone witnessing our 55th Anniversary this year in 2016, it is pleased to take this special opportunity to revisit the accomplishments of ACRA over the past 5 years.

Legislation

By means of the Government conducts public engagement in lawmaking through consultations, ACRA works actively with various government departments for the associated legislative process.

Global warming is adversely affecting the living environment of the whole world. As a part of measures taken to promote reduction of environmental impacts, ACRA closely liaised with Electrical and Mechanical Services Department (EMSD) for drafting of the mandatory Building Energy Codes (BEC) 2015, which it is now enforced mandatorily.

The industry has been calling for legislative framework to abandon the unfair "pay when paid" or "Pay if paid" practice from the Employer / Main Contractor which is the origin of financial problem facing by subcontractors and suppliers. ACRA participated in Construction Industry Council's (CIC) taskforce for the Security of Payment Legislation (SOPL) to examine the magnitude of payment problems in the industry and to recommend measures to tackle them.

Industry Standards

Solid foundation of ACRA is supported by our members' expertise. ACRA was invited by various government departments or semi-government bodies in developing standards for the industry.

The Development Bureau is going to launch the 2017 Edition of General Specification for Air-Conditioning, Refrigeration, Ventilation and Central Monitoring & Control System Installation. As such, ACRA has been liaising with Architectural Services Department (ArchSD) to incorporate the latest information of market development and practice where the specification serves as a core guideline for up-to-date practical requirement for government building as well as private development.

Long liaison with Fire Services Department (FSD) was held regarding the use of Pre-insulated Duct in ventilation system, which enables saving on both manpower and installation time. ACRA is glad that FSD has accepted the use of Pre-insulated Duct under Building Regulation Chapter 123J.

ACRA also provides the latest market information and overseas experience for application of new eco-friendly refrigerant through continuous meetings with EMSD and other organizations. For this matter, the ACRA Taskforce of New Refrigerant was formed to work with those parties intended for the development of regulating measures, training of workers and identification of working time frame with stakeholders, etc.

Moreover, ACRA participated in the development of technical standard regarding green product labelling scheme to air conditioning products such as Chiller, VRF, Cooling Tower, Pump, AHU and FCU with the Hong Kong Green Building Council (HKGBC).

Besides local technical visits, ACRA has organized technical visits in overseas, such as Beijing, Shanghai, and Bangkok etc. The visit has become one of the main activities for members to enrich their expertise as well as sharing their skills, knowledge and experience with professionals in the world.

Foster Talent and Work Force

Current situation of labour shortage causes much negative effect on the industry, such as construction project delay and high construction cost etc. Hence, attracting new blood to the industry has become one of the key tasks of ACRA which works with CIC and other stakeholders to conduct survey with members and provide figures for industry manpower planning.

It is ACRA's objective to increase opportunities for young engineers to gain practical skills and knowledge. There were numerous trainings organized by ACRA or jointly with other organizations/institutions such as Vocational Training Council (VTC), The Hong Kong Federation of Electrical and Mechanical Contractors (HKFEMC), ASHRAE Hong Kong Chapter (ASHRAE), The Hong Kong Institution of Engineers (HKIE), The Chartered Institution of Building Services Engineers (CIBSE), and Building Services Operation and Maintenance Executives Society (BSOMES) for the young engineers to gain knowledge from experienced industries practitioners. In 2015, ACRA jointly organized with ASHRAE / BSOMES / CIBSE / HKIE for the "Joint Comprehensive Certificate Course on HVAC&R System in Buildings" which was remarked as a great success with the highest numbers of applicants ever, recording an average of approx. 300 attendees for each session.

At the same time, ACRA supports various training schemes organized by CIC, EMSD and VTC by offering job attachment opportunities to students or new comers.

Cohesiveness and Social Responsibility

In addition to liaison with government departments, ACRA also organizes various recreation events, such as golf, bowling, badminton, table tennis etc., which allows our members to networking in a relaxed setting.

Building a better world is undoubtedly the want of most people, thus, ACRA promotes to make contributions for well-being of the community that we live in. A rewarding life is one in which having the capability to serve others, ACRA has been standing in the forefront with members engaging in a wide variety of charity events for elderlies, low-income families, children etc. with collaboration of charity organizations. Members are exceptionally active and enthusiastic in supporting by volunteering and supplying gifts. Of all the activities, they were ended in success with pleased smiles, joyfulness and appreciation.

Our Commitment

ACRA strives to support the business of the air conditioning and refrigeration industry, and is evolving to an organization meeting the demands of today's industry. While challenges are lying ahead, ACRA will always be committed to a brighter and more sustainable future — not only for our members, but for the entire industry.

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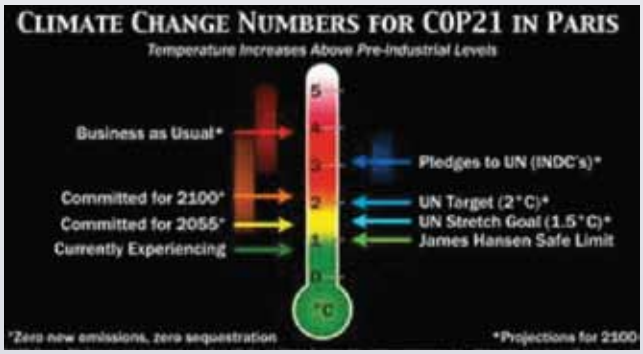
Combating Climate Change

By: **Ir Dr. K. L. Chan**

The United Nations Conference on Climate Change (Paris, France, Nov. 30-Dec. 11, 2015), also known as COP21, is the critical culmination of decades of negotiations to try and limit the increase in global temperature rise. The acronym "COP21" stands for 21st session of the "Conference of the Parties to the 1992 United Nations Framework Convention on Climate Change (UNFCCC)," referring to the landmark 1992 conference in Rio de Janeiro, Brazil, which was also known as the Earth Summit.

In December 2015, more than 100 world leaders -- including U.S. President Barack Obama – attended the two weeks conference to agree on a universal agreement on climate change. This was a historic opportunity for all generations to set a sustainable future. Participants in this high-level event of COP21 listened and learnt from leaders and experts; networked with business financiers and policy makers; and showcased their solution to a VIP audience and global media. The goal of which is to come away with a legally binding agreement on limiting emissions that cause global warming.

The agreement is endorsed by 195 countries with a commitment to keep the average global temperature rise to "well below" 2 Deg C when compared pre-industrial levels. Hong Kong will be bound by the Paris Agreement when it is signed by the Chinese Government. Governments will be assessing every five years what further policies and actions they might be able to adopt.



The Paris Agreement calls for everyone's involvement. It also encourages governments, cities, industries and businesses to set timelines and targets with appropriate data transparency and to work together climate readiness. The "4Ts" – Timeline, Target, Transparency and Together is useful reminder for everyone.

The Hong Kong Government is now considering a local target for 2030. A new inter-departmental committee, chaired by the CS, will be formed to steer and coordinate the government's climate change work. The carbon reduction opportunities in HK include reducing or even eliminating coal-fired electricity generation and through much greater energy saving efforts especially in buildings. Energy sector leaders and leaders of the building sector are invited as they are key partners in improving energy efficiency in Hong Kong. The Government wishes to work closely with these groups of important stakeholders going forward using "The 4Ts" as a framework for discussion. Existing buildings, in particular, have huge potential in offering energy savings.

There are approximately 43,000 nos. of existing buildings in Hong Kong which is account for the majority of our building stocks. The key is whether these buildings can be energy efficient and be able to adapt, mitigate and be resilient to climate change. There are immense potential and opportunity when these existing buildings come to retrofitting, recommissioning, revitalization, upgrading and renovation.

In the market, there are many good and practical ideas and concept that can effectively combat climate change. What is needed is action to turn ideas and concepts into action plans. In addition, there must be supportive government policies to lead and drive the industries and the community to turn the concepts into action. It is evident that the response of the industries to the Government policies is always direct and positive. The successful promotion of new

green buildings is made possible by the new Government policy implemented through PNAP151 since 2011. The Government should consider extending the successful experience from new buildings to existing buildings.

A mechanism or coordinating committee is required to oversee the implementation of such actions and to deliver the results as pledged. ACRA is prepared to play supporting roles in collaboration with the Government and all the stakeholders on initiatives and actions that are conductive to combating climate change and the promotion of sustainability of our environment.

In addition, the carbon Emissions Trading System (ETS), also known as cap-and-trade, is a policy tool that is adopted in some countries as a means to reduce its carbon emissions. Currently, the European Union (EU) ETS is the largest system in force, although China's upcoming national ETS is expected to overtake it in 2017. In view of these, what role should Hong Kong take in global climate action, in particular carbon emissions trading? As such, the HKSAR government should also review and formulate policy recommendations on this issue.

For practitioners in HVAC&R industry, we are important to drive the actual reduction on electricity consumption which can indirectly help to combat the climate change because air-conditioning consumes major part of the electricity consumption of a building. Everybody knows that using more energy efficient products will improve the air-conditioning performance. This is the easier way to do but it stays at the Equipment Level. With chiller plant control interfaced with building management system, the air-conditioning equipment will be performed at optimized conditions which bring the energy saving to the System Level. Nowadays, other smart services are available to improve operational performance of chiller plant, properties and facilities leading to significant maintenance and energy savings. It provides the continuous real time energy management service at Energy and Facility Management Level.

There is kind of cloud based data analytics software platform which is running as a software-as-a-service (SaaS), the platform algorithm provides customers and Energy Service Companies (ESCOs) with solid decision-making support and thus eliminates their concerns on energy saving uncertainty. Via a user friendly dashboard, the platform works with a buildings control system (BMS) to present to building owners and operators a selection of smart services to assist in their day to day operations, leading to significant savings on maintenance, labor costs and energy output thanks to preventive maintenance.

The most effective way of combating climate change is the change in our culture and behavior. Instead of being well dressed at most business occasions, we should change our dress code to smart attire which is similar to the National attire of Singapore/Malaysia. The room temperature set point will always be kept from 24 to 26 Deg C. Applying the carbon dioxide sensor and with VSD or inverter in place, the efficiency of air-conditioning equipment will be improved at part load conditions. Last but not least, let us turn off the equipment before leaving the room. These can be easily done by everyone in every day. Of course, at the city level, we can do more "Greening" for the city and transportation and "Turning Waste-to-Resources" so as to reduce the carbon emission and improve external environmental qualities.

At the occasion of 55th Anniversary of ACRA, we would like to seek for everyone's effort and contribution to combat climate change as much as you can. This is not the problem for our next generation anymore, the problems caused by climate change becomes more severe and destructive in coming decades. For your next generation and yourselves, we urge you to act now.

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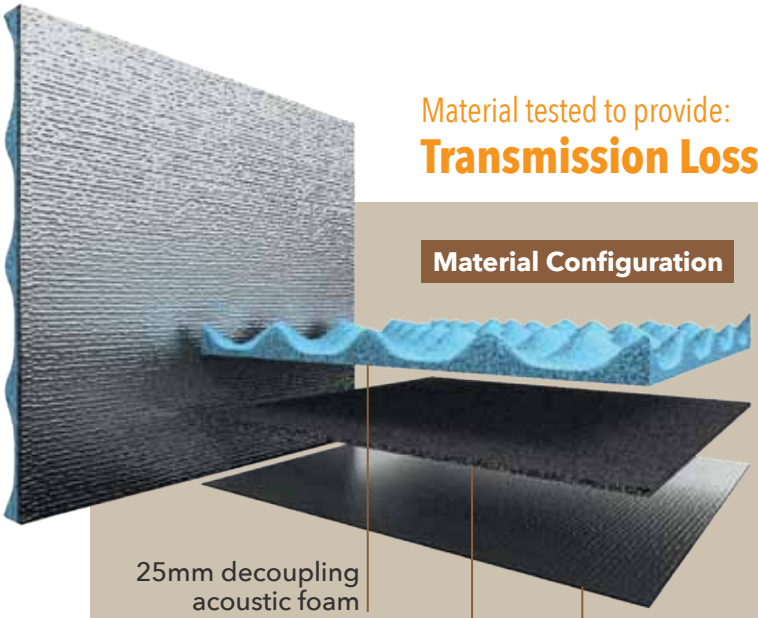

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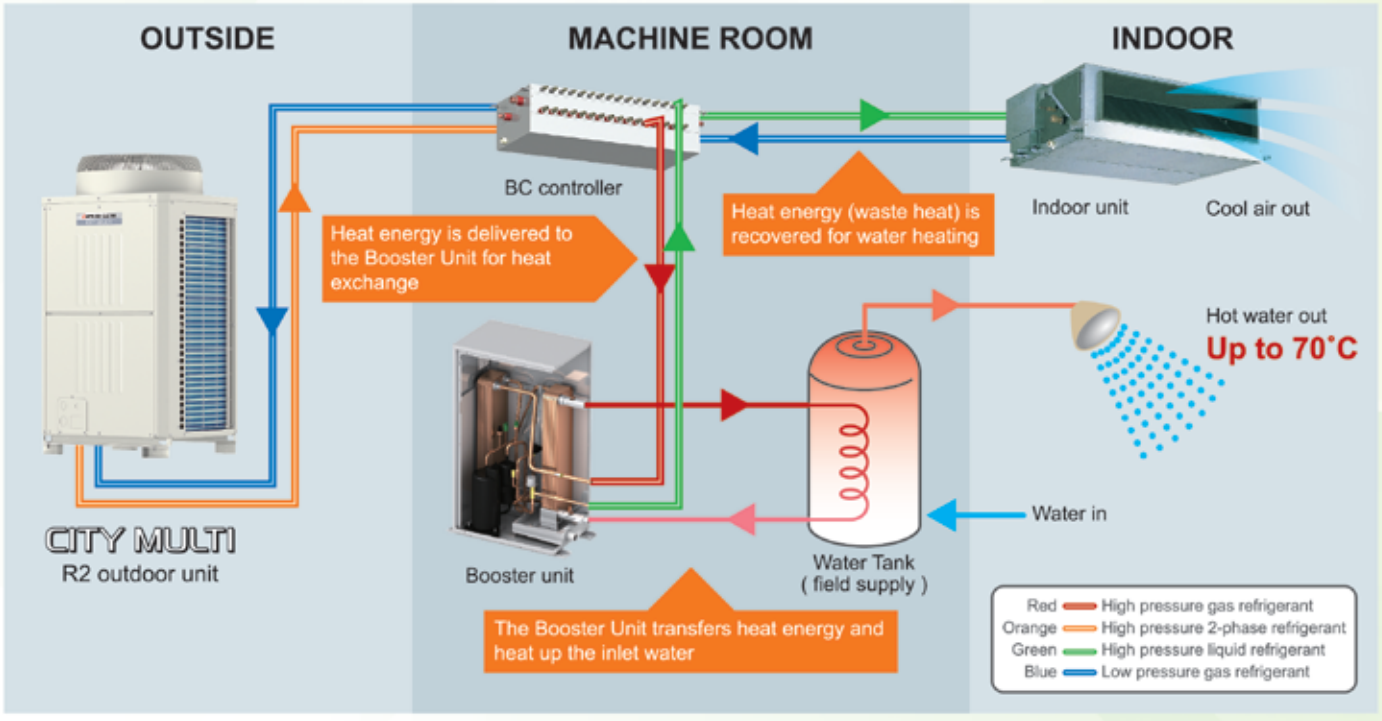

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Hong Kong International Airport New Midfield Concourse

Project Name	: **Contract P533 - Midfield Concourse Works**
Architect	: **Aedas**
Consultants	: **ARUP, Mott MacDonald Joint venture.**
Member's Role in the Project	: **E&M subcontractor installation including:-**

- Mechanical ventilation and air conditioning
- Fire services
- Airport system
- Aviation fuel system
- Electrical services
- Plumbing and drainage system
- Building management system

Completion Year	: **2015**
Member/ Company Name	: **Gammon E&M Limited**

Overview of Midfield Concourse

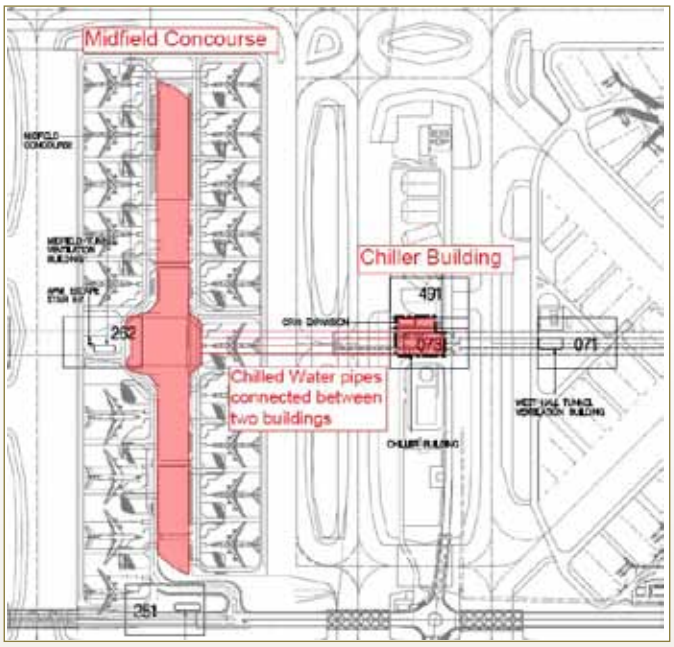
Interior of Midfield Concourse

Hong Kong International Airport New Midfield Concourse started operation in 2015. The Midfield project was the largest solo contract ever awarded to Gammon. The project was vast in scale. It involved the construction of a five-level concourse, twenty aircraft parking stands, a chiller plant and other ancillary buildings, an extended automated people mover tunnel, a new taxiway and underpass, as well as E&M systems and airport systems.

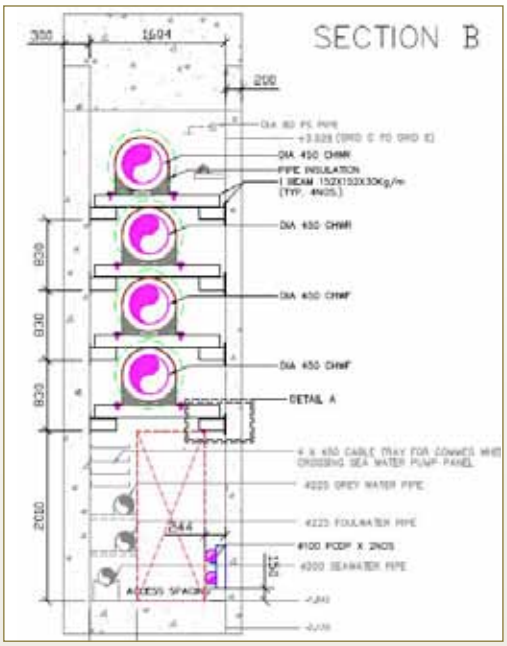
Mechanical Ventilation and Air Conditioning (MVAC) system in Midfield Concourse comprises four sub-systems, ventilation and air conditioning system, dynamic smoke extraction system, static smoke extraction system, and tunnel ventilation system.

Ventilation and Air Conditioning System

The ventilation and air conditioning system provided by the chiller plant building outside Midfield Concourse serves Midfield for over 6000 refrigerant tons by five water-cooled chillers and cooling towers through four main chilled water pipes connected between Midfield Concourse and Chiller Building. Departure and arrival concourses air conditioning systems are divided into zones. They are controlled by means of automatic temperature control system with monitoring.



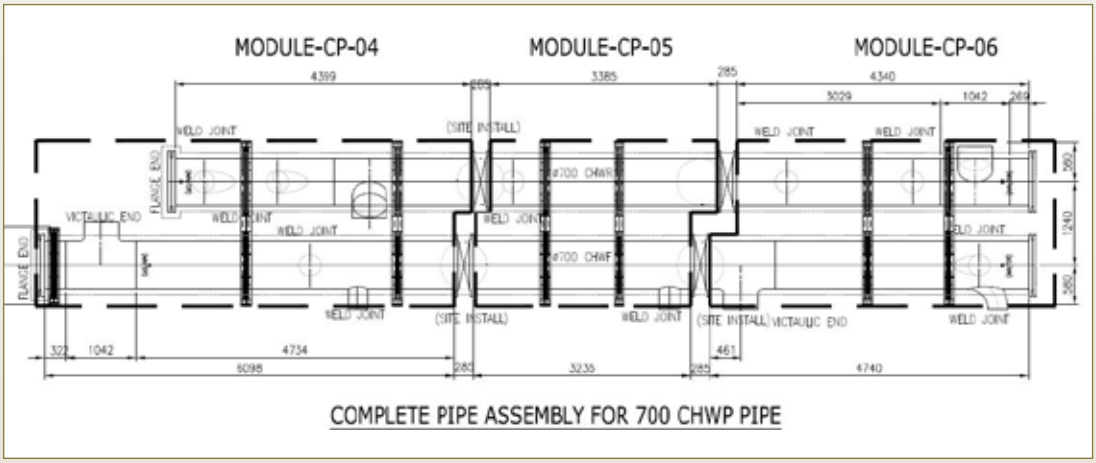
Chilled water pipes connected between Midfield Concourse and Chiller Building



Building information modeling (BIM) was used to visualize any potential construction and operational issues. Pipe module with pre-fabrication was also applied for construction to minimize the cost and time.

BIM used in Chiller Plant Construction

Pipe module in Chiller Building



COMPLETE PIPE ASSEMBLY FOR 700 CHWP PIPE

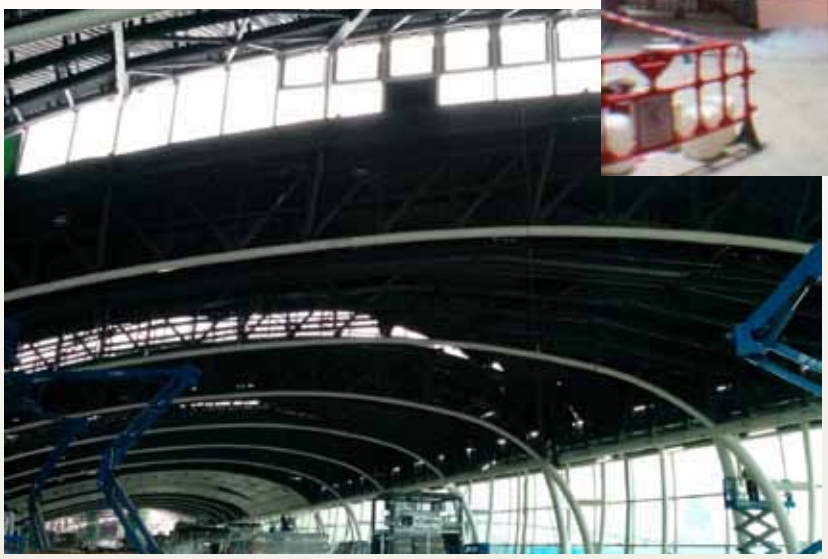
Dynamic Smoke Extraction System

For the retail areas in Midfield Concourse, cabin concept is applied to protect these high fire load areas, while permitting flexibility in use of large space without physical compartment walls. Dynamic smoke extraction system serves the retail areas by smoke extraction fans extracting the smoke through grilles.

Static Smoke Extraction System

The volume with over 28,000m3 of Departure Concourse, the smoke control systems for the Departure Concourse and Node area comprise of static smoke vents mounted on roof skylights. Openable smoke vents under the roof of incident smoke zone will allow discharge of smoke to outside; vents under the roof of adjacent non-incident smoke zones will provide make-up.

Hot Smoke Test Performed in Midfield Concourse



Smoke Vents in Departure Concourse

Tunnel Ventilation System

The tunnel ventilation system is to ensure that smoke is prevented from spreading along the tunnel and enable passengers to escape along the tunnel in a smoke free environment to reach the exit point at the station or staircase. The tunnel ventilation system is applied to the Automated People Mover extension to Midfield Concourse from Terminal 1 line.

The system comprises tunnel ventilation fans to extract smoke in tunnel, motorized fire and smoke dampers to control the fire zone, in order to operate the fans in normal mode, fire mode, and fan failure mode.

Automated People Mover Tunnel

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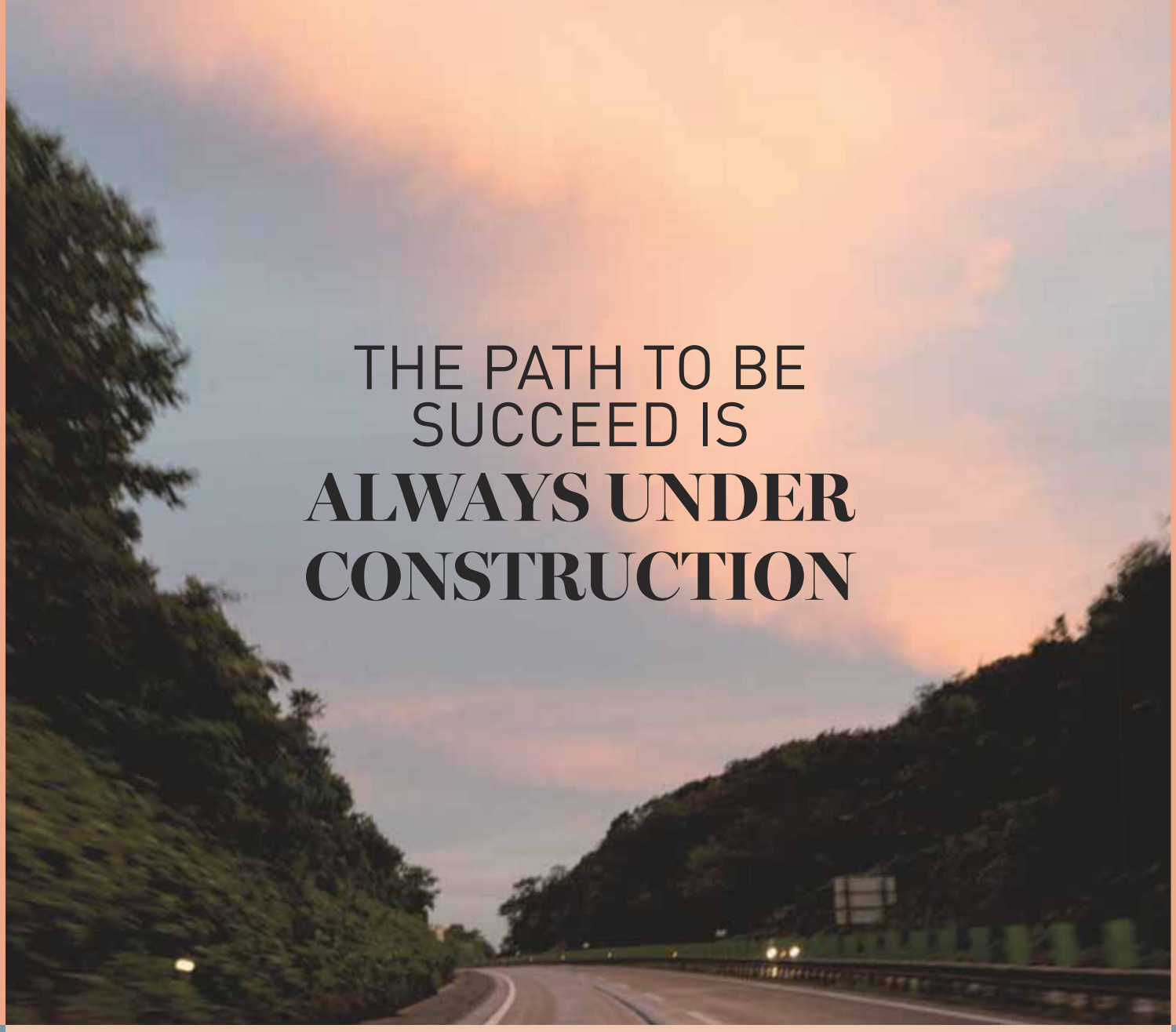

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People Interview with Mr. Victor Law

羅威德先生

適逢今年香港空調及冷凍商會五十五周年，我們特意邀請本會中流砥柱人物之一羅威德先生（Mr. Victor Law）接受訪問，一一細述為人所津津樂道的商會發展點滴。另外，羅先生亦大方分享自己在工程生涯的箇中得著，內容豐富，本會獲益良多。

親力親為服務商會　為業界貢獻所能

羅先生熱心為本會服務超過二十年，於1988年加入冷凍商會，擔任榮譽秘書一職，及後更出任過副會長、主席、及兩屆會長等職位。另外，羅先生亦積極參與香港機電工程聯會事務，曾為聯會出任副會長，代表本會跟聯會緊密溝通合作。由於商會在早期人手相對有限，只有四位幹事執行會務，加上當時商會文化尚未盛行，所以業界取態較為被動，無論招募幹事或會員都面對一定困難，所發出的入會邀請更甚至多番被推卻，幸得多位前會長一直不辭勞苦為商會服務，即使每人亦肩負了相當的工作量，但各人並不言倦，以推動商會發展成為業界的交流平台為目標而不斷努力。商會建立至今，歷屆幹事都交接有序，使理念得以承傳，更隨之注入新元素、新思維，使商會緊貼市場發展，有效為會員服務。而羅先生當中就參與過各種類型的事務，負責籌劃的周年晚宴亦多不勝數，邀請過眾多舉足輕重的嘉賓出席晚宴，前工務局局長、建築署署長，甚或連東亞銀行主席李國寶先生亦曾是榮譽嘉賓，而冷凍商會的周年晚宴亦隨之成為每年業界盛事。羅先生縱然公事繁忙但仍然堅持為商會事務付出寶貴時間，致力令會務發展更上一層樓。

推動業界發展　凝心聚力回饋社會

問及難忘事，不得不提當時本會應機電工程署轄下的能源效益事務處之邀請，協助編寫有史以來第一冊的空調裝置能源效益守則並提供意見，羅先生聯同當時工作小組成員不時與政府商討細則，歷時超過一年之久，充當與政府溝通的重要橋樑，提供專業意見以協助制訂足以反映及回應市場狀況的守則，為推動業界發展盡一分力。另外，在當時冷氣行業在職工人培訓概念未普及化時，羅先生已經就著安全應用玻璃綿這個議題聯同建築署去設計並實行第一個有關空調裝置安裝的培訓課程，由課程設計、製作教材及培訓手冊、印製證書以至安排場地等，羅先生都親力親為，一手包辦。而在註冊工人方面，羅先生聯同商會向當時的發展局回饋意見，使工人註冊的分類得以釐清，以編制出能夠與業界相應的註冊分類，此舉促使其進度之餘亦有助推廣工人註冊之重要性。除此之外，本會亦一直與消防處保持緊密聯繫，於較早時期，當時為回應消防處對於抽煙喉耐熱程度的疑問，羅先生與幾位熱心會員就一起製作出好幾款厚度不同的風喉並邀請城市大學為風喉進行測試，將風喉放置在高達攝氏250度的焗爐內進行耐熱測試，同時為該測試批出證書以茲證明風喉耐熱程度達到消防處所訂立的標準，釋除消防處、相關業界及商會會員對此方面之疑慮。

除了致力推動業界發展外，本會亦關心社會事務，希望透過自身專業技能去回饋社會。2003年沙士肆虐香港，市民人心惶惶，社會一片愁雲慘霧，但當時就有一班來自不同工程學會、商會的有心人籌組了一個名為「SARS-Buster」的團隊，旨在運用各方面的機電工程專業知識去為社會出力。當時羅先生聯同來自ASHRAE HKC、CIBSE HKB、HKIE BSD及香港大學的代表去設計醫院隔離病房的通風系統，目標是將醫護人員吸入病菌的機會減到最低。這項研究一絲不苟，由設計模擬隔離病房、選擇及安裝設備、到測試調控都盡心盡力。時至今日，有不少醫療機構都參考及採用了當時的研究結果，為社會及市民大眾作出一大貢獻。

回顧工程生涯　細訴難忘項目

羅先生個性活躍好動，熱愛運動，由求學時期至今都熱衷球類活動，更曾在就讀大學時參與足球丙組的公開賽事，並於1980年在香港大學獲得機械工程學位，同年入行機電界投身職場，加入怡和機器有限公司，其後在1987年加入安樂工程有限公司，為安樂工程集團已服務了接近三十年，現任安樂數據中心基建有限公司的首席總監，亦身兼安樂工程集團及安樂屋宇裝備工程有限公司的總監。猶然憶述入行初期是由落標學起，從而認識到不同顧問的要求及各種工程類型的設計，羅先生善用這段時間建立並鞏固好基本功，同時，亦藉此機會接觸到眾多品牌的供應商，深入地學習到各產品特性，隨之而更與各廠商彼此建立了深厚的友誼。羅先生主理過的工程項目眾多，而其中一個最為有紀念價值的項目就是香港會會所大廈，該為當時香港首個運用廢熱回收式製冷機的項目。羅先生自動向上司請纓跟進此項目，由投標、中標、安裝執行到最後調試完工，全程都緊貼進度，從頭徹尾完成整個項目，加強了項目管理的整體思路。

除了在工作中取得成就，更可貴的是能夠在職場中與同業甚或是客戶之間建立到友誼，例如太古地產及香港賽馬會，大家相識相知多年，一起共同成長。羅先生相識滿天下，贏得同儕的肯定及尊重有賴於其認真處事的態度。羅先生用心做事，竭盡所能，為客戶服務刻盡己任，對每件事情都充分地深入了解，融會貫通有效運用知識，為事情作出全面分析從而把難題迎刃而解，各界對羅先生的信任亦因此得以建立。

努力不懈促進凝聚力　積極主動為業界發聲

本會發展至今，會員數字與日俱增，羅先生對商會的凝聚力特別欣賞。在商會早期發展時，羅先生牽頭籌組活動，策劃過多種大受歡迎的康樂及球類項目，旨在提供一個溝通平台以增強會員之間資訊交流，有助增進對行業的知識，擴闊人脈網絡。除此之外，會員亦可透過參與工餘康樂活動以放鬆心情，使工作和生活間取得良好平衡。時至今日，各位會員都積極踴躍參與本會舉辦的康樂活動以聯絡感情，每次聚會大家都打成一遍，歡笑聲不絕，而會員間的感情建立亦有助增強對商會的向心力。商會除了是一個維繫會員的平台外，羅先生認為商會亦擔任著為業界發聲的重要角色，與政府溝通，主動出擊反映業界狀況並回饋意見以作出改善，使業界整體效率得以提升，帶動市場發展。

行內經驗豐富的羅先生現為本會出任顧問一職，為商會發展走向提供寶貴意見。本會除了十分感謝羅先生撥冗抽空接受訪問之外，亦衷心感激羅先生一直以來都不遺餘力推動商會發展，為業界作出莫大貢獻。適逢本會五十五周年，編輯組在此謹祝願本會會務蒸蒸日上，業界發展蓬勃。

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