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THE HONG KONG AIR CONDITIONING AND REFRIGERATION ASSOCIATION LIMITED
SUMMER 2016
Newsletter 會員通訊

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Contents

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Message from the President

Dave Chan
President

The first half of 2016 is coming to a close and it has been exciting and fulfilling for ACRA. ACRA had assisted EMSD in uplifting the requirements of air-conditioning installation in the new Building Energy Code 2015 Edition. The BEC 2015 Edition has been released and will take effect later this year. ACRA is delighted to have been part of the taskforces to develop effective communication between the Government and industry stakeholders, ensuring the new requirements would be practically achievable under a regulatory system. Thanks to all members who contributed their time and efforts to make it happen.

The Government has been taking the lead in promoting energy efficiency and green building through various means. EMSD is currently in the midst of drafting a technical guideline on retro-commissioning (RCx) which is served as a basic and clear procedural guidance. The increasing awareness for the benefits of RCx is posing opportunities for our members with the anticipation of a greater demand to come for HVAC optimisiation solutions. Let's get prepared and be technologically ready to embrace the business opportunities ahead so as to enhance our competitive position.

ACRA has regular liaison meetings with Architectural Services Department. One of the key topics we covered at the recent meeting is the review of the draft for the 2017 Edition of the General Specification for Air-conditioning, Refrigeration, Ventilation and CCMS installation in Government Buildings. We have set up a number of working groups to gather the expertise from our members to review the draft document and make recommendations for improvement.

ACRA appreciates the importance of recruiting new talents to join our industry. We participated in the HKTDC Education & Careers Expo 2016 held in January. The 4-day recruitment exhibition with grouped booths and game setting jointly organised by the 19 organisations of the HK E&M Trade Working Group provides an one-stop service to the visitors, such as the latest information on E&M engineering jobs, education and training paths, employment prospects and promotion opportunities. ACRA is pleased to have participated in the Expo as one of the exhibitors to interact with young graduates and introduce them to the HVAC systems by giving live demonstration of the products and technologies.

To help train up more skillful technicians for the industry, EMSD has recently launched a pilot apprenticeship programme, namely "Pilot Co-operative Apprentice Scheme" (CATS). Under this scheme, EMSD will increase the number of 4-year apprenticeship training places and after providing basic workshop training to the students, they will deploy the apprentices to work in the industry as on-the-job attachment training. ACRA fully supports this initiative and will work closely with EMSD to train up a new pool of young engineering professionals for our industry.

Constant learning is one of our core values at ACRA and it is essential in order to stay competitive in an ever-changing marketplace. A series of Joint Professional Training Courses organised by HKFEMC kicked off in May. ACRA members helped conduct three lectures on the latest HVAC technologies and practices. The response was overwhelming and we are happy for being able to share our knowledges with other industry insiders and keep our members up with all the technologies available today.

In April, we have organized a delegation to visit the 27th China Refrigeration Expo in Beijing. This remarkable event brought us together under one roof to learn about the latest innovations that are shaping the market trends, we are impressed with the level of participation and the scale of the event. Apart from visiting the Expo, we made the most of the field trip by having a technical visit at Parkview Green, a building with cutting-edge design situated in one of Beijing's most prestigious locations. Parkview Green embraces the latest green building technologies and energy-saving measures, making it become one of the largest applications of green technologies in China. The engaging learning experience we gained from the field trip to Beijing enabled us to capture new insights on implementation of green building technologies.

Coming to the end of my term as President of ACRA, I am glad for having the opportunity to serve the Association in the past two years. All the Association's activities would not have been a success without the exceptional contribution provided by our council and committee members. The support from our members is the motivation to keep us going, please allow me to take this opportunity to express my sincere appreciation to all members, it has been a privilege to serve you, thank you very much.

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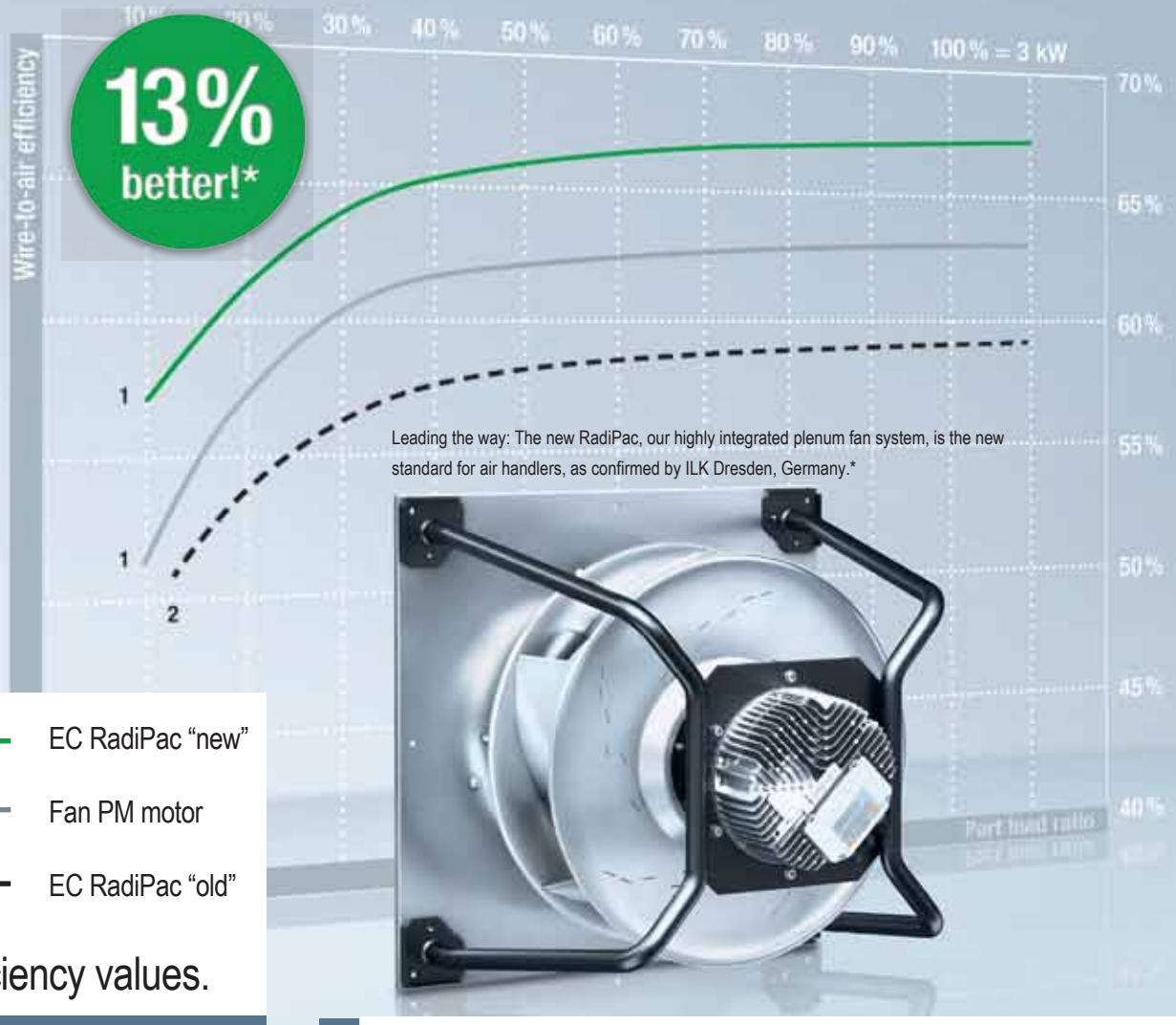

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A New Green Building Rating Tool for Existing Buildings –BEAM Plus Existing Buildings Version 2.0

By: **Ir Kelvin Tang**
FHKIE, FCIBSE, CEng, REA, RPE, BEAM Pro

Introduction

Building Environmental Assessment Method (BEAM) Plus is a comprehensive environmental assessment scheme for buildings on a voluntary basis. Owned and operated by Beam Society Limited, it provides owners of buildings a comprehensive set of performance standards for reference by defining the good practice criteria for a range of sustainability issues across the whole life-cycle of buildings and projects. BEAM plus has specific practices for 3 categories: New Building (NB), Existing Building (EB) and Interiors.

Starting from 2011, participation in BEAM Plus New Buildings (NB) Scheme shall be one of the prerequisites for private developments obtain gross floor area (GFA) concessions in Hong Kong. The registration numbers of BEAM Plus assessment increased from 16 nos. in average from 1996-2010 to 150 nos. in average from 2011-2013. However, the participation rate for BEAM Plus Existing Buildings (EB) is relatively low.

http://www.enb.gov.hk/sites/default/files/pdf

According to the Energy Saving Plan that was published last year, it sets the target to achieve energy intensity reduction by 40 % by 2025. It is a great challenge to the stakeholders in the industry, especially to the building owners of private-sector for reducing their energy consumption of the existing buildings. As a matter of fact, there are over 42,000 existing buildings stocks in Hong Kong. Most of them are over thirty years old. Improving their energy efficiency is also an important step towards the achievement of Energy Saving Plan target by 2025.

In view of the low participation rate for BEAM PLUS EB v1.2, an enhanced version of Green Building rating tool for Existing Buildings was necessary in order to encourage the building owners of existing buildings to adopt green building management and upgrading the building services systems. After 24 months 'consultation on revamp of EB Rating tool, BEAM PLUS EB v 1.2 has been replaced by BEAM PLUS EB v2.0 and was officially launched at Zero Carbon Building (ZCB) on 24 March 2016. The development of BEAM Plus EB v2.0 was led by a BSL Steering Committee comprising industry practitioners and experts. It plays an important role in sustainable development of Hong Kong.

http://www.beamsociety.org.hk/en_beam_assessment_project_1.php

New Assessment Framework

In order to promote more participation in "Green" Existing Building, Version 2.0 consists of a number of major amendments to the guideline. The old version 1.2 was a One-Step approach which requires all aspects to be assessed in one-go and one full certificate will be offered if the requirements are fulfilled. This high threshold has deterred building owner from joining the assessment. In contrast, new version 2.0 provides them more flexibility to improve their green performance of buildings. There are 2 major schemes under BEAM Plus Existing Buildings Version 2.0, i.e. **Comprehensive Scheme** and **Selective Scheme**. Comprehensive Scheme provides one-step or stepwise assessment and adopts the 'Plan-Do-Check-Act', integrated management system (IMS) approach for the continual improvement of the buildings while Selective Scheme upholds the 'Better than yesterday' principal to recognize the efforts made by the building performance. The new assessment framework includes:

Comprehensive Scheme	Selective Scheme
(A) One-step approach All aspects are assessed in one-go and one full certificate will be offered if the requirements are fulfilled.	It is an individual aspect assessment approach with a lower threshold than comprehensive scheme, and the applicant is not required to complete all aspects. An individual certificate will be issued for each assessed aspect.
(B) Step-wise approach Free combination of aspects assessment is allowed. The intermediate result(s) for the assessed aspect(s) will be issued. The applicant is required to update the necessary information of the assessed aspect(s) and submit the remaining aspect(s) within 3 years of the issuance of the first intermediate result.	

Assessment Aspects and Weighting

In BEAM Plus Existing Buildings V2.0, for Selective Scheme, grading will be awarded separately for each individual aspect, namely 'Excellent', 'Very Good', 'Good' or 'Satisfactory'. On the other hand, for Comprehensive Scheme, aspects are grouped into the following categories, a weighting for each environmental performance category has been assigned to reflect its importance and the global trends as stated as follows:

Category	Weighting (%)	
	V1.2	V2.0 (Comprehensive)
Management (MAN)	N/A	24
Site Aspects (SA)	18	10
Materials and Waste Aspects (MWA)	12	14
Energy Use (EU)	30	24
Water Use (WU)	15	14
Indoor Environmental Quality (IEQ)	25	14
Total	100	100

I. BEAM PLUS Existing Buildings Version 1.2 (2012)
II. BEAM PLUS Existing Buildings Version 2.0-Comprehensive Scheme (2016)
III. Category weighting is not applicable under BEAM Plus v2.0 - Selective Scheme; and a grading is awarded separately for each individual category only.

Comparing the two versions of assessment aspects weighting, the major change is the addition of 'Management' category in V2.0. An effective management of building operations and maintenance is the key factor for the better environmental performance of the building, especially for existing buildings. Developers have to demonstrate that green purchasing plan and procedures (including both materials and services) either follow their internal company guideline or other international standards, e.g. ISO, OHSAS EnMS.

Energy Use (EU) has a great ratio among other categories. Energy audit has to be conducted every 5-year in accordance with the Buildings Energy Efficiency Ordinance (Cap. 610) requirements for existing buildings. So developers are encouraged to evaluate the performance of buildings and put greater investments to upgrade their existing systems. For instance, installing energy saving equipment like LED lights, High-efficiency chiller, Chilled Beam system would help to improve the energy performance of existing buildings, so as to reduce energy consumption and the associated environmental impacts, and to reduce summer peak electricity demand. On the other hand, public are highly concerned about Indoor Environmental Quality (IEQ). It includes indoor air quality and ventilation provisions that safeguard health, as well as thermal comfort, lighting, acoustics and noise, impact on well-being and productivity. Some solutions to improve indoor air quality are to install Photohydroionization (PHI) air purifiers, Activated Carbon filter (ACF), or provide a deodourising system in all rooms designated for refuse storage or materials recovery.

Summary

In echo with government's target under the Energy Saving Plan, BEAM Plus Existing Buildings Version 2.0 provides applicants with more flexibility to participate in this green assessment to suit their program, budget and technical capability. The new initiatives will improve the energy efficiency and environmental impact for the aged buildings. I hope private building owners and developers strive to improve the environmental performance of buildings and contribute towards sustainable development.

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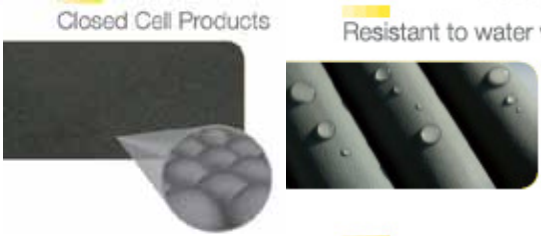

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People Interview with Mr. CK Wong

黃志光先生

剛於本年二月退休的黃志光先生（Mr. CK Wong），作為工程業界為人熟悉之翹楚，本會慕名邀請黃先生接受訪問，與大家分享他的管理理念及待人處事之道。訪談過程中黃先生不失幽默，以日常生活瑣事闡釋做人道理，內容豐實，本會受益匪淺。

永不言倦　職場打拼40年

黃先生於邁進集團（Meinhardt）任職26年之久，亦曾經在澧信工程顧問有限公司（JRP）服務6年，其工程顧問經驗豐富，參與的各大型項目多不勝數，相信大家對黃先生的顧問角色絕不陌生，但大家又可知道其實黃先生在投身顧問行業之前，曾經於景福工程（Young's）任職6年，黃先生更笑言自己是「地盤中長大」，從接手過形形式式的工程項目中逐漸累積寶貴的實戰經驗，為迎接日後挑戰打好根基。黃先生在任職景福期間曾遠赴美國特靈總部受訓半年，從中深化及鞏固了暖通空調的設計及應用基礎，例如當年還是新創的變風量箱(VAV)及變水流量系統等設計技術上的學問至今仍活學活用於日常工作之中，知識歷久常新，黃先生更娓娓道出「成功不成功，全賴基本功」的道理，所以勤奮向學，尋求知識可謂是成功的基石。受訓期間黃先生不但增強了工程知識，當中有關銷售技巧（salesmanship）的課程都使黃先生對於一位工程師，怎樣溝通、待人接物，及如何用簡潔的方法演譯深澀難明的工程理論都大有得著。加上與來自世界各地的同事交流，並接觸到戴爾卡內基（Dale Carnegie）的名著，從而啟發到同理心、易地而處之重要性，在人際交往過程中，體會他人的情緒和想法、理解他人的立場和感受，並站在他人的角度思考和處理問題，這些都是在黃先生入行早期時所領略到亦畢生受用的專業知能（hard skill）及軟技能（soft skill）。另外，黃先生更不斷增值多方面的知識，取得法律系學位及工商管理碩士學位，有助於從不同角度思考出問題的解決方法，以達到互補不足之優勢。

成就企業文化　分享管理心得

企業管理從來都是一門高深學問，而工程顧問本身就是以人為本的行業以提供人性化服務，所以黃先生一直以來謹守的管理宗旨都是以人為中心出發 —「處事要態度嚴肅，心情輕鬆」，「管人要態度嚴正，情理寬鬆」，黃先生每每與新入職同事約法三章，要求同事重視承諾，無論對外對內，一旦是答應過的事情就要全力以赴去實現承諾，樹立客戶的信任。同時，如覺得客戶要求是不利於彼及對可行性存疑，應用誠懇態度和對方商討。遇到自己能力解決不到的問題就則要上報，切忌妄下承諾失信於人，黃先生態度嚴正，下屬亦因此有章可循，使公司上下都朝向相同目標進發，公司文化亦得以建立。黃先生亦重人情，在要求同事克盡己任努力完成工作之外，亦會細心觀察及指導團隊，了解同事個性及事情問題所在，釐清到底是同事力有不逮，還是無心戀戰，這個「不能」抑或是「不為」的問題，管理層應要洞悉清楚並就此應對。黃先生一直扶持引導那些有心而只是尚「不能」的同事，從不吝嗇地循循善誘下屬並教授實用知識，藉以複製出和自己一樣、擁有相同技能的團隊，達致營運效益。正面的企業文化及理念使同事上下一心，在工作過程中成長，發揮團隊精神。

處事態度正面　暢談做人座右銘

黃先生人生經驗豐富，做人之道本著「三大堅持　四大執行」—— 三大堅持包括：健康第一、朋友無價、和諧共享。而四大執行就是：行善積德、天道酬勤、富貴浮雲、清福在身。茶是中國人的深厚文化，黃先生引用魯迅“喝茶”解釋何謂清福、「有好茶喝，會喝好茶，是一種清福，不過要享這清福，首先就須有工夫，其次是練習出來的特別感覺。」那杯茶最好，每人都不同，但人生如茶，質樸自然已很好了，最珍貴的是懂得拿起茶杯，放下心情，把心放在閒處，保持愉快。黃先生認為做人不需要過分執著於輸贏得失，反之而應該保持心境寧靜，多以正面態度處事，發放正能量去影響及感染身邊人。做人樂觀積極的黃先生，除了在工作中取得成就，更可貴的是在職場中與同業甚或是競爭對手所建立的深厚友誼，黃先生訪問過程中提及過覺得自己相當幸運，生命中一路有眾多良師益友，相識相知共同成長，互相學習。工作了多年，雖然只有兩袖清風，卻要多謝良友滿途。

退而不休　繼續貢獻社會

退休前，黃先生曾出任香港工程師學會消防分部和屋宇設備分部的主席及其他服務。退休後，更積極投身義工服務，更笑言「退休後比以前更忙」。黃先生近日忙於為本地教育界出力，支援弱勢家庭並為有需要的同學提供生涯規劃，協助同學自我認識，灌輸正面價值觀；同時，亦提供就業及事業輔導，協助年輕人訂定就業目標。黃先生秉持退而不休的精神，樂在其中於有意義而豐盛的退休生活。

本會十分感謝黃先生與我們分享管理智慧及人生道理，在此謹祝願黃先生退休生活充實美滿，享受精采人生。

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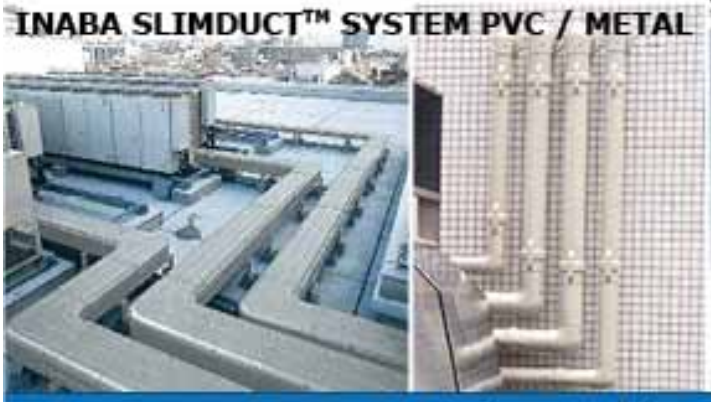

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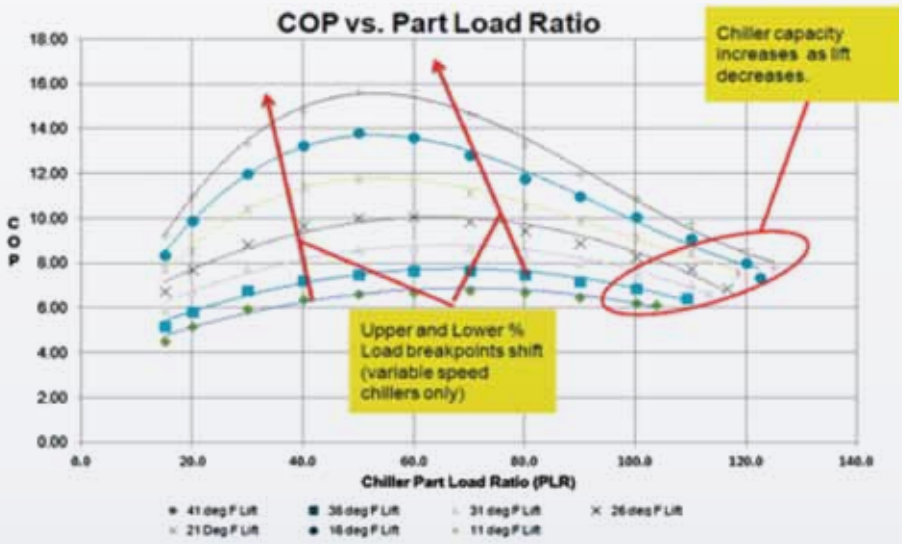
Central Plant Optimization

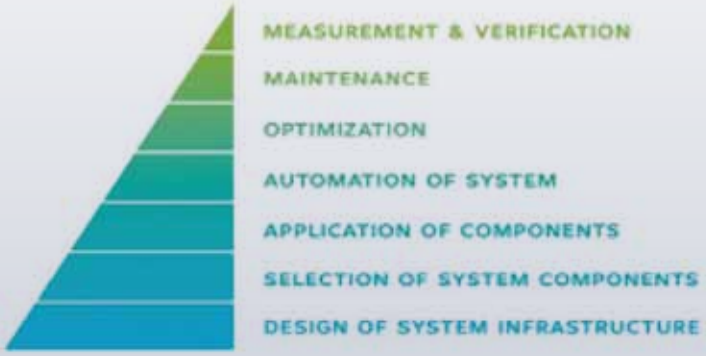
Introduction:

Within a building, the HVAC system consumes the most energy. Among the various HVAC systems such as airside, chillers and boilers, the chiller plant uses the most energy with more than 35% of the total power consumption of the building. As a result, there is mounting pressure to increase plant efficiency through optimization. Optimization is being promoted for a period of time in the industry, there has been a great deal of confusion about what it means. Is it hardware? Software? A third-party add on? Central Plant Optimization is about all of them and even more. Central Plant Optimization is an approach to allow a chiller plant to reach and sustain its high-performance.

What is Central Plant Optimization (CPO)?

As shown in the pyramid below, there are seven key steps to achieve Central Plant Optimization, encompassing everything from infrastructure design, equipment selection, measurement to maintenance. When implemented holistically, CPO can deliver over 30% energy savings with full equipment, automation and maintenance upgrade.





Achieving your plant efficiency potential is determined by both the design and operating decisions you make.

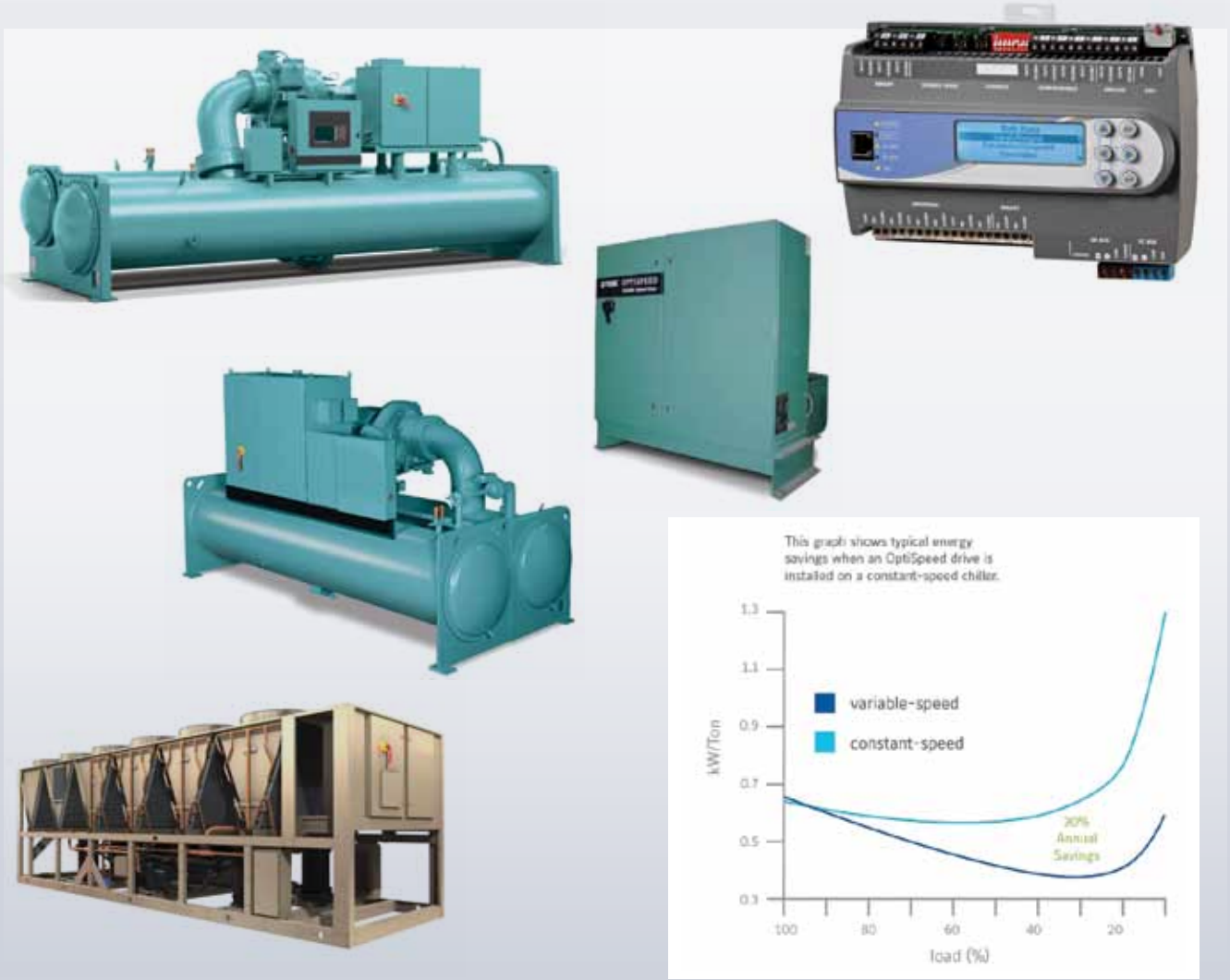
Design Decision – Hardware Selection

HVAC equipment manufacturers have made great strides in the past 25 years, the efficiency of equipment has significantly been improved. Conscious consultants and building owners will often purchase the most efficient equipment available, sized for the worst-case scenario or to accommodate future growth. Equipment are chosen, for example, based on full-load kW/ton or the efficiency of the plant on the hottest summer day with the full occupancy. However, best practices call for selecting plant equipment with good full load and part load efficiencies.

A chiller with a more favorable part-load efficiency profile in off-design condition will be the better performer in the real world when loads vary a lot. In existing buildings, it is possible to correct design deficiencies to achieve similar results by taking steps such as:

- Replacing equipment at the end of its life
- Automating the plant, if it is operated manually
- Adding VSDs to chillers, pumps and cooling tower fans
- Reviewing and improving automation sequences

It may be more expensive to install this type of infrastructure, but the up-front cost of well-designed infrastructure typically pays for itself because it enables a plant to run at better efficiency over its entire lifecycle, leading to improved return on investment.



Operation Decision – How to operate equipment as efficient as it could

Even with the most efficient equipment and infrastructure, the energy performance of central plant still cannot be driven to its maximum level. It is because traditional methods of plant operation and maintenance are based on a static operating model that treats the plant as a series of disparate pieces of mechanical equipment. Nowadays, high-efficiency equipment are designed to work optimally when they are part of a system. Even the most skillful operators in the world would have a hard time operating a plant as efficiently and effectively as a current building automation system (BAS).

Latest BAS does not just start and stop equipment to maintain set points. It starts the right equipment at the right time to maximize efficiency based on its operating history and its efficiency profile. With variable speed drives, the BAS also selects the right speed to operate pumps and tower fans. Top-tier building automation systems enhance plant efficiency further with tuning algorithms that continually adjust control routines based on system dynamics loading changes and seasonal changes.

The best-in-class building automation systems also offer monitoring and reporting tools so that the optimized performance of a central plant can be sustained over time.

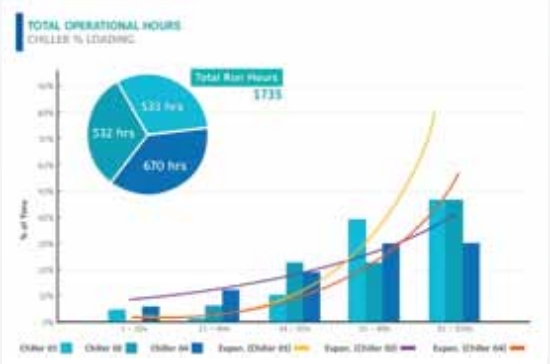
CPO application is the intelligent logic that holistically operates the plant in the most efficient manner. It is the brain behind the operation and helps to save up to 15% of energy consumption on the same plant against standard chiller plant automation. Today's optimization software takes advantage of building automation systems to maximize central plant efficiency with relational-control algorithms that optimize all the equipment so that the chiller plant uses the least amount of power. Control set points are automatically calculated based on real-time building load information inputs received from the building automation system, and the optimization software then evaluates that data and makes recommendations back to the BAS to improve performance. In the past, such state-of-the-art software was available only as a custom-built solution. But now, optimization software is standardized, documented, tested and proven –decreasing both cost and risk for the purchaser.

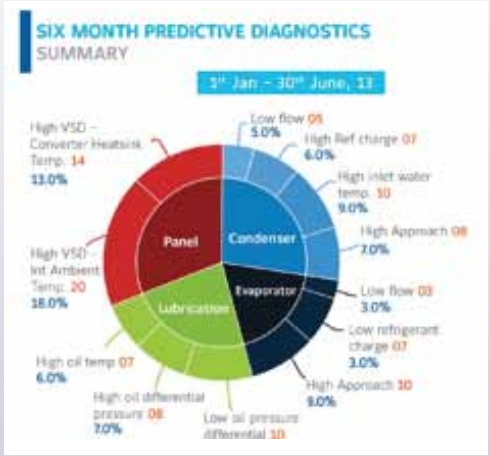
Optimization Will Never Stop

Plants often fail to maintain their design efficiency over time by depreciation and hardware failure. In Central Plant Optimization solution, optimization will never stop after installation of equipment and commissioning of control system.

A century ago, service is "set it and forget it" proposition and uptime was the critical measure of system success. Most of the time, maintenance was reactionary. With today's ultra-efficient equipment and optimized central plants, maintenance is predictive. In fact, predictive maintenance - the ability to identify issues before they become problems - is essential to maintain the optimization of central chiller plants.

To make sure efficiency levels are being maintained over the plant's entire life cycle, performance data must be regularly measured, verified and managed as part of a continuous commissioning process. When real-time data is available anytime, anywhere, issues such as performance drift can be identified long before the degradation results in significant loss of efficiency or, equipment failure. Today, web-based tools are available 24/7 and act as a continuous feedback loop by providing detailed, real-time and historical performance data so that operators can quickly detect, diagnose and resolve system faults. Data is made visible via easy-to-read dash- board and analysis tools allowing for quick diagnosis of faults. Alerts and notifications are sent automatically. These emerging measurement tools enable continuous and effective commissioning. Early adopters say they are amazed at the level of available, actionable data these tools provide.





Recommendation

When looking for solutions to reduce energy use for central plant, adaption of central plant optimization application, continuous measurement & verification and predictive diagnostic of equipment allow a chiller plant to reach and sustain its high-performance, potential.

SUN HUNG KAI CENTRE

Exceeds Energy Savings Goal

Sun Hung Kai Properties, one of Hong Kong's largest real estate developers, set out to further improve the sustainability of their corporate headquarters, already a leading green building. Through partnering with Johnson Controls, Sun Hung Kai Centre achieves 10 percent energy and cost savings and reduces carbon footprint by 300 tons.

"Johnson Controls gave us valuable counsel and with their integrated solutions, we were able to exceed our energy savings goal. We are deeply impressed by their level of expertise and professional service."

- *Ricky Kwan, Head of Technical Sercices,*
  S.H.K. Real Estate Management Company Ltd.

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MITSUBISHI ELECTRIC
Changes for the Better

嘉里恒溫倉庫改建

項目名稱：**嘉里恒溫倉庫改建**
冷庫溫度：**－4度攝氏（改建前）；**
－18至－25度攝氏（改建後）

本項目是應業主要求將兩個使用中的恒溫倉庫，佔地面積每層為二千多平方米，存放貨物高度四米（共兩層），改建為六個獨立式－18度攝氏的冷庫（共約三千多平方米）及兩個獨立式－18至－25度攝氏的冷庫（共約一千多平方米），－18度攝氏的冷庫總冷量約為130冷噸；－18至－25度攝氏的冷庫總冷量約為45冷噸。

由於冷庫容積頗大，所以冷庫外牆保溫用上「無縫聚氨脂漬塗」技術，於大面積冷庫，它的好處是安裝時間相對較短，高效益保溫能力及更善用存貨空間，室內間格牆則用預制絕熱板以減低安裝所需時間，各主要運送出入口都設置穿堂及安裝紅外線自動感應式快速捲簾，以有效地減低室外熱空氣於出入貨物期間滲入冷庫對溫度所做成之影響。照明系統方面，採用發光二極體（LED）天井燈，能節約能源及提供不少於250流明於一米高作業平台上。

冷風機採「N台運作，一台備用」模式運作，在化霜程序中,後備冷風機會自動輪換運行。工業冷風機選用Heatcraft - Bohn品牌，它的優點在於電氣和制冷劑管道連接簡單容易安裝，外部安裝的風扇，鉸鏈式的排水盤亦能易於保養維修及清潔，冷風機選用熱氣化霜，熱氣是由新安裝的水冷式製冷機組提供。

水冷式螺杆並聯製冷機組主要由三台125匹壓縮機組成, 提供「兩台運作，一台備用」模式運作，壓縮機模組因為可以獨立式運行，能針對於7日24小時冷庫運作， 較易安排保養維修。

冷凝水主要取自於原有的散熱水塔系統，其餘小部份則取自新建的水塔，新舊系統一起提供冷凝水予三台製冷機組使用。

中央電腦自動化監控模式能有效地管理，紀錄各個冷庫溫度，設備狀況等資料。

在改建工程上遇到的困難 ---

甲、與現有系統作隔離，安裝及重新連接。因為此為部份改建項目工程，所以首先要把原用的系統隔離，才能開展拆卸工作，避免影響原有運作中的系統，當所有系統完成，要將新安裝設備，例如供電櫃、冷凝水水泵、水塔及水管系統，跟原有的系統重新連接。幸得客戶支持，電力系統可以於凌晨時段作短暫暫停供電，以作接駁。

乙、運送大型物料設備。因為剩餘運作中的倉庫每日出入貨量頻繁，難於運送大型設備如預制絕熱板，冷風機和冷凝機組，幸得與客戶協商，供使用工廈吊貨櫃設施，我司先將大型設備送入貨櫃，再將貨櫃送到各安裝樓層，然後在各層卸載。

改建後冷庫室內情況

新建的水塔系統

紅外線感應式快速捲簾

The Building Energy Code 2015 Edition –Energy Efficiency Requirements for Air Conditioning Installation

By: **Franco K.P. Mok,**
CEM, BEAM Pro, CEng, MIMechE, MHKIE

The Building Energy Code (BEC) has been a mandatory ordinance since 2012 under Building Energy Efficiency Ordinance (Cap 610). The BEC is set to be reviewed every three years with the first review conducted in 2015 incorporating the latest technological developments, international standards and public aspirations. The BEC 2015 Edition will take effect on 11 June 2016 and 11 September 2016 for Stage One Declaration (new building projects) and Form of Compliance (major retrofitting works) respectively. The focus of the new ordinance is on improving energy efficiency through various means. A quick overview of the regulations imposed on the HVAC-related systems is covered in the following sections.

Air-side System

The BEC2015 has tightened up the requirement on air distribution system fan power. It requires an air-conditioning system with fan motor power of 1 kw or above to be designed to vary the airflow as function of load. For a conditioned space with fan power motors more than 2.5kW, the system fan motor power should not exceed 1.6W per L/s for CAV system and 2.1W per L/s for VAV systems. The new version also introduces a new requirement on mechanical ventilation system with system fan motor power of not exceeding 1.1W per L/s. The portion of fan power consumed due to pressure drop across air treatment or filtration devices is deductible from the system fan motor power. The fresh air intake and exhaust air discharge for a conditioned space should be equipped with automatic dampers which must be turned off when the conditioned space is not in use. The dampers have to remain off during preoccupancy cool-down and/or off-hour setback.

Water-side System

To optimise the pump power, a water side pumping system should be designed for variable flow down to 50% of design flow or less except the chiller plant capacity is less than 350kw or the system equipped with supply chilled water temperature reset. It also requires the chilled water and condenser water flow through a chiller to be automatically shut off when the chiller is not in operation. The fiction loss requirements in a water piping system have been revised to take into consideration of constant and variable flow conditions.

Controls

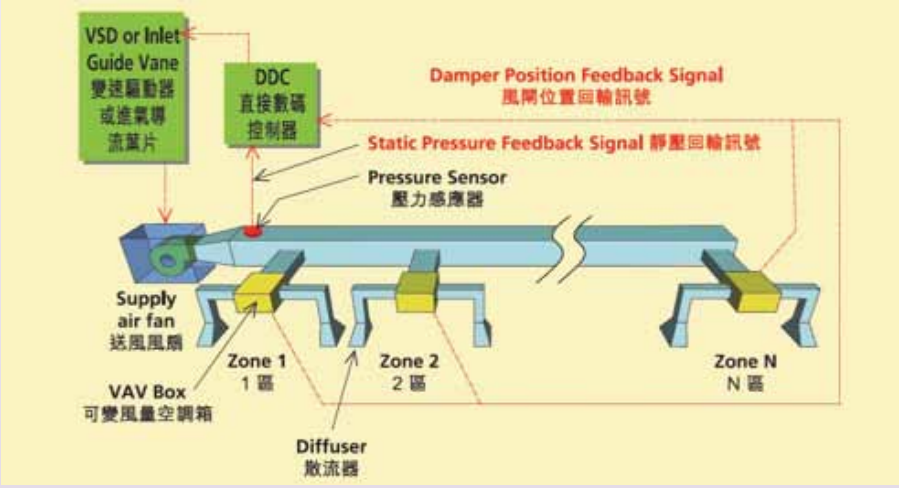
A number of new requirements on controls are incorporated into this new edition, which includes the isolation of zones, VAV air distribution systems, demand control ventilation and Direct Digital Control (DDC).

The air-conditioning systems serving multi-zones which are intended to operate non-simultaneously, must be equipped with controls and isolation devices that feature automatic power-off of conditioned supply air and fresh air to and

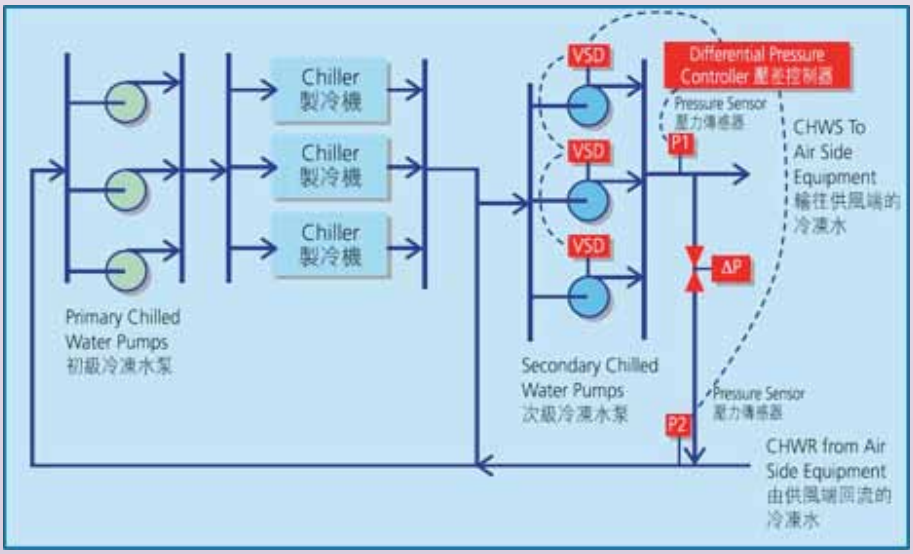
exhaust air from the area. It is also necessary for the control systems to support a stable operation for central systems and chiller plants when serving only the smallest isolation zone.

For the control of VAV systems, the set point of static pressure sensors should be reset based on the actual demand of the conditioned space and should not be greater than 300Pa.

Demand control ventilation is required when fresh air flow rate is 1400 l/s or above, unless energy recovery of exhaust air is provided. The fresh air dampers of AHU or FAF should be designed to modulate in accordance with the CO2 level of the served conditioned space unless it is operating in free cooling mode.



DDC should be provided when the plant has a cooling/heating capacity of 350kW or above while serving more than three zones. DDC is also required when the power of a system fan in an air distribution system for a conditioned space is 7.45 kW or above.



Efficiency Requirement on Air-Conditioning Equipment

The Coefficient of Performance (COP) of air-conditioning equipment is further tightened up in order to improve overall energy efficiency of HVAC systems. The full load COP requirements for Chillers, Unitary Air-conditioner and VRF system has been raised in order to meet with the technological advancement in the market. New categories of VSD Screw Chillers and VSD Centrifugal Chillers have been added with additional part load COP requirement at 75% full load capacity has been specified.

New requirements on controlling the heat rejection efficiency of open-circuit cooling towers have been incorporated. It specifies the requirements on minimum water flow per unit tower fan motor nameplate power of 1.7 l/s per kW for centrifugal fans and 3.4 l/s per kW for propeller/axial fans.

Motor Efficiency in MVAC Systems

For the motors not being integrated into a machine with the rated output of 7.5kW or above, the latest requirement on minimum rated efficiency of motor is now required up to the IE3 standard (90.1% to 96%) while it was IE2 (88.1% to 95.1%) previously.

Energy Metering

In addition to the current metering requirements for Central Building Services Installations (CBSI - including entire chiller plant & heat pump plant, all lifts and all escalators or passenger conveyors),new requirements are imposed on energy meters in Air Handling Units (with motor rated at 5kW or above) The energy meter must be able to collect power consumption data.

The Government's efforts to enforce the regulations encourage the involvement of the industry players in green building development. The adoption of green building practices can make a huge difference in leaving a positive impact on the environment at multiple levels, reducing energy waste and improving energy efficiency. The deployment of the right expertise and green building systems, as well as flawless execution offered by an experienced solution provider are all needed for achieving environmental sustainability.

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NEW MEMBER (from Nov 2015 to Apr 2016)

1 Aires Engineering Co., Ltd.
2 Carewin Engineering Ltd.
3 Centalink International Limited
4 Dynalink International Technology Limited
5 KSB Limited
6 Luen Ming Pengshan Air Conditioning Factory Ltd.
7 Maxwell Electrical Asia Ltd.
8 MECO Engineering Ltd.
9 Ritech Engineering & Supply Co., Ltd.
10 San Yik Air Conditioning Engineering Company Limited
11 Shun Tung Engineering Co., Ltd.
12 Trisun Air Conditioning System Limited
13 Union (Luen Hop) Refrigeration Co. Ltd
14 White Hippo Limited
15 Wo Lee Steel Company Ltd.

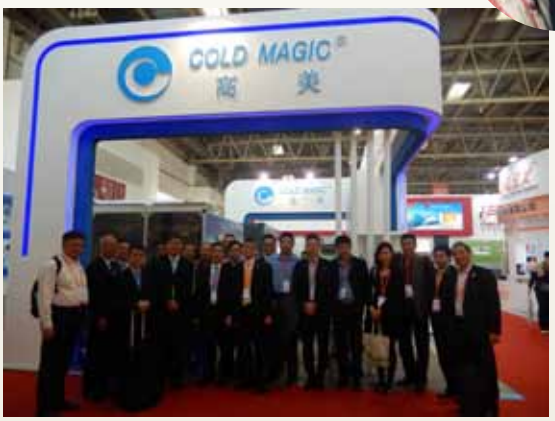
Mr. Dave Chan, President of ACRA, presented the Membership Certificate to new members to welcome them joining ACRA.

中國制冷展2016

每年到了春暖花開的季節，香港空調及冷凍商會、香港註冊通風系統承建商協會、美國供暖制冷及空調工程師學會香港分會和香港能源工程師學會都會走在一起忙碌地組團參觀中國制冷展，在這幾年裡差不多成為四會的一個慣常活動和合作。今年的中國制冷展在北京的北京國際展覽中心(新館)舉行，本屆展會以‘喜迎開局，高瞻遠矚，誠信務實，共奔小康’為主題，規模繼續保持在10萬平方米以上，共計8個展館。西側4個展館為供熱採暖設備及國家展團館，空調設備館，通風設備館及相關配件館;　東側四個展館分別是冷凍冷藏館，制冷設備館以及相關配件館，共有來自32個國際及地區的1050家企業參展。

香港代表團由陳志雄會長、佘達志上任會長、胡志輝副會長、陳家龍前會長、梁栢泉司庫和老少達理事、勞燦傑理事及曾廣健理事的帶領下於4月6日早上在香港國際機場出發直飛北京，下午到達酒店後馬上盛裝出席中國製冷展國際組織招待晚宴。4月7日早上，四會會長或主席一起參加了中國制冷展開幕典禮和主題論壇，今年主題論壇其中一個內容是‘十三五規劃’解讀，跟中國制冷展的主題有互相呼應的效果，大家都鼓吹綠色、創新、共享成果和建立小康社區。在進展覽館前，各會長跟其他團員會合起來影了一幅大合照作留念。

在會場內，很高興碰到很多香港的老朋友，他們有些是在負責展覽單位的推廣工作、有些是特意到北京了解中國制冷展所展示的最新產品和技術。今年制冷業倆大美國公司---特靈和約克都沒有參展，只有開利和麥克維爾繼續支持中國制冷展。其他三間中國制冷業的龍頭公司---海爾、美的和格力都積極推廣磁懸浮變頻冷水機作主打產品。日本公司大部份都沒有參展，就算有都是展示壓縮機和其他產品。總觀今年中國制冷展的情況，是中國制冷公司獨佔鰲頭，而大部份冷水機組制造商都拿到AHRI認証。還有，已有美國廠家推出用陶瓷軸承的變頻冷水機組來跟磁懸浮變頻冷水機組作比拼，看來未來冷水機組市場在競爭上可能會出現非常大的改變。晚上，代表團出席了中國制冷展開幕招待晚宴，並即場致送紀念品予中國制冷學會，多謝他們熱情的款待及安排。



4月8日，代表團參觀了HOLTOP；4月9日，在前往北京機場辦理登機及出境手續前，代表團參觀了北京的芳草地（Parkview Green），其領先的環保設計、持續發展的理念和豐富多元化的藝術氣氛構成了它的獨有持色，為每一位到訪者帶來充滿新意的獨特體驗。

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Annual Dinner 2015

On 23 November 2015, more than 600 members and professionals across the fields of HVAC engineering, building services, government scene and academia came together to celebrate the 54th Anniversary of ACRA at JW Marriott Hotel.

We are honored to have Mr. Wong Kam Sing JP, Secretary for the Environment, Environment Bureau, as our guest-of-honor. All guests had a fun-filled evening packed full of lucky draw, good wine and food, and wonderful sing performance by Ms. Lily Ho.

Mr. Dave Chan, President of ACRA, gave an opening remark to start off the event.

Council members gave a toast and wished all have a prosperous year in 2016!

The wonderful performance of Ms. Lily Ho lightened the evening.

More than 600 guests and friends from HVAC field joined the event.

Mr. Wong Kam Sing JP, Secretary for the Environment, Environment Bureau of HKSAR, gave an inspiring speech at the event.

Mr Chan Fan, JP, Director of EMSD, presented the Grand Prize of lucky draw

Joyful Dinner 耆英萬歲晚宴

For the 6th consecutive year, ACRA Caring Committee and Open Door Ministries (開心社區服務) co-organized the Joyful Dinner to continuously plant the seeds for caring those in needs. The Joyful Dinner was successfully held on 5th December 2015. Over 50 volunteers from the 2 organizations attended the dinner to celebrate Winter Solstice Festival with 200 elderlies in Lam Tin. As part of the event, "This is the 6th year we join hands with Open Door Ministry to help and serve. I would like to take this opportunity to thank volunteers' great support and member companies' sponsorship and participations. At the same time, special thanks to Raymond Synn, Chairman of ACRA Caring Committee, to take the lead to develop the social responsibility plan within the organization as a way of continuous contribution to the community. Thanks and we look forward to seeing more members in our future social responsibility events." said Dave Chan, President of ACRA.

Mr Raymond Synn, Chairman of ACRA Caring Committee, presented the souvenir to company members to thank for their sponsorships.

Wonderful singing performance by the volunteers.

Smiles and laughter are the best reward to us

Mr Dave Chan, Chairman of ACRA, presented gifts to the elderlies.

HKTDC Education & Careers Expo 2016

In January 2016, the Hong Kong E&M Trade Promotion Work Group, which comprises EMSD and other government departments, public organizations and trade associations, participated in the 4-day Education & Careers Expo 2016 to promote the development of E&M industry in Hong Kong and attract youngsters' attention to the career prospects and development of the E&M industry. As one of the Work Group members, ACRA supported the expo through displaying the copper press system to the visitors to demonstrate the some of the work processes in the field of E&M.

Revision Course of Training for Workers in Handling HFC & Blend Type Refrigerants for Architectural Services Department Contracts

On 30th January 2016, ACRA organized a revision course for registered workers who had successfully completed the training courses previously held for Workers in Handling HFC & Blend Type Refrigerant for ArchSD projects. In this revision course, an update of the current development of refrigerants and a refreshment of the training materials will be conducted.

Mr. Albert Lo, Chairman of Training Committee, presented souvenir to the guest speaker, Mr. Leslie M. K. Cheung, Assistant Technical Manager of Johnson Controls Hong Kong Ltd.

2016 Spring Dinner

At the beginning of the Year of Monkey, ACRA shared the joy and fun with members and guests by hosting a Spring Dinner on 26th February 2016. Along with fantastic dinner and wine, the event had a lot of engagement activities including games, lucky draw and beer competition. Dave Chan, President of ACRA, also expressed his appreciation for the sincere trust and support from professionals in the field; and member's persistent effort to cooperate and adhere the development of ACRA.

All members and guests enjoyed the evening and were excited with the lucky draw and game with varieties of prizes were distributed.

Mr Dave Chan, Chairman of ACRA, and council member gave a toast

Here we are – the Queens of beer competition!

How can we missing the lucky draw!

All sets their sights on the champion of beer competition!

Daikin Cup Golf Day

Taken place at Long Island Golf Club, ACRA Golf Day – Daikin Cup was successfully held on 11th March 2016 and it is one of the most popular events of ACRA. More than 30 members and guests competed for the champion.

Prizes		Winners
Gross	Champion	TANG Sher Kin
Nett	Champion	梁志明
	1st runner up	Raymond TO
	2nd runner up	Eddie TSO
Longest Drive	北 1	TANG Sher Kin
	西 3	Marco CHIN
Nearest to the Pin	北 6	Vincent IP
	西 2	KY IP

ACRA earns "5 Years Plus Caring Company" logo for the first time

ACRA has been awarded the "5 Years Plus Caring Company" logo by The Hong Kong Council of Social Service, in recognition of its continued efforts in fulfilling corporate social responsibility. ACRA has earned the "Caring Company" log for 6 consecutive years since 2010. We will continue our utmost efforts in corporate citizenship. The honor is a significant recognition to our contribution to the community as well as the fruitful results of its cooperation with Open Door Ministries (開心社區服務) .

5 years+ 同心展關懷®
caringorganisation
Awarded by The Hong Kong Council of Social Service
香港社會服務聯會頒發

Member List

	Company Name		Contact Number	Website / Email	Trade			
					Contracting	Manufacturing	Servicing	Supplier
ACRA Fellow Members	ATAL Engineering Limited	安樂工程有限公司	2565 3399	www.atal.com.hk	●		●	●
	Carrier Hong Kong Limited	開利 (香港) 有限公司	2694 5618	www.carrier.com.hk				●
	Krueger Engineering (Asia) Limited	高雅機電工程有限公司	2860 7333	www.krueger.com.hk	●			
	Newland Engineering Limited	新陸工程有限公司	2967 8620	moshiu@newland.com.hk	●			
	REC Engineering Company Limited	盈電工程有限公司	2619 8888	www.rec-eng.com	●		●	
	Shinryo (Hong Kong) Limited	新菱工程香港有限公司	2237 8624	www.shinryo.com	●			
	Shun Hing Engineering Contracting Company Limited	信興機電工程有限公司	2419 8282	www.shecon.com	●			
	The Jardine Engineering Corporation Limited	怡和機器有限公司	2807 4511	www.jec.com	●		●	●
	Trane Hong Kong	特靈香港	3128 4756	www.tranehk.com		●	●	●
	Winston Air Conditioning & Engineering (Hong Kong) Company Limited	永通冷氣工程 (香港) 有限公司	2764 1200	www.winston-hk.com	●		●	
	York International (Northern Asia) Limited	約克國際 (北亞) 有限公司	2590 0012	www.johnsoncontrols.com	●	●	●	●
	Young's Engineering Company Limited	景福工程有限公司	2235 0900	www.youngs.com.hk	●		●	
ACRA Corporate Members	Alliance Contracting Company Limited	聯和承造有限公司	2891 9083	www.alcc.com.hk	●			
	Analogue Technical Agencies Limited	安樂科技有限公司	2565 3399	www.atalbs.com.hk				●
	ATAL Building Services Engineering Limited	安樂機電設備工程有限公司	2561 8278	www.atalbs.com.hk	●		●	●
	Bun Kee (International) Limited	彬記 (國際) 有限公司	2748 9319	www.chinapipegroup.com				●
	BYME Engineering (Hong Kong) Limited	嘉福機電工程有限公司	2881 6690	www.bymehk.com	●		●	
	Carewin Engineering Limited	嘉榮行工程有限公司	2898 2183	carewin@on-nets.com	●		●	
	Chevalier (E & M Contracting) Limited	其士 (機電工程) 有限公司	2111 4811	www.chevalier.com	●			
	China State Mechanical & Electrical Engineering Limited	中國建築機電工程有限公司	2823 7888	www.cohl.com	●			
	Chun Wo E & M Engineering Limited	俊和機電工程有限公司	3758 8007	www.chunwo.com	●			
	Cold Magic Efatar (Hong Kong) Company Limited	高美怡輝 (香港) 有限公司	2606 6922	www.coldmagicefatar.com.hk		●		
	Daikin Airconditioning (Hong Kong) Limited	大金冷氣 (香港) 有限公司	3966 9320	www.daikin.com.hk				●
	Fook Loong (HK) Limited	福隆 (香港) 有限公司	2393 7773	www.flhk.com.hk				●
	Gammon E&M Limited	金門機電工程有限公司	2516 8823	www.gammonconstruction.com	●			
	Honeywell Limited	霍尼韋爾 (香港) 有限公司	2331 9133	www.honeywell.com			●	●
	Hsin Chong Aster Building Services Limited	新昌亞仕達屋宇設備有限公司	2579 8238	www.hcaster.com	●			
	Johnson Controls Hong Kong Limited	江森自控香港有限公司	2590 0012	www.johnsoncontrols.com	●	●	●	●
	K-Thorn Engineering Company Limited	旗鋒工程有限公司	2481 2918	main@k-thorn.com.hk	●			
	Lik Kai Engineering Company Limited	力佳工程有限公司	2611 4501	ericyung@likkai.com.hk	●			
	Lucky Engineering Company Limited	運通冷氣電業有限公司	2780 5285	general@luckyeng.com.hk	●			
	McQuay Air-Conditioning Limited	麥克維爾空調有限公司	2893 6261	www.mcquay.com				●
	Midea Electric (Hong Kong) Limited	美的電器(香港)有限公司	3669 4888	www.mideahk.com	●	●		●
	Quad-Tech Engineering (Hong Kong) Company Limited	高得工程有限公司	2573 1832	quadtech@hkstar.com	●			
	Raising Engineering Limited	威信工程有限公司	2395 6081	simonsiu@raising.com.hk	●			
	Ryowo (Holding) Limited	菱和 (集團) 有限公司	2391 8381	www.ryowo.com		●		
	Siemens Limited	西門子有限公司	2107 6506	andy.wong@siemens.com				●
	Skyforce Engineering Limited	天科工程有限公司	2885 1620	info@skyforce.com.hk	●			
	Southa Company Limited	南龍有限公司	2963 7175	www.southa.com				●
	Standard Refrigeration & Engineering Company Limited	立德工程有限公司	2781 0871	SRE@hklpg.com.hk	●		●	●
	Takasago Thermal Engineering (Hong Kong) Co., Ltd.	高砂熱學工業 (香港) 有限公司	2520 2403	sales@takasago.com.hk	●		●	
	Technicon Engineering Limited	得力確工程有限公司	3193 1300	technic@technicon.com.hk	●			
	Welcome Oncho Denki Limited	偉基溫調電機有限公司	2806 8316	www.saiver-welaire.com.hk		●		●
	Westco Air Conditioning Limited	威高冷氣工程有限公司	2426 3123	mandylo@scee.com.hk	●			
ACRA Associate Members	A & R Engineering Company Limited	奇樂工程有限公司	2408 2960	general@arengco.com.hk	●			
	AGILE 8 Consulting Limited		2185 7679	www.coolnomix.com		●	●	
	Aires Engineering Company Limited	毅力機電工程有限公司	2658 8856	adrianwong@aires.com.hk	●			
	Air Master International Limited	雅士 (國際) 空調有限公司	2764 0307	winston@airmaster.com.hk		●		
	Air Trade Centre Limited	裕風先達有限公司	2887 7000	www.atc.hk	●	●		●
	Alpha Appliances Limited	第一電業有限公司	2529 7555	www.alpha-general.com				●
	Anway Engineering Company Limited	正隹工程有限公司	2598 4228	www.anway.com.hk				●
	Armacell Asia Limited	阿樂斯亞洲有限公司	2574 8376	www.armacell.com		●		
	Arnhold Trading Limited		2807 9400	patricklai@arnhold.com.hk				●
	A Shing Engineering Company Limited	亞成冷氣工程有限公司	2537 1818	wilkiengan@ashing.com.hk	●			●
	BELIMO Actuators Limited	搏力謀執行器有限公司	2687 1716	www.belimo.com		●		
	Biocline Healthcare Services Limited	新康醫療器材工程有限公司	2672 1111	bio@biocline.com	●			●
	Bitzer Refrigeration Asia Limited	比澤爾制冷亞洲區有限公司	2868 0206	www.bitzer.de				●
	Brisky Limited	穿梭科技有限公司	2511 3161	tkwan@briskyltd.com	●		●	●
	Centalink International Limited	信嘉國際有限公司	2626 1897	andy@centalink.com.hk		●		
	CDBM Engineering Consultant Company Limited	新雄力工程顧問有限公司	2598 1088	mail@cdbm.asia	●			
	Chi Yip Engineering Company	志業工程公司	3078 9984	canny@acmv-cy.com	●			●
	Chin Tat Trading Company	展達貿易公司	3521 1589	www.chintat.com.hk				●
	Chit Tat Electrical Engineering Limited	捷達機電工程有限公司	2499 0688	chittat@yahoo.com.hk		●	●	
	Chong Kin Air-Condition Trading Engineering Co., Ltd.	創建冷氣貿易工程有限公司	2307 5159	www.chongkinaircon.biz.com.hk	●			●
	C.J. Wishing International Limited	惠生電業有限公司	2799 9797	cjwish@cjwish.com.hk				●
	Clydeman Engineering Limited	佳電工程有限公司	2332 3591	daniel@clydeman.com	●		●	●
	Crowntin Limited	冠殿有限公司	8202 0830	clchoy@crowntingrp.com.hk	●			●
	Dah Chong Hong (Engineering) Limited	大昌貿易行工程有限公司	2768 3595	www.dch.com.hk	●			
	Delta Pyramax Company Limited	佳澤科技有限公司	2511 2118	www.deltapyramax.hk				●
	Dynalink International Technology Limited	匯能國際科技有限公司	3955 0203	www.di-technology.com	●		●	●
	Dynamic Success Company Limited	勁技有限公司	2116 9021	www.dsuccess.net				●
	Eaxon International Company Limited	恩索有限公司	3590 4656	gamescheung@eaxon.hk		●	●	●
	ebm-papst Hong Kong Limited	依必安派特香港有限公司	2145 8678	info@hk.ebmpapst.com		●		●
	Electrodrive Engineering Limited	高宜工程設備有限公司	2573 7211	info@electrodrive-eng.com				●
	Enviro-Tech Engineering Company Limited	鷹達工程有限公司	2827 0688	steveli@envirotech.com.hk				●
	Ever Cool Refrigerating & Air-Conditioning Co., Ltd.	嘉毅冷凍空調設備有限公司	2356 8598	info@evercoolhk.com		●		●
	Evergreen Environmental Technology Company Limited	冬青環保科技有限公司	2562 3331	www.evergreen-environmental.com				●
	Extensive Trading Company Limited	精基貿易有限公司	2889 1681	www.extensive.com.hk				●
	Far East Engineering Services Limited	遠東工程服務有限公司	2898 7331	www.fareast.com.hk	●		●	
	Fungs E & M Engineering Company Limited	馮氏機電工程有限公司	2682 7200	fungscww@netvigator.com	●			
	Gate Way Valve & Fitting Limited	基法水管配件有限公司	2688 2666	www.gatewayv.com.hk				●

ACRA Associate Members

Company Name		Contact Number	Website / Email	Trade
GTECH Services (Hong Kong) Limited	英國通用工程 (香港) 有限公司	2123 0888	www.gtechservices.com.hk	Contracting
GELEC (HK) Limited	香港通用電器有限公司	2919 8383	hq@gelec.com.hk	Supplier
Gether-Force Air-Conditioning Engineering Co., Ltd.	群力冷氣工程有限公司	2890 2622	geforce@hknet.com	Contracting
Getwick Engineers Limited	佳域工程有限公司	2893 3600	getwick@getwick.com	Contracting
Gotop Engineering (HK) Limited	高陞工程 (香港) 有限公司	2459 3038	gotopco@yahoo.com.hk	Contracting
Great Top Engineering Limited	宏鋒工程有限公司	2345 2219	general@greattop.com.hk	Contracting
Hang Ji Industries International Co., Ltd.	恒基工貿國際有限公司	2721 6129	www.hangji.com	Manufacturing
Hensen System Engineering Limited	豪信系統工程有限公司	2884 9001	cecil@hensen.com.hk	Supplier
Hilti (HK) Limited	喜利得 (香港) 有限公司	2773 4705	www.hilti.com.hk	Manufacturing
Honest Air Conditioning Limited	明發冷氣有限公司	2396 8108	aircond@netvigator.com	Contracting, Supplier
Hi Tak Thermal & Acoustic Insulation Eng. Limited	喜德保溫隔聲工程有限公司	2770 7703	www.hitakinsul.com	Contracting, Manufacturing, Supplier
H.W. International Air-Conditioning Limited	豪華國際空調有限公司	2796 8888	info@hooair.com	Manufacturing
IES (Hong Kong) Limited	恒豐工程 (香港) 有限公司	2992 0830	weston@ieshk.com.hk	Supplier
Intelligent Technologies Limited	毅智科技發展有限公司	2301 4868	info@intelligent-net.com	Supplier
J & J Network Engineering Company Limited	信卓網絡工程有限公司	3579 5263	www.jjnetwork.com.hk	Supplier
Jinchat Engineering (HK) Company Limited	正卓工程 (香港) 有限公司	2687 1755	jyin@jinchat.com	Manufacturing, Servicing, Supplier
Keio Engineering Company Limited	京王工程有限公司	2695 8872	www.keio.com.hk	Contracting
Kembla (Hong Kong) Limited	金特霸 (香港) 有限公司	2528 0999	www.kembla.com.hk	Supplier
Kin Wo A/C Engineering Limited	健和冷氣工程有限公司	2398 0157	kw@kinwo.com.hk	Contracting
Kinetics Noise Control (Asia) Limited	建力聲震控制 (亞洲) 有限公司	2191 2488	www.kineticsnoise.com	Manufacturing, Supplier
Kings View Airconditioning Engineering Co., Ltd.	景匯空調工程維修有限公司	2796 2417	admin@kingsview.com.hk	Contracting
K-Flex (Hong Kong) Insulation Company Limited	凱門 (香港) 保温材料有限公司	2668 5202	www.k-flex.com	Manufacturing
KSB Limited	凱士比有限公司	2147 1226	philip.chow@ksb.com.hk	Manufacturing
Laser Resources (Asia) Company Limited	全美 (亞洲) 有限公司	2516 7500	laasiahh@netvigator.com	Manufacturing, Supplier
LeBlanc Water Treatment & Chemicals Limited	利邦化工水處理有限公司	2408 2000	www.leblanc.com.hk	Servicing
Lee Tack Engineering Company Limited	李德工程有限公司	2305 3111	ltec@leetack.com.hk	Contracting
Legend Engineering Company Limited	卓越聲控工程有限公司	2815 0928	info@legendjt.com.hk	Contracting, Manufacturing, Supplier
Lifa Air Limited	麗風空氣有限公司	2511 7076	www.lifa-air.com	Servicing, Supplier
Life Air IAQ Limited	活力空氣品質科技有限公司	3527 0106	winston@lifeairiaq.com	Manufacturing, Supplier
Link The Best Company Limited	必發 (香港) 有限公司	2568 4092	sales@linkthebest.com.hk	Supplier
Luen Ming Pengshan Air Conditioning Factory Ltd.	聯明坪山冷氣製品廠有限公司	2797 2168	www.luenming.com	Supplier
Mason Industries (HK) Limited	梅森實業有限公司	2967 9639	www.mason-hk.com	Supplier
Maxwell Electrical Asia Ltd.	美基電器亞洲有限公司	3583 5088	www.maxwell-asia.com	Manufacturing, Servicing
MECO Engineering Limited	德寶工程有限公司	2774 8200	meco-engltd@yahoo.com.hk	Contracting
Mesan Fiberglass Engineering (International) Limited	明新玻璃纖維工程 (國際) 有限公司	2787 5717	www.mesanct.com	Manufacturing
Mitsubishi Electric (Hong Kong) Limited	三菱電機 (香港) 有限公司	2887 4575	www.mitsubishi-ryoden.com.hk	Supplier
NAP Acoustics (Far East) Limited	NAP 聲學工程 (遠東) 有限公司	2866 2886	www.napacoustics.com.hk	Contracting, Manufacturing, Servicing, Supplier
New Way Engineering Company Limited	新法機械有限公司	2325 6892	www.newway.com.hk	Supplier
Oxprime (International) Limited	鑫輝 (國際) 有限公司	2590 8088	info@oxprime.com	Supplier
Pacific Sense Enterprises Limited	栢昇企業有限公司	3549 5372	www.pacificsense.com.hk	Contracting, Supplier
Peterson Engineering Limited	必德信工程有限公司	2365 0372	stso@peterson.com.hk	Contracting
Powers Technical Services Limited	寶華技術服務有限公司	2770 2110	powers.pts@gmail.com	Contracting
Practical Engineering (Hong Kong) Company Limited	百利高工程 (香港) 有限公司	2402 2772	practical@practical.hk	Contracting, Supplier
Pyrofoe Engineers Limited	衛安工程有限公司	2388 8038	www.pyrofoe.com.hk	Contracting
Ready Electrical Metal Work Limited	全達電器金屬製品有限公司	2898 8623	kw_leung@ready-group.com	Contracting, Manufacturing
REC Green Technologies Company Limited	盈電環保科技有限公司	2619 8817	www.yaulee.com	Servicing, Supplier
Regin Controls Hong Kong Limited	瑞晶溫控香港有限公司	2407 0281	saleshk@regin.se	Supplier
Richmax Air-Conditioning Company Limited	萬聯空調有限公司	2698 3423	lawrence@richmaxltd.com.hk	Supplier
Ritech Engineering & Supply Company Limited	偉達工程材料有限公司	2410 1819	www.ritech-hk.com	Supplier
San Yik Air Conditioning Engineering Company Limited	新益冷氣工程有限公司	3565 5812	www.sanyikgroup.com	Contracting, Servicing, Supplier
Sanby Trading Company Limited	聖備貿易有限公司	2573 4219	www.sanby.com	Supplier
Savills Engineering Limited	第一太平戴維斯設備工程有限公司	2534 1688	pwong@savills.com.hk	Contracting, Servicing
Shenling Environmental Systems (Hong Kong) Ltd.	申菱環境系統 (香港) 有限公司	2603 0002	www.shenling.com	Supplier
Shun Hing E & M Engineering Limited	順興機電工程有限公司	2387 2882	project@shunhingeng.com	Contracting, Supplier
Shun Tung Engineering Company Limited	順通冷氣電機工程有限公司	2633 6866	gabriel@shun-tung.com	Contracting
Sing Kin Limited	陞建有限公司	2333 1518	singkin@gmail.com	Contracting
Smartech HVAC & Engineering Limited	智能空調工程有限公司	2521 9768	info@smartech-hvac.com.hk	Supplier
Southa Engineering Limited	南龍工程有限公司	2963 7241	www.southa.com	Contracting
Stars (Hong Kong) A/C & R Company Limited	恒星 (香港) 冷熱設備有限公司	6116 7832	stanley_yuen@hstars.com.cn	Manufacturing
Super Mark (H.K.) Engineering Company Limited	高達 (香港) 工程有限公司	2595 1122	www.supermark.com.hk	Contracting, Servicing, Supplier
Superpower Pumping Engineering Company Limited	力霸水泵機械工程有限公司	2745 3562	www.sppump.com	Supplier
Sustainable Energy Limited	恒澤節能有限公司	2332 3077	www.sustaine.com.hk	Manufacturing, Servicing
Target Energy Solutions Limited	達標能源管理有限公司	2155 9882	www.targetensol.com	Servicing
Teembase Development Limited	天基發展有限公司	2554 6263	www.teembase.com	Supplier
Thermtech Building Products Limited	泛達建築材料有限公司	2756 3837	thermbpl@netvigator.com	Contracting, Supplier
Trisun Air Conditioning System Limited	三陽系統有限公司	2377 1618	enquiry@trisun.com.hk	Contracting, Servicing, Supplier
Tinwood Pacific Limited	天匯太平洋有限公司	6325 1197	www.sinro.com	Manufacturing
Tomi Fuji EMC Limited	富滕能源管理有限公司	2432 0170	www.tomifuji.com.hk	Servicing
Tom's Equipment Company Limited	義隆設備有限公司	2757 5539	tom@toms-equipment.com	Supplier
TROX Hong Kong Limited	妥思香港有限公司	2861 2261	www.troxapo.com	Supplier
United Controls Limited	統一儀器有限公司	2556 1001	www.ucl668.com	Servicing, Supplier
Union (Luen Hop) Refrigeration Co., Ltd.	聯合冷氣工程有限公司	2627 4600	unionlh@bizentvigator.com	Contracting
Victory Engineering Service Company Limited	維陞工程有限公司	2979 4068	pamela@ves.hk	Supplier
Viewco Building Services & Engineering Co., Ltd.	偉保工程有限公司	2543 0610	engineering@viewco.com.hk	Contracting
Wai Luen Air Conditioning Limited	偉聯空調設備有限公司	2890 9321	garychan@wailuenhk.com	Contracting
Wardson Engineering Limited	華順工程有限公司	2329 8268	wsengltd@yahoo.com.hk	Contracting
White Hippo Limited	白河馬企業有限公司	2303 1318	www.kshop310.hk	Supplier
Wing Shing Air-Flow Company Limited	永盛風咀製品廠有限公司	2792 6331	contact@wingshing-hvac.com	Manufacturing, Supplier
Wo Lee Steel Company	和利鋼鐵有限公司	2393 0131	www.wolee.com	Supplier
Wolter Asia Limited	華德亞洲有限公司	2456 0198	info@wolter.com.hk	Manufacturing, Supplier
Wysermann Company Limited	威士文有限公司	2614 2213	wysermann@wysermann.com.hk	Manufacturing, Supplier
Yin On Trading Limited	賢安建材貿易有限公司	2572 7110	office@yinon.com.hk	Supplier
Yordland Engineering Limited	日島工程有限公司	2362 2186	www.yordland.com	Contracting, Servicing, Supplier
York Choi Industrial Limited	旭彩實業有限公司	2795 8286	www.yorkchoi.com	Manufacturing
Zenith International Enterprise Ltd.	盛豐國際企業有限公司	2815 5852	www.ebara.com.hk	Supplier

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CFCs & HCFCs Free Phenolic Foam Insulation (Zero ODP)

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Phenotherm™ Class '0' CFCs & HCFCs Free Rigid Phenolic Foam Pipe & Board Insulation

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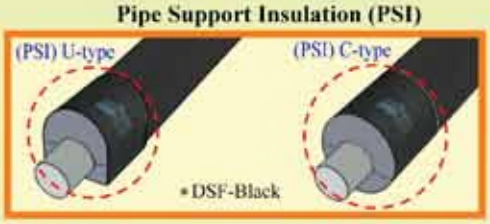
Duct Support Insulation (DSI)

Pipe Support Insulation (PSI)



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Phenotherm™ Rigid Phenolic Foam Insulation is the PROFESSIONAL'S CHOICE for Pipework & Ductwork in HVAC/R System

★ Rigid insulation ensure the final performance, **NO COMPROMISE ON WALL THICKNESS** as other flexible insulation materials.

★ Pipe insulation wall thickness in **SINGLE LAYER** from 15 ~ 150mm.

★ **NO AIR-GAP** after proper installation, insulation ID cut to top-fit pipe OD.

★ **PERFECT HARMONY** with pipe support in same materials.

★ **EASY & FAST INSTALLATION** (As Easy As ABC)

A. Apply adhesive.

B. Snap-on Pipe Support / Pipe Insulation.

C. Seal with Aluminium Tape.

ADVANTAGE
Labour saving + Time saving = Money saving !

EASY JOB

1994

2016 onward...

General Cancer Centre,
Prince of Wales Hospital
Shatin, N.T.
Year of Completion : 1994

International Financial Centre
Phase I (IFC-I)
South West Tower at
Hong Kong Station, HONG KONG
Year of Completion : 1998

Nina Tower
Tsuen Wan, N.T.
Year of Completion : 2007

Central Mail Centre
Kowloon Bay, KLN.
Year of Completion : 2013

SOLE AGENT :

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