Member List

ACRA Associate Members

Company Name		Contact Number	Website / Email	Trade
Ever Cool Refrigerating & Air-Conditioning Company Limited	嘉毅冷凍空調設備有限公司	2356 8598	info@evercoolhk.com	Supplier & Manufacturing
Extensive Trading Company Limited	精基貿易有限公司	2889 1681	med@extensive.com.hk	Supplier
Far East Engineering Services Limited	遠東工程服務有限公司	2898 7331	fareast@fareast.com.hk	Contracting & Maintenance
Fook Loong (Hong Kong) Limited	福隆 (香港) 有限公司	2393 7773	www.flhk.com.hk	Supplier
Fungs E & M Engineering Company Limited	馮氏機電工程有限公司	2682 7200	fungscww@netvigator.com	Contracting
GTECH Services (Hong Kong) Limited	英國通用工程(香港)有限公司	2123 0888	admin@gecs.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 Company Limited	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
Goodways International Limited	協進國際有限公司	2575 8770	josephlam@goodwaysintl.corp.com.hk	Supplier
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
Hennex Sustainable Energy Limited		2332 3077	www.sustaine.com.hk	Manufacturing
Hensen System Engineering Limited	豪信系統工程有限公司	2884 9001	cecil@hensen.com.hk	Supplier
Honest Air Conditioning Limited	明發冷氣有限公司	2396 8108	aircond@netvigator.com	Contracting & 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
Kembla (HK) Limited	金特霸(香港)有限公司	2528 0999	info@kembla.com.hk	Supplier
Kervin Engineering Company Limited	樂信工程有限公司	2422 3110	kervinkm@yahoo.com.hk	Contracting
Kieback&Peter Hong Kong Limited	德國科特貝德(香港)有限公司	2372 9083	www.kieback-peter.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
Kinden Corporation		2368 6136	kidhx@kinden.imsbiz.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	Supplier
Kings View Airconditioning Engineering Company Limited	景匯空調工程維修有限公司	2796 2417	admin@kingsview.com.hk	Contracting
Laser Resources (Asia) Company Limited	全美(亞洲)有限公司	2516 7500	laasiahh@netvigator.com	Supplier & Manufacturing
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
Life Air IAQ Limited	活力空氣品質科技有限公司	3527 0106	winston@lifeairiaq.com	Supplier
Lik Kai Engineering Company Limited	力佳工程有限公司	2627 0888	admin@likkai.com.hk	Contracting
Link The Best Company Limited	必發(香港)有限公司	2568 4092	sales@linkthebest.com.hk	Supplier
Man Po Environment Technologies Company Limited	文寶環保科技有限公司	2429 0088	account_hk@manpo.com.hk	Supplier
Mega Power Engineering Company Limited	雄力工程有限公司	2474 9832	sw1838@mpec.com.hk	Supplier
Mesan Fiberglass Engineering (Int'l) Limited	明新玻璃纖維工程(國際)有限公司	2787 5717	www.mesanct.com	Manufacturing
Midea Electric (Hong Kong) Limited	美的電器(香港) 有限公司	3669 4888	leonard@mideahk.com	Supplier
NAP Acoustics (Far East) Limited	NAP 聲學工程(遠東)有限公司	2866 2886	www.napacoustics.com.hk	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
Peterson Engineering Limited	必德信工程有限公司	2365 0372	stso@peterson.com.hk	Contracting
Practical Engineering (HK) Company Limited	百利高工程(香港)有限公司	2402 2772	practical@practical.hk	Contracting
Pyrofoe Engineers Limited	衛安工程有限公司	2388 8038	public@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	Manufacturing
Richmax Air-Conditioning Company Limited	萬聯空調有限公司	2698 3423	lawrence@richmaxltd.com.hk	Supplier
Sanby Trading Company Limited	聖備貿易有限公司	2573 4219	sanby@netvigator.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
Shun Hing E & M Engineering Limited	順興機電工程有限公司	2387 2882	project@shunhingeng.com	Contracting
Sing Kin Limited	陞建有限公司	2333 1518	singkin@gmail.com	Contracting
Stars (H.K.) A/C & R Company Limited	恒星(香港)冷熱設備有限公司	6116 7832	luoxiaoju2000@163.com	Manufacturing
Southa Engineering Limited	南龍工程有限公司	2963 7241	www.southa.com	Contracting
Super Mark (H.K.) Engineering Company Limited	高達(香港)工程有限公司	2595 1122	www.supermark.com.hk	Contracting
Sustainable Energy Limited	恒澤節能有限公司	2332 3077	www.sustaine.com.hk	Manufacturing
Teembase Development Limited	天基發展有限公司	2554 6263	info@teembase.com	Supplier
Thermtech Building Products Limited	泛達建築材料有限公司	2756 3837	thermbpl@netvigator.com	Supplier
Tinwood Pacific Limited	天匯太平洋有限公司	6325 1197	www.sinro.com	Supplier
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
Tyco Water Hong Kong	泰科水務香港	2919 1900	www.tycowater.com	Supplier
United Regent International Limited	友益國際有限公司	2527 8003	unitedregent@unitedregent.com	Supplier
Union Manor Limited	聯明有限公司	2797 2168	luenming@unionmonorltd.imsbiz.com.hk	Contracting
Victory Engineering Service Company Limited	維陞工程有限公司	2979 4068	pamela@ves.hk	Contracting
Viewco Building Services & Engineering Company Limited	偉保工程有限公司	2543 0610	engineering@viewco.com.hk	Contracting
Vital Engineering Company Limited	威圖工程有限公司	2571 5382	hongkongvital@yahoo.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
Wing Shing Air-Flow Company Limited	永盛風咀製品廠有限公司	2792 6331	contact@wingshing-hvac.com	Manufacturing
Wolter Asia Limited	華德亞洲有限公司	2456 0198	info@wolter.com.hk	Supplier
Wysermann Company Limited	威士文有限公司	2614 2213	wysermann@wysermann.com.hk	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	info@yordland.com	Contracting
Zion Engineering Limited		3481 6007	kwong.zion@gmail.com	Contracting & Supplier

香港空調及冷凍商會有限公司
THE HONG KONG AIR CONDITIONING AND REFRIGERATION ASSOCIATION LIMITED

SUMMER 2012
Newsletter 會員通訊

商界展關懷 caringcompany 2011/12
Awarded by The Hong Kong Council of Social Service 香港社會服務聯會頒授

Contents

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Message From The President

Mr. K.Y. Ip *President*

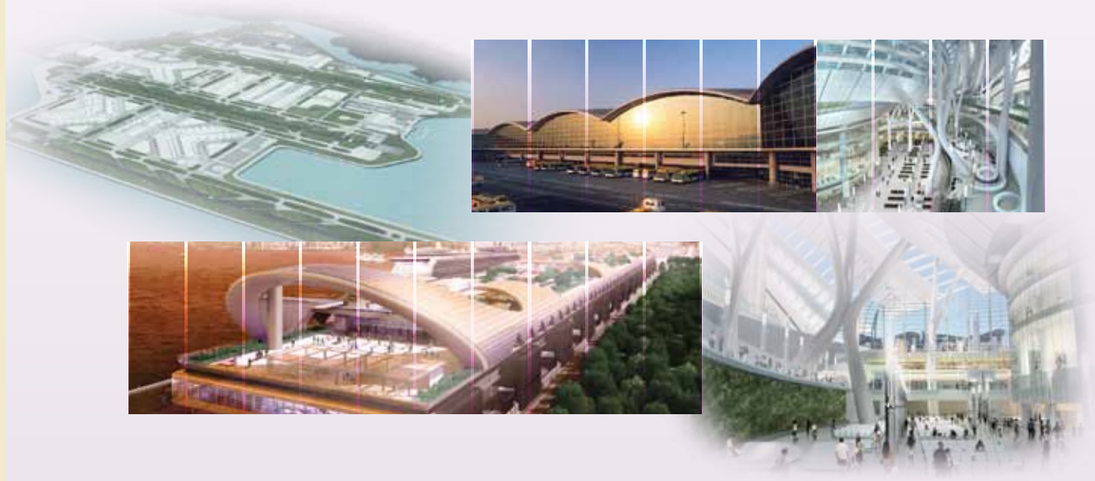
Being one of the pioneers in the air conditioning and refrigeration industry of Hong Kong in the last 50 years is a remarkable achievement of ACRA. The road to its 50th anniversary for the biggest celebration of this important milestone reached its climax when guests, members and council in joint hands to show support and unity in HKCEC on 28 November 2011. This marked an extremely joyful and memorable moment in ACRA's history.

Time flies with two years of the current term of office coming to a conclusion in June this year. Transition of commitments, duties and responsibilities from the present term of office to the next has been in the making and I am confident that this process shall develop into a smooth completion at time of AGM to be held on 8 June 2012. Making things happen involving the commitment and consensus of stakeholders, ACRA has been keeping its collective voice up and upholding its uncompromising stance driven by the benefit and interest of the industry and society at large. The culture and core value being brought down from the predecessors and cultivated during every term of office are ACRA's pillars to build its strength and gain its widest support from different walks of the industry and members.

The reach and portfolio of ACRA in these years have been further enriched. They include the growth of members' pool, external liaison and participation in various policy reviews, attending to technical and networking issues, cooperation with professional and learned bodies, providing services to the industry by organizing training programmes and forums, reaching the grass root of the community through caring activities for the elderly and needy and many other activities. Promoting business, advancing technology and good practice are missions of ACRA, we have been pursuing such through different platforms and outreaching with joint effort from the Council, support of ACRA members and collaborative contribution by other stakeholders and organizations in the industry.

Message From The President

Construction in Hong Kong has been benefiting from the rapid social and economic development of the city, the boom shall ride on the activities in the construction for infrastructure, railway, urban redevelopment, community, hospitals, education and housing in the years ahead. The further increase in expenditure and annual budget from HK$62 billion at present to over HK$70 billion in coming years for government capital works is a key driver to provide jobs and turnover, while at the same time stimulates the growth and development in private sector with synergy. Apart from the current massive projects where contracts have been awarded with some where construction has been underway, the ambitious strategic plan for developments such as Shatin Central Link, West Kowloon Cultural Hub, Kai Tak Redevelopment, Airport Master Plan 2030, harbourfront enhancement, cross boundary projects and infrastructure, etc. will certainly spin out tremendous opportunities for the construction industry going forward.

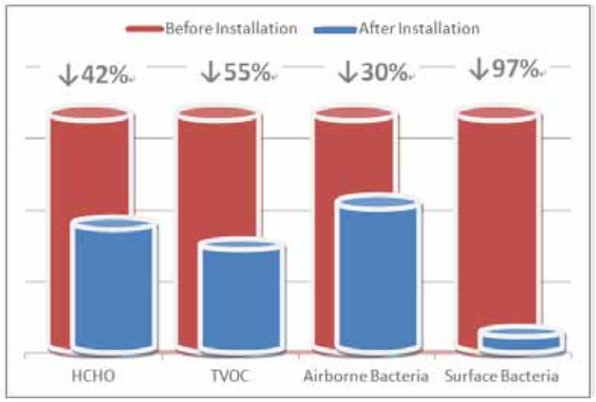


On the other hand, there are no lack of problems in resolving and absorbing the risks in labour shortage, payment delays and disputes, materials fluctuation, wage inflation and others by the industry in the time coming. Taking the opportunity of construction boom, it shall be in the interest of the society to alleviate the payment issue impact by security of payment through legislation. This would be a promising move to return the industry to a more balanced and healthy condition from a financial point of view, and such would allow the industry to deploy sufficient resources to do the job and provide better pay and benefits to attract new blood to join the aging and diminishing workforce.

There are challenges lying ahead in the industry: keeping pace with the advancement of technology for energy efficient and green targets, compliance with the BEC under BEE Ordinance, deployment of workers qualified under CWR Ordinance, adopting the collaborative approach for executing contracts under NEC3 standard form, healthy competition and shrinking direct and NSC contracts for E&M are a few of the many. ACRA's next term of office will continue to strive in joint and collaborative effort looking forward and tackling the challenges ahead of ACRA's 50 years of establishment for serving the members, industry and society at large. We look forward to your continuous support, voices and participation in ACRA's mission and endeavor for more success in year 2012 and beyond.

有效滅除:

- 花粉
- 揮發性氣體
- 細菌
- 煙霧
- 塵蟎
- 異味
- 霉菌
- 寵物毛屑
- 病毒、過濾性病毒



安裝 STERIL-ZONE 空氣淨化器前後的比較 (小學課室測試結果: LAWN EPL)

甲醛 (HCHO)

來源: 黏貼劑、傢俱、塗料等

甲醛對皮膚及黏膜有刺激性作用，接觸過甲醛的皮膚可能出現過敏現象，嚴重者甚至會導致肝炎、肺炎及腎臟損害。

總揮發性有機化合物 (TVOC)

來源: 清潔劑、傢俱、印刷油墨、油漆及溶劑等

指可在空氣中揮發的有機化合物，苯、甲苯、對二甲苯、間二甲苯、鄰二甲苯及乙苯 等都屬於 TVOC 的範疇。能影響中樞神經系統，並伴有頭痛、頭暈、噁心，影響造血機能，對肝、腎及 免疫系統產生影響，可引起血液系統的疾病，是白血病誘病因子，它被世界衛生組織確認為有毒致癌物質。

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E-mail: sales@briskyltd.com Website: www.building.hk/brisky

2012穿梭推介所有冷氣名牌

- 批發零售安裝家用冷氣機及商用冷氣機 (R410A, R22 雪種都有)
- 中央冷氣設備 (包括 1.CHILLER 2. AHU 3. FAN COIL〔掛牆、卡色、標準、高壓及靜音都有〕 4. 水冷坐地柜機及水冷吊天花機 (有分體式及整體式) 5. VRV 6. 零件 7. AAF隔塵網及AAF空氣淨化機 8. 移動式冷氣機
- PANASONIC、CARRIER、MCQUAY、TOSHIBA 及其他名牌商用冷氣機
- 穿梭I及小型工程牌照編號 MWC(P)921/2011, 安裝亦可

2011年穿梭推介所有防火名牌

- PROMAT, DURASTEEL, SUPALUX, MONOLUX, VICUCLAD 防火板
- TANDA, RUSKIN, LASER, LLOYD 防火閘/防火防煙閘
- NULLIFIRE, CAFCO, SPRAYFILM 防火油及 MANDOLITE, CAFCO 防火泥

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- 美國牌子有開利, 約克, 麥克維爾, 飛歌, 惠而浦, TRANE 等
- 其他牌子有美的, 格力, 海爾, 新科, TCL, LG, SAMSUNG, 德國寶, 白朗 等
- "穿梭" 是中國東莞名牌 "雅榮商用及中央空調" EDWIN的港澳總代理
- "穿梭" 提供開利R22兩匹至六匹淨散熱分體機存貨作維修用 (輕過 90KG)

通風
所有名牌通風機 (包括商用及家用)
- 家用名牌通風扇有 PANASONIC, KDK, IMASU, GNN 等
- 商用名牌風扇有 PANASONIC, WOODS, KRUGER, NICOTRA, OSTBERG 等
- 風閘牌子有 PANASONIC, KDK, MITSUBISHI 而且 IMASU 有單相及三相
- 穿梭特別介紹 PANASONIC 吊天花乾衣冷暖風抽風機 (浴室寶) (線控及無線搖控都有)

防火
名牌防火板, 防火油, 防火圈, 防火泥, 防火配件都齊備
- 防火板有 PROMAT 牌子全系列的 PROMATECT-H, PROMATECT-S, PROMINA, PROMINA HD, PROMASEAL, PROMAT FIRE COLLAR 及最新 PT-50 板 (不用防火棉)
- 穿梭亦有 SUPALUX, DURASTEEL, MASTERBOARD, MONOLUX, VICUCLAD 防火板
- 防火閘及防火防煙閘有 TANDA, RUSKIN, LASER, LLOYD
- 防火岩棉有 BNBM, ROXUL (CSR), FINENESS

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LCD, LED 高清電視有 PANASONIC, SONY, SHARP, RASONIC, PHILIPS 等
- 雪櫃, 洗衣機及電磁爐有GALA, 樂聲, 日立, 東芝, 三星, 三菱, 白朗, 威士汀, 飛歌, 樂信, GE, 北極, 西門子, 金章, 惠而浦, 德國寶 等

安裝
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- 穿梭I級小型工程牌照MWC(P)921/2011, 安裝亦可

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The first zero carbon building in Hong Kong, an incredible feat of sustainable engineering

Christopher To
Executive Director of
Construction Industry Council (CIC)

The Basic Concept and the Objectives of the Zero Carbon Building

In order to combat the increasing pressure from climate change, the Hong Kong government has recently targeted for carbon intensity reductions by 50 to 60 percent by 2020 compared to the 2005 baseline. Buildings account for 90 percent of the electricity consumption and 60 percent of the greenhouse gas (GHG) emissions in Hong Kong. As such, the construction industry presents both a challenge and an opportunity for reduction of GHG emissions.

With a vision to promote low carbon building design and technologies, the Construction Industry Council (CIC), the statutory coordination body for the construction industry, is developing the first Zero Carbon Building (ZCB) in Hong Kong in collaboration with the Hong Kong government.

The project aims to showcase the state-of-the-art eco-building design and technologies locally and internationally. It will serve as an education and exhibition centre to share knowledge and expertise in low carbon building design and technologies and to raise community awareness of sustainable living.

The ZCB consists of indoor exhibition spaces, an eco-home, eco-office, multi-purpose room and other ancillary functions. The landscaped area will be open to the public for leisure use and for outdoor exhibitions. The ZCB consists of indoor exhibition spaces, an eco-home, eco-office, multi-purpose room and other ancillary functions. The landscaped area will be open to the public for leisure use and for outdoor exhibitions. With a building footprint of under 10 percent of the site area, the project has a high greenery coverage of more than 50 percent with a proposed urban native woodland which seeks to promote biodiversity. The ZCB is sited away from the Drainage Reserve Zone (DRZ) to avoid the building loads acting on the box culvert. On the DRZ where soil loading is constrained, existing trees within the site were kept whenever possible and potted trees put in place. Balanced cut and fill for the works were adopted to minimize import/export of materials for the excavations/site formation works and the construction of the urban native woodland area.

"With a building footprint of under 10% of the site area, the project has a high greenery coverage of more than 50%, including Hong Kong's first urban native woodland which seeks to promote biodiversity"

A Life Cycle Analysis (LCA) based hierarchical and integrated design approach was adopted, which leads to an overall reduction of 40 percent in energy demand (20 percent from passive design measures; 20 percent from the use of ultra-energy-efficient active building systems), as compared to the current standard design.

How Electrical and Mechanical (E&M) Equipment Adopted Can Contribute to the Overall Success of Zero Carbon, Particularly on Heating, Ventilation, Air-Conditioning (HVAC) Systems?

A number of advanced technologies are adopted in the ZCB. The special E&M features that contribute to achieving zero carbon emissions are as follows:

Renewable Energy

Renewable energy is generated on-site from 1,015m2 photovoltaic panels and a 100kWe biodiesel tri-generation system. The large-scale use of biodiesel extracted from waste cooking oil is a first in Hong Kong. The use of bio-diesel from waste cooking oil not only displaces the combustion of fossil fuel, but also avoids the generation of methane gas by disposing the waste cooking oil at landfills.

"The building itself consumes less than 100 kWh/m2/year of electricity which is approximately 40% less than the baseline of HK's Building Energy Code (BEC)."

The renewable energy generation of the ZCB is larger than its operation needs. The tri-generation (Combined Cooling, Heating and Power) plant and the PV system generate approximately 230MWh/year. The building itself consumes less than 100 kWh/m2/year of electricity which is approximately 40 percent less than the baseline of HK's Building Energy Code (BEC). Surplus energy output is exported to offset embodied energy of its construction process and major structural materials.

Tri-Generation Using Biodiesel

It will be the first large-scale use of biodiesel to generate renewable energy in Hong Kong. Adopting waste-to-energy (biodiesel produced from waste cooking oil), the tri-generation system captures 70% of the fuel energy (adsorption cooling / desiccant dehumidification), compared to 40% for conventional energy supplied through electricity grid where the bulk of fuel energy is rejected as waste heat into the sea or atmosphere.

PV panels

Over 80% of the roof is covered with crystalline PV panels (1015sqm), which produces 80 MWh of electricity per year, providing more than 60% of the energy needs at the ZCB. BIPV (building integrated PV) panels and thin film PV panels of new ultra-light-weight cylindrical CIGS (copper indium gallium diselenide) technology are also showcased.

Ultra-Energy-Efficient Active Systems

Cross-ventilation and High Volume Low Speed Fans – This building is designed to address specific environmental challenges in the climatic conditions of Hong Kong. It features an open-plan cross-ventilated layout. When used in conjunction with High-Volume-Low-Speed (HVLS) ceiling mounted fans, it promotes a gentle and uniform air-velocity throughout the building that can effectively counter the effects of the often humid weather (effective for approximately 30 to 40% of the year).

Under Floor and Radiant Cooling Systems – Under the air-conditioning mode, the building uses an advanced concept: high temperature system consisting of under floor air-supply, radiant cooling system and desiccant dehumidification. To achieve the desired room conditions of 26°C, 55% relative humidity, conventional system overcools the supply air (10 to 14°C) to achieve dehumidification. In this design, the humid fresh-air is pre-treated through a desiccant dehumidification process, hence the air and coil temperatures can be significantly higher, thus posing less load on the chillers.

Energy Cascade – The design also addresses the shortcoming of conventional electricity supply which is inherently inefficient due to the high-rate of waste heat rejection: only 40% of the source energy is captured. At the ZCB, thermal energy from the combustion of biodiesel is captured in an energy cascade that first utilizes the highest grade heat for electricity generation, then adsorption cooling, and then desiccant dehumidification. As a result, 70% of the fuel energy is captured.

Comprehensive Monitoring – More than 2,000 sensors are built into the building, reporting on every aspect of the building performance. The results are displayed interactively on a dashboard in real-time.

Microclimate Monitoring – Four microclimate monitoring stations are placed on and around the building to enhance the understanding of how the building performs and interacts with its surroundings. This is particularly important in the high-density context of Hong Kong.

Automatic Windows and User Control – A number of high-level windows are centrally controlled by coordinating their operation with the air conditioning strategy. At the same time, there are a number of low-level windows that can be controlled by the user to tailor the amount of ventilation and wind speeds at the occupied level.

Task-Lighting – Rather than uniformly lighting the building to a high-level of brightness, most of the building will be illuminated to approximately 200 lux (appropriate for people circulation), while task-lighting will be provided at areas where fine work occurs (office desk, display etc).

Active Skylights – A controllable skylight that allows users to actively adjust the natural daylight level through control of louver blades.

People Interview with William Yick

在這一次人物專訪裡，我們不時會聽到同業朋友們稱呼為「阿Sir」的易永林〔William〕妙語連珠，而我們聽著他細說自己的人生經歷也覺津津有味。就讓大家一起來分享 William 的故事。

易永林先生

《滴嗒滴嗒 ■ 事業起步點》

問到 William 的入行經過，1975 年畢業於加拿大 University of Toronto 的機械工程學系的他這樣說：「與很多年青人一樣，對於事業其實也沒什麼計劃，只抱著找一份工作想法而已。哈哈！」不過在寄出一封一封求職信後，當時全球最大的消防設備公司 Simplex 卻向他招手，並安排他在多倫多分公司任 Technical Representative，負責其中一社區所有消防系統及 master clock system。何謂 master clock system？就是由主鐘〔master clock〕控制很大範圍區域內所有的子鐘〔slave clock〕，令到它們全部沒有絲毫誤差地一致運行，而這系統大多應用於火車站、機場、醫院、工廠工人打咭機等。由於當時的 control system 仍未發展完善及盛行，所以 master clock system 也可算是能控制暖通空調設備開關的第一代應用方案。雖然 William 所學本科為機械工程，但這份工作卻為他在屋宇設備〔Building Service〕方面的發展打開了大門，並為以後的成功打下基礎。

《事業發展 ■ 沒有地域界限》

80年代開始，亞洲區經濟起飛，William 便在回港後於1981 年加入 Honeywell 出任香港區保養部經理，服務範圍包括氣動空調控制系統、樓宇自動控制系統、消防和保安等。憑著出色的表現，William 再於1987 被調升為亞太區保養部經理，同時兼顧台灣及新加坡市場，並以豐富的經驗協助兩地成立保養部，提升區內保養服務的水平。在 Honeywell 工作的十年間，亞太區保養業務也在 William 的領導下，營業額翻了幾翻。

可能「人才」走到那裡都惹人注目，William 在1991年一趟往韓國出差旅程中，因機緣巧合遇上 Landis+Gyr〔來自瑞士歷史猶久的樓宇控制系統公司〕的副總裁，並得到他的賞識邀請加入其公司。雖然Landis+Gyr的業務在香港發展順利，但到1992年 William 感到當時香港市場已開始飽和，遂建議公司在上海和北京設立分司，拓展中國市場。亦因為William看準當時大量香港資金湧向內地，加上Landis+Gyr的實力，他們在內地獲得很多港資項目合約，包括香港廣場和鷹君集團等多個項目。在1998年，西門子收購 Landis+Gyr，William 繼續為公司效力至2001 年轉職 Johnson Controls。

《要比別人走得更前》

William 服務過多家跨國公司，且在事業上屢創高峰，相信這與他的創新思維和〝要比別人走得更前〞的信念不無關係。早在八十年代初，Honeywell 已很注重客戶管理〔Account Management〕，但 William 認為要令這策略更具成效，必須再加強與客戶之間的連繫及其忠誠度。所以他便在業內首創聘請客戶專員跟主要顧客定期會面，聽取他們的意見甚至投訴，然後向公司反映及與各部門跟進。這樣一來，顧客當然倍感被重視，而良好業務關係得以長期保持，顧客也會在合約價錢的議價過程中以服務質素為重要考慮，最終公司可在服務定價上贏得優勢。

除了創意，William 的不服輸精神也令他比別人走得更前。由於在90年代，Landis+Gyr 並不廣為市場熟悉，所以在第一次投標香港大學的項目中落選。但他沒有放棄，再在港大另一項目投標以較進取的定價和標榜產品的質素，最終取得合約，並在往後成為港大其中一家長期合作伙伴。

而 William 另一「戰績」可謂是替置地廣場其中一座辦公大樓更換樓宇自動控制系統。這項工程的難度在於（一）原有舊控制系統運作多年及經過多次修改而缺乏紀錄圖或相關文件，要跟踪及改善線路與有效的控制器及系統真是談何容易；（二）這座甲級寫字樓的專尚租客要求甚高，大廈主要設備如空調或電梯等系統根本不能停止運作。但 William 帶領他的小組特別用心仔細做好事前計劃及準備，最終當然順利完成工程，而業主置地公司後來亦再向他批出遮打大廈項目的合約。

《培育人才》

多年來作為業內首屈一指企業的管理層，William 認為生意固然重要，但在培育人才和接班人方面也不容忽視。這個信念亦令他在 Johnson Controls 擔任亞太區 System Director 期間，於公司內部創立了一個討論平台，讓各地區的工程師可以提出不同技術問題討論。在一個又一個〝問〞和〝答〞當中，這平台便漸漸成為一個技術及應用方案支援中心，尤其令經驗較淺的工程師如同獲得綜合培訓一樣，不斷汲取別人的經驗和增進自己的工作知識。

而曾與 William 共事的年青朋友，相信也曾經歷過被他在前往工地或探訪客戶途中被他「突擊測驗」，問到有關各種有關屋宇設備的問題吧！William 這樣做當然不是為了貪玩，而是想儘量提醒年青工程師們要時刻留意身邊發生的事和物，令自己設計的樓宇自動控制系統可更完善和切合客戶的需要。這也算是另類培育後輩的方法吧！

雖然 William 相識滿天下，但很多同業朋友也可能不知道他真的是一位「阿 Sir」！原來他近年在澳門大學的發展及質量研究所〔Institute for Development and Quality〕每年都會客席教授幾堂有關樓宇自動控制系統原理的課堂，希望做到薪火相傳之外，也能吸引更多年青人入行。

《給後輩的話》

在這暖通空調和智能建築管理的行業打滾差不多四十年，面對時代變遷和科技各種進步，William 認為「顧客」始終是最重要的。科技可幫助我們簡化工序，如 load calculator 能更快和準確計算出所需的數據，但不能替我們設計出一套合顧客心意的空調或樓宇自動控制系統。因為設計時要有「心」，兼且融入「人」的元素，系統方案最後才能切合顧客實際需要，令顧客能得心應手的使用操作，發揮系統最大功效。所以 William 奉勸各位年青工程師應一切從簡，不要賣弄不必要的複雜，設計才能更加人性化。

此外，「真誠」也十分重要—它會為你帶來顧客的信任和長期良好合作關係。正因為 William 的真誠，當年很多顧客不單依然與他有業務往來，更成為他交心的好朋友呢！

《後記》

訪問到尾聲，看到 William「百足咁多爪」，便問他空閒時間是否很少。他這樣回答：「也可以這麼說吧。不過我覺得工作之餘也要享受生活和回饋社會，所以我便和一些老友記在【長青社】當義工，幫老人院做能源審計和設計更換空調和照明系統的方案，我覺得挺有意義呀！」雖然聽起來好像還是在工作，不過倒也感受到 William 十分享受當義工呢！

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Explore Energy Potentials for Cooling the Space

Radiant cooling technology – chilled ceilings and chilled beams

Author: **Ir Allan Jones CE**
MIMech E, MCIBSE, MHKIE.

Introduction

New air conditioning systems are emerging in Hong Kong focused on energy efficiency. Chilled ceilings and chilled beam systems have been used in Europe for 20 years and are very popular due to their energy efficiency. Both systems operate on the principle of separating the functions of room sensible cooling from the functions of ventilation and humidity control. In these systems the air supply is only used for ventilation and humidity control and thereby the amount of air used can be substantially reduced resulting in a large saving in the energy used moving air around a building. In many central air conditioning systems the energy used by the fans circulating air can be almost the largest part of the energy consumption of the air conditioning system. By limiting the use of air to only ventilation and humidity control the amount of air needed is much reduced and often only the fresh air part of the air supply is needed resulting in not only large energy savings but also excellent air quality. This is why in Europe these systems are a popular choice for not only offices and public buildings but also for hospitals and medical facilities.

Chilled Ceiling Systems

The chilled ceiling system works on the principle of cooling metal ceiling panels and using them as radiant coolers to cool the room. As much as 60% of the room sensible cooling is achieved by radiation. The chilled ceiling panels operating typically with a surface temperature 7 to 8 deg C lower than the room absorb the heat from all surrounding higher temperature surfaces by radiant or electro magnetic heat transfer. Radiant cooling or heating is governed by the Stefan Bolzmann equation whereby the heat flow from a higher temperature body to a lower temperature body is proportional to 4th power of the temperature difference, so the temperature difference between the ceiling panels and the room determines the amount of available cooling. With the facility to carry out most of the cooling by radiation, air is only needed for ventilation and humidity control and this reduction in the amount of air needed is a major contributor to the energy efficiency of the system. Also with less air flow there is less risk of air distribution problems and air drafts.

Figure 1 shows a schematic of chilled ceiling system. The ceiling panels are cooled by chilled water typically supplied at 15 to 17 deg C with a return water temperature 2 to 3 degrees higher. As such the chilled ceiling cooling circuit is operating at significantly higher water temperatures than the typical 7 to 12 deg C chilled water circuits needed for fan coil or all air systems. The reasons for this are twofold. Firstly it is more energy efficient to generate chilled water at higher temperatures and secondly the ceiling is required to operate above the dew point temperature of the room to avoid any risk of condensation. The use of higher chilled water temperatures also allows the possibility of using low grade geothermal cooling or free cooling from the outside air when ambient temperatures are reduced.

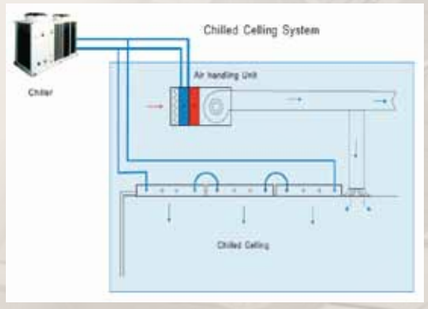

Figure 1

The structure of the chilled ceiling panel is shown in figure 2. The unit incorporates extruded aluminum heat exchange rails which are bonded with special adhesive to the back of the ceiling panel. Copper tubes are expanded into the saddles in the heat exchange rails to allow the chilled water to cool the heat exchange rails and thereby the metal ceiling panels. There are other types of chilled ceiling panel construction including the clipped type where copper pipes are clipped to the back of the ceiling panel and lay in types where normally plastic chilled water pipes are laid in the metal ceiling panel. The effectiveness of the different types depends on the amount of contact between the chilled water pipes and the metal ceiling panels and for this reason the clipped type and the lay in types are less effective than the heat exchange rail type.

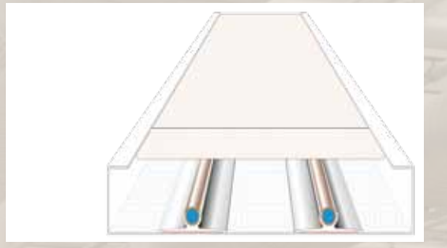

Figure 2

The chilled water circuits for the chilled ceiling panels are normally configured with 4 to 6 panels in series with each circuit connected to the water distribution headers in parallel. Control of the room cooling is achieved by controlling the water flow to each zone normally using 2 way on/off water valves.

As mentioned earlier air is only used for ventilation and humidity control and therefore much less air is needed compared to a VAV or other all air system. This primary air can be supplied to the room using under floor displacement type air distribution or by air mixing from the ceiling. The under floor displacement approach has a limitation because in this case the air needs to be supplied at a minimum temperature of 18 deg C to avoid cold feet problems whereas the supply air needs to be cooled in the primary air handling unit to a dew point temperature of about 13 deg C in order to provide the humidity control required. Clearly it is a waste of energy to reheat to 18 deg C and therefore overhead air distribution is generally a simpler and more energy efficient solution. With small quantities of air it is important to ensure good air mixing of the primary air and to achieve this normally high induction linear air jet diffusers or swirl diffusers are used as shown in figures 3 and 4.

Figure 3

Figure 4

Experience has shown that chilled ceiling systems are not only very energy efficient but they also provide high levels of comfort. It has been found that with radiant cooling it is possible to operate with up to 2 deg C higher room temperatures with the same level of comfort. This can add a lot to the overall efficiency of the system.

One limitation of the chilled ceiling system is their effective cooling capacities. Typical capacities with a 10 deg C difference between the supply water temperature and the room temperature are about 90W per square meter of active ceiling panel. After allowing for the installation of other services in the ceiling such as lighting, fire sprinklers etc the active area of ceiling can be reduced to 70% of the total ceiling area resulting in a cooling capacity of about 60W per square meter of total ceiling or floor area. The primary air system also adds some cooling, typically 10 to 20W per square meter giving an overall system capacity of 70 to 80W per square meter.

As such chilled ceiling systems are good for interior zones but may not provide enough cooling for perimeter zones with high glazing loads. In these situations it is common to apply the system together with high performance building facades to reduce the perimeter heat loads or with a perimeter chilled beam system which gives a higher cooling capacity to compliment the chilled ceiling system in the interior zones. See figure 5.

Figure 5

Chilled Beam Systems

Chilled beam systems have similar benefits in that they separate the functions of room sensible cooling from the ventilation and humidity. The difference between the chilled beam and the chilled ceiling systems is that chilled beams provide the sensible cooling in the room using finned heat exchangers that cool the room air by convection.

There are two types of chilled beam system – passive type and active type.

Passive Chilled Beams

Passive chilled beams operate based on room air circulating through the finned chilled water heat exchanger by natural convection. The passive chilled beam is located in or above the ceiling. The air in contact with the heat exchanger is cooled becoming heavier and as a result falls creating a downward convective air flow which cools the room. This method of cooling is very efficient because no energy is used to move the air through the heat exchanger. However the system needs to be applied carefully to avoid air distribution issues due to the air down draft below the beams. In view of this passive chilled beams are often used at the perimeter of the building to offset the up draft at the windows caused by the window solar or transmission heat loads or adjacent to interior partitions where people are not normally seated.

With a passive chilled beam system the primary air for ventilation and humidity control is provided with a separate system similar to the chilled ceiling system. See figure 6.

The cooling capacities of passive chilled beam systems are higher than the chilled ceilings again making them useful for application at the building perimeter with chilled ceilings in the interior.

Active Chilled Beams

Active chilled beams also use finned chilled water heat exchangers to provide sensible cooling to the room but they use the primary air, required for ventilation and humidity control, to create induction of the room air through the heat exchanger. This results in a higher performance from the finned chilled water heat exchanger. See figure 7.

The induction air flow is created by passing the primary air though air nozzles. The air nozzles create a negative pressure above the heat exchanger causing room air to be induced through the centre perforated diffuser and through the heat exchanger before mixing with the primary air from the nozzles. This mixed cooled air is then delivered to the room through linear slot diffusers using the Coanda effect to increase the air throw. See figure 8.

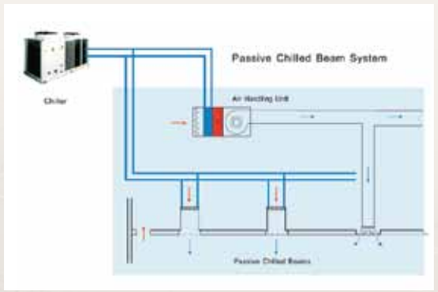

Figure 6

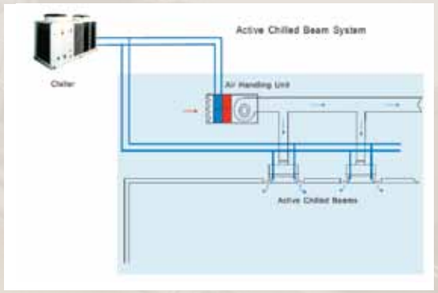

Figure 7

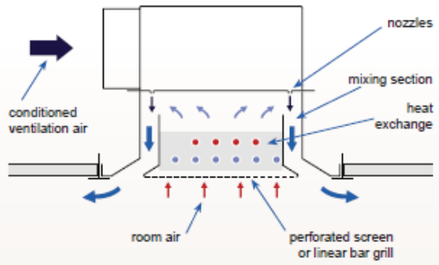

Figure 8

Active chilled beams provide the highest unit capacity of the systems discussed together with energy efficient operation and good air distribution. These are the reasons for the increasing popularity of this system.

Water Systems

Chilled ceiling and chilled beam systems use secondary chilled water for the room sensible cooling at higher temperatures than normally used in air conditioning systems, typically 15 to 17 deg C supply with a 2 to 3 deg C temperature rise. At the same time the primary air handling units still need chilled water at the more typical 7 deg C supply and 12 deg C return, to dehumidify the primary air for humidity control. There are a number of ways to create the chilled water for the two different temperature circuits. The most energy efficient is by using separate chillers for the two different temperature circuits. In this way the energy savings can be maximized because the chiller on the higher temperature water circuit will operate at a much higher COP. Other methods to achieve the higher secondary water temperature are by using water to water heat exchangers or by using water mixing or injection circuits.

Condensation Concerns

When applying these types of systems in high humidity areas such as Hong Kong there is a natural concern about the risk of condensation on the chilled ceiling panels or the chilled beam heat exchangers. However, providing the humidity level in the building is controlled effectively this need not be a concern. The techniques used to control the room humidity are firstly by ensuring that the primary air system maintains the dew point temperature in the space below the supply water temperature to the chilled ceiling or chilled beam heat exchangers. This is not a difficult process and further it is not difficult to employ control strategies to ensure that the humidity is brought under control during morning startup or after a weekend shutdown before bringing the chilled ceiling or chilled beam heat exchangers into operation. Secondly the supply and exhaust air quantities should be controlled to keep a positive pressure in the building so that any air leakage is out of the building and not into the building.

Beyond that it is normal to install condensation sensors on the secondary water chilled water pipes in the space so that if the sensor detects the possibility of condensation then either the chilled water supply to the effected zone is closed or the secondary water temperature is increased avoiding the possibility of condensation.

These humidity control and condensation methods are simple and well proven.

Summary

Chilled ceiling and chilled beam systems are new to Hong Kong but they provide the opportunity to achieve new levels of system energy efficiency. As such they can be a valuable contributor to achieving Hong Kong's objective to reduce the energy consumption of our air conditioning systems.

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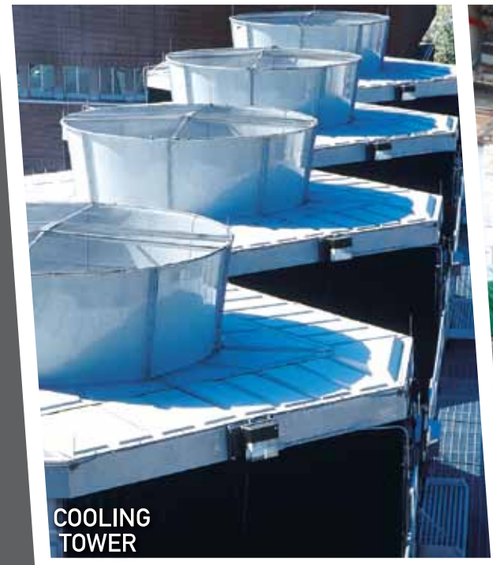
Energy Efficiency

HVAC Energy Efficiency Solution


COOLING TOWER


AUTOMATIC TUBES CLEANING SYSTEM


CHILLED BEAM / CEILING SYSTEM


HIGH EFFICIENCY PUMP AND MOTOR


CHILLED BEAM / CEILING SYSTEM

SEPARATION SYSTEM

Jardine Engineering Corporation

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Expansion of Tseung Kwan O Hospital

Overview

Tseung Kwan O Hospital is a purposely designed and built 10-storey extension to house various out-patient clinics, medical services and hospital administration. The ACMV Contractor faced a challenge to provide energy efficient air conditioning and mechanical ventilation systems for the hospital extension together with dedicated environmental and infection control for some clinical areas which are used for surgical operations and treatment of infectious diseases.

Systems and Solutions

The air-cooled chiller plant is configured with six 820kW oil-free chillers, two 870kW heat-recovery chillers and two 870kW heat-pump chillers, with total cooling capacity of 8,400kW. The central heating water plant collects waste heat dissipated from the heat-recovery chillers, heat generated by the heat-pump chillers, heat from solar panels, and is backed up by gas-fired hot water boilers. Variable air volume (VAV) system was adopted with demand control fresh air supply, optimized air changes and free cooling for energy efficiency and conservation. Designated AHUs designated for the respective AC zoning to operating theatres and infection control areas are served by designated and non-recirculation AC supply with directional flow control and HEPA filters.

Mechanical ventilation was provided to store rooms, toilets, utility rooms and plant rooms, generally using the conditioned air drawn from the adjacent "cleaner" area as makeup. Independent air exhausts were provided for extraction of odour and/ or gaseous media during clinical procedures and from inflection control areas such as cleansing room, herbs preparation room, pulmonary function room, etc. Throughout the project, every effort was made to conserve energy. Special features for energy efficient installation includes oil-free chillers with higher COP particularly at part load operations, optimum chiller mix and sequencing control to achieve the best and most efficient operations, and pumping and AC ventilation systems equipped with high efficiency motors for pumps and fans for the varying flow operation through CCMS control. Besides, AHUs were equipped with heat wheel or heat pipe for energy reclaim while fresh air being monitored and fed by demand control.

To maximise reliability and maintainability, the N+1 design concept was adopted for the chiller plant and heating water plant, where each group of operational units is backed up by a standby unit. Two separate groups of independent pipe risers, for normal and essential services respectively, were provided for each of the chilled water and heating water distribution systems. Additionally, AHUs and ventilation fans serving critical areas were provided with either dual fans or a single fan with dual motors. CCMS was provided to control and monitor the HVAC system with interface through communication protocols with the building services/ E&M installation. Trend logging on CCMS for electric power, cooling/ heating load profile and equipment operations facilitates energy management, plant optimization and maintenance management.

Summary

The systems in Tseung Kwan O Hospital were designed and installed using an integrated approach to maximize energy efficiency and conservation. Cooling, heating, energy reclaim and renewable energy generated on site provided energy-saving opportunities that the design team and ACMV Contractor exploited effectively by making use of environmentally conscious design principles, energy-efficient technology, and an optimization strategy for operations control and management.

PROJECT SUMMARY

Project Site	: No. 2 Po Ning Lane, Hang Hau, Tseung Kwan O
Client	: Hospital Authority, HKSAR
Architect	: Simon Kwan & Associates Limited
M&E Consultant	: Parsons Brinckerhoff (Asia) Ltd.
ACMV Contractor	: Young's Engineering Co., Ltd.
Completion Date	: December 2011

2012年 中國製冷展

第23屆國際冷凍、空調、供暖、通風及食品冷凍加工展覽會（簡稱2012年中國製冷展），已於4月11日至4月13日在北京中國國際展覽中心隆重舉行。始創於1987年的中國製冷展，經過25年的勵練已經成為國際頂級製冷暖通空調專業展覽會，更是我國製冷空調產業界，學術界進行交流與合作重要的綜合性平台。今年，大會又以創紀錄的92,700平方米展出面積及1,078家參展商，吸引了超過50,000多名專業人士和用戶進場參觀的驕人成績，繼續領跑全球同類展會。

一如過往，香港空調及冷凍商會受到主辦單位的誠摯邀請，組織了一行13人的4天參觀團到北京出席此次盛會，並作出參觀和交流。參觀團在團長梁栢泉先生的策劃和領導下，並得到永遠名譽會長連金水先生、會長葉啟賢先生、主席佘達志先生、副會長陳志雄先生、秘書長胡志輝先生、理事劉自威先生及前會長陳家龍博士等等的大力支持和參與，本會的2012年北京中國製冷展及技術探訪團，在熱烈和融洽的氣氛中順利進行和完滿結束。

2013年的中國製冷展已定於2013年4月8日到10日移師上海舉行，大家記得密切留意商會的安排。

參觀 Munters 廠房

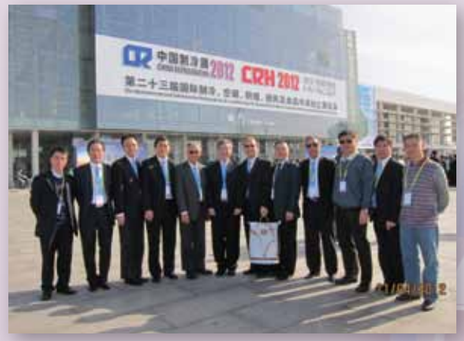
晚宴酒會會場

開幕儀式

參觀中國海外石油大廈

展覽場館內

遊覽長城慕田峪關



展覽場館外

50th Anniversary **Dinner**

The 50th Anniversary Dinner was successfully held on 28th November 2011 at Hong Kong Convention and Exhibition Center. The event featured a cocktail hour, seated dinner for over 800 guests and live performance by Ms Mimi Lo. We also invited Mrs Carrie Lam, Secretary for Development of HKSAR, as our guest-of-honor to join us celebrating this important milestone to ACRA. '

The success of event showcased the brilliant team work of ACRA members.

Mrs Carrie Lam (2nd from the right), Secretary for Development of HKSAR, Mr K Y Ip (3rd from the right), President of ACRA, Ringo Shea (1st from the right), Chairman and other Council Members jointly officiated at the 50th Anniversary Dinner.

A great honor to have the protagonists of 'People Interview' at the 50th Anniversary Special Edition joining this special event.

Ms Mimi Lo's wonderful performance livened up the evening.

A special edition was also published that documented ACRA's development and looked back over the HVAC industry in the last half century.

Mrs Carrie Lam (2nd from the left), Secretary for Development of HKSAR, visited members' exhibition booths under the accompany of Mr K Y Ip (1st from the left), President of ACRA, Mr Ringo Shea (2nd from the right), Chairman of ACRA, and Mr Raymond Lin (middle), Honorary Life President of ACRA.

Celebration Party

for the Success of 50th Anniversary Dinner

On 2nd January 2012, ACRA held a party to celebrate the success of 50th Anniversary Dinner and publishing of special edition. Mr K Y Ip, President of ACRA, said 'I would like to extend my heartfelt gratitude again to all the subcommittee members for their dedication that made the whole 50th Anniversary celebration campaign a very successful and memorable one!'

How can a party be a joyful party without wine!

Our lovely sub-committee and ACRA members ~ work hard and play hard!

Joyful Dinner 耆英萬歲晚宴

In December 2011, ACRA co-organized a dinner with Open Door Ministry 開心社區服務中心 (Lam Tin) to celebrate Winter Solstice Festival with 150 elderlies in Lam Tin. Over 30 volunteers from the 2 organizations attended the dinner to help and serve. Other than great food, the volunteers also arranged a few entertainment performances for love and fun. Mr K Y Ip, President of ACRA, said 'We are delighted to join hands with Open Door Ministry in such a meaningful activity. The event let the elderlies living in Lam Tin to have a good time celebrating one of the most important festivals in a year. ACRA will definitely continue to support these activities as a way of contribution to the community.' Special thanks were given to our members who had sponsored the dinner and exquisite gifts.

Thanks to all the volunteers, the elderlies had an enjoyable Winter Solstice Festival.

The volunteers performed like professional singers.

Mr K Y Ip (middle at the back), President of ACRA, and Ms Polly Mui (left at the back), Administration Officer, led our members to help and serve at the dinner.

Spring Dinner **2012**

As the first ACRA event in the year of Dragon, Spring Dinner was held successfully on 27th February 2012. Thanks to the support of all members and different organizations in the industry, we were happy to have more than 240 guests joining this event. Sure we had good food, but nice wine was also essential for a joyful evening. The dinner was filled with fun, laughter and fine wine. Hope to see you all again next year!

Toast from the Council Members signifying vibrant business of industry in year of Dragon.

How can we miss the Beer Drinking Competition!

Mr K Y Ip (left), President of ACRA, and Ringo Shea (middle), Chairman of ACRA, kicked off the Spring dinner with bubbling champagne.

Training for Workers

in Handling HFC and Blend Type Refrigerant

A revision course for workers in handling HFC and blend type refrigerant was co-organized with Vocational Training Council (VTC) in February 2012. This is a recognized training and attendants can then be qualified to service refrigeration equipments, such as chillers and DX split units, in ASD projects. It includes ½-day classroom training and 1-day practical workshop training at the Hong Kong Institute of Vocational Education (Morrison Hill).

'Gotop Cup' Golf Tournament **2012**

We couldn't have picked a better day and it was blessed with sunny blue skies. Sponsored by Goptop Engineering (HK) Limited, 'Gotop Cup' Golf Tournament at The Palm Island Golf Resort has rounded off with happy golfers playing on our 18-hole championship course on 9th March 2012. Congratulations to all winners!

Champion : Barry Ku
1st Runner-up : Hyman Chan
2nd Runner-up : Ricky Yuen
Best Gross : Cheung Hon Min
Best Front 9 : Riccl Choi
Best Back 9 : Kenneth Wong

Nearest to the Pin
Hole B8 : Regina Lai
Hole C6 : Andy Wong

Longest Drive
Hole B6 : Mike Cheng
Hole C2 : Dennis Lau

Horse Racing Night

A fun night out on 9th May 2012 at Happy Valley Racecourse! In addition to the on-track thrills, the evening's excitement also included delicious cuisines, good wine and 賽馬大亨計獎金比賽!

Winner of 賽馬大亨計獎金比賽 is Dennis Sheung from Kembla (HK) Limited.

Bowling Competition **2012**

This year the ACRA Bowling Competition rounded off on 20th April 2012 at Hong Kong Bowling City. We received overwhelming response and there were over 50 participants formed 16 teams to compete for the champion.

Team Awards

Champion : ATAL Engineering Limited
1st Runner-up : Newland Engineering Limited
2nd Runner-up : Young's Engineering Company Limited (Team 2)

Special Awards

Highest 3 Games Series : Mr Philip Chan (Analogue Technical Agencies Limited)
Highest Single Game : Mr C P Fok (Hsin Chong Aster Building Services Limited)

Mr Antonio Chan (left), Treasurer of ACRA, presented the award to 2nd Runner-up team: Young's Engineering Company Limited (team 2).

Not only did Mr K Y Ip (middle), President of ACRA, cheered the participants and presented the awards, but also had an enjoyable bowling there.

Champion team: ATAL Engineering Limited

Mr Ringo Shea (left), Chairman of ACRA, presented the award to 1st Runner-up team: Newland Engineering Limited.

商界展關懷

在12/5/2012商會再次透過啟田浸信會屬下的「開心社區服務」一起舉行了今年第一個活動，名為 孩子同樂日 - 兒童滅火輪及科學館之旅，共招待了40名6-12歲的孩子，是次活動要鳴謝以下會員公司多次贊助並派員工參加：

景福工程有限公司
安樂科技有限公司
高美怡輝（香港）有限公司
彬記（國際）有限公司
恩索有限公司
佳域工程有限公司
葉啟賢會長

孩子同樂日 - 參觀香港科學館

孩子同樂日 - 參觀葛量洪號滅火輪

	Company Name		Contact Number	Website / Email	Trade
ACRA Fellow Members	ATAL Engineering Limited	安樂工程有限公司	2565 3399	www.atal.com.hk	Contracting & Maintenance
	Carrier Hong Kong Limited	開利 (香港) 有限公司	2694 5618	www.carrier.com.hk	Supplier
	Krueger Engineering (Asia) Limited	高雅機電工程有限公司	2860 7333	www.kureger.com.hk	Contracting
	Newland Engineering Limited	新陸工程有限公司	2967 8620	moshiu@newland.com.hk	Contracting
	REC Engineering Company Limited	盈電工程有限公司	2619 8888	www.yaulee.com	Contracting
	Shinryo (Hong Kong) Limited	新菱工程香港有限公司	2237 8624	victorcheung@shinryo.com.hk	Contracting
	Shun Hing Engineering Contracting Company Limited	信興機電工程有限公司	2419 8282	www.shecon.com	Contracting
	The Jardine Engineering Corporation Limited	怡和機器有限公司	2807 4511	www.jec.com	Supplier, Contracting & Maintenance
	Trane Hong Kong	特靈香港	3128 4711	www.tranehk.com	Supplier
	Winston Air Conditioning & Engineering (Hong Kong) Company Limited	永通冷氣工程 (香港) 有限公司	2764 1200	winhk@winston-hk.com	Contracting
	York International (Northern Asia) Limited	約克國際 (北亞) 有限公司	2590 0012	www.johnsoncontrols.com	Supplier & Maintenance
	Young's Engineering Company Limited	景福工程有限公司	2235 0900	www.youngs.com.hk	Contracting
ACRA Corporate Members	Alliance Contracting Company Limited	聯和承造有限公司	2891 9083	enquiry@alcc.com.hk	Contracting
	Analogue Technical Agencies Limited	安樂科技有限公司	2565 3399	www.analogue.com.hk	Supplier
	Chevalier (Hong Kong) Limited - A/C Division	其士(香港)有限公司 - 冷氣部	2111 4811	aircondi@chevalier.com	Contracting
	China State Mechanical & Electrical Engineering Limited	中國建築機電工程有限公司	2823 7888	applelau@cohl.com	Contracting
	Chun Wo E & M Engineering Limited	俊和機電工程有限公司	3758 8007	applelau@cohl.com	Contracting
	Cold Magic Efatar (HK) Company Limited	高美怡輝(香港)有限公司	2606 6922	www.cold-magic.com	Supplier & Manufacturing
	Daikin Airconditioning (Hong Kong) Limited	大金冷氣(香港)有限公司	2570 2786	miky@daikin.com.hk	Supplier
	Efatar Engineering Co. Ltd.	怡輝冷凍工程有限公司	2606 6922	www.efatar.com.hk	Supplier
	Gammon E&M Limited	金門機電工程有限公司	2516 8823	www.gammonconstruction.com	Contracting
	Honeywell Limited	霍尼韋爾(香港)有限公司	2331 9133	Candy.Lam@honeywell.com	Supplier
	Hsin Chong Aster Building Services Limited	新昌亞仕達屋宇設備有限公司	2579 8238	josephfung@hcg.com.hk	Contracting
	Johnson Controls Hong Kong Limited	江森自控香港有限公司	2590 0012	www.johnsoncontrols.com	Supplier & Maintenance
	K-Thorn Engineering Company Limited	旗鋒工程有限公司	2481 2918	main@k-thorn.com.hk	Contracting
	Lucky Engineering Company Limited	運通冷氣電業有限公司	2780 5285	general@luckyeng.com.hk	Contracting & Supplier
	McQuay Air-Conditioning Limited	麥克維爾空調有限公司	2893 6261	custdept@mcquay.com.hk	Supplier
	Meco Engineering Limited	德寶工程有限公司	2891 8722	wg_chu@meco-group.com	Contracting
	Quad-Tech Engineering (Hong Kong) Company Limited	高得工程有限公司	2573 1832	quadtech@hkstar.com	Contracting
	Raising Engineering Limited	威信工程有限公司	2395 6081	raising@netvigator.com	Contracting
	Ryowo (Holding) Limited	菱和(集團)有限公司	2391 8381	ryinfo@ryowo.com	Manufacturing
	Siemens Limited	西門子有限公司	2107 6506	andy.wong@siemens.com	Supplier
	Skyforce Engineering Limited	天科工程有限公司	2885 1620	info@skyforce.com.hk	Contracting
	Southa Company Limited	南龍有限公司	2963 7175	www.southa.com	Supplier & Contracting
	Standard Refrigeration & Engineering Company Limited	立德工程有限公司	2781 0871	SRE@hklpg.com.hk	Contracting
	Takasago Thermal Engineering (Hong Kong) Company Limited	高砂熱學工業(香港)有限公司	2520 2403	sales@takasago.com.hk	Contracting
	Technicon Engineering Limited	得力確工程有限公司	3193 1300	technic@technicon.com.hk	Contracting
	Welcome Oncho Denki Limited	偉基溫調電機有限公司	2806 8316	www.saiver-welaire.com.hk	Supplier
	Westco Air Conditioning Limited	威高冷氣工程有限公司	2426 3123	mandylo@scee.com.hk	Contracting
ACRA Associate Members	A&R Engineering Company Limited	奇樂工程有限公司	2408 2960	arengco@netvigator.com	Contracting
	Air Master International Limited	雅士 (國際) 空調有限公司	2764 0307	winston@airmaster.com.hk	Manufacturing
	Air Trade Centre Limited	裕風先達有限公司	2887 7000	anthony@atc.hk	Supplier
	Alison M & E Engineering Limited	雅訊機電工程有限公司	2595 1199	contacts@alison.com.hk	Contracting
	Alpha Appliances Limited	第一電業有限公司	2529 7555	hkwat@alpha-general.com	Supplier
	Alstern Technologies (Hong Kong) Limited	奧思(香港)有限公司	2647 8163	www.alstern-technologies.com	Contracting
	Anway Engineering Company Limited	正隹工程有限公司	2598 4228	www.anway.com.hk	Supplier
	Armacell Asia Limited	阿樂斯亞洲有限公司	2574 8376	sam.s.yeung@armacell.com	Supplier
	Arnhold & Co., Ltd.	安利有限公司	2807 9400	patricklai@arnhold.com.hk	Supplier
	A Shing Engineering Company Limited	亞成冷氣工程有限公司	2537 1818	wilkiengan@ashing.com.hk	Contracting & Supplier
	Boca International Limited	寶加國際有限公司	3176 6028	dr.richardchan@gmail.com	Supplier
	Brightwell Air-Conditioning Limited	冠昇空調有限公司	2331 8559	brightwell@biznetvigator.com	Supplier
	Brisky Limited	穿梭科技有限公司	2511 3161	tkwan@briskyltd.com	Supplier
	Bun Kee (International) Limited	彬記 (國際) 有限公司	2748 9370	hvac@bunkeeintl.com.hk	Supplier
	Chi Yip Engineering Company	志業工程公司	3078 9984	canny@acmv-cy.com	Contracting
	Chivas Corporation Limited	瑞峰洋行有限公司	2521 9768	info@chivascorp.com.hk	Supplier
	Chong Kin Air-Condition Trading Engineering Company Limited	創建冷氣貿易工程有限公司	2307 5159	www.chongkinaircon.biz.com.hk	Supplier
	C.J. Wishing International Limited	惠生電業有限公司	2799 9797	cjwish@cjwish.com.hk	Supplier
	Clydeman Engineering Limited	佳電工程有限公司	2332 3591	daniel@clydeman.com	Contracting
	Crowntin Limited	冠殿有限公司	8202 0830	clchoy@crowntingrp.com.hk	Contracting
	Dah Chong Hong (Engineering) Limited	大昌貿易行工程有限公司	2768 3595	www.dch.com.hk	Contracting
	Delta Pyramax Company Limited	佳澤科技有限公司	2511 2118	alanyip@dpx.hk	Supplier
	Dextra Pacific Limited	德士達太平洋有限公司	2511 8236	www.dextragroup.com	Supplier
	Dynamic Success Company Limited	勁技有限公司	2116 9021	amok@dsuccess.com.hk	Supplier
	Eaxon International Company Limited	恩索有限公司	3590 4656	gamescheung@eaxon-group.com	Supplier
	ebm-papst Hong Kong Limited	依必安派特香港有限公司	2145 8678	www.ebmpapst.com.cn	Supplier / Manufacturing
	Electrodrive Engineering Limited	高宜工程設備有限公司	2573 7211	info@electrodrive-eng.com	Supplier
	Enviro-Tech Engineering Company Limited	鷹達工程有限公司	2827 0688	steveli@envirotech.com.hk	Supplier