



# THE HONG KONG AIR CONDITIONING AND REFRIGERATION ASSOCIATION LIMITED

## 香港空調及冷凍商會有限公司

Room 1801, Tung Wai Commercial Building, 109-111 Gloucester Road, Wanchai, HK  
Fax : (852) 2519 0298 Web Site : [www.acra.org.hk](http://www.acra.org.hk) E-mail : [info@acra.org.hk](mailto:info@acra.org.hk)

### Message from the President

The Annual General Meeting of the Association was held on 7 October, 2003. I am delighted to see the Association embarked on a new chapter in its history this year. With the smooth transition into a Limited Company, the Association is prepared to offer broader and better services to our members and to the industry. I would like to express my appreciation for the contribution and support of our Council and Members throughout.



Various working groups were set up to advance the Association's activities, such as training courses for insulation workers, factory visits, sport events, seminars, etc. Thanks to our Publication Committee led by K L Chan, the long awaited Newsletter is now published and I trust that it will provide Members with the most up-to-date news of the industry and the Association's activities. In addition, our Association has jointly organised a series of CPD courses for HVAC systems with HKIE, ASHRAE, CIBSE, and BSOMES. We have registered full enrolment in all these classes. Such remarkable results are very encouraging and I am delighted to know that the Association will be providing more of such courses in the future. As for external liaison matters, ACRA is taking an active role in the FEMC council to ensure every effort will be made to protect the interests of our members. As always, we have maintained close liaison with various government authorities. Our council members have represented our Association on various committees such as the Ventilation Liaison group of FSD, Electrical & Mechanical Services Training Board of VTC, Task group on review of "Control Standards and Operation Procedures for HVAC Installations" with ASD, etc.

Last year, our Technical Visit Committee organized visits to the Daikin, Trane and Carrier factories in Shanghai and these were very much enjoyed by all taking part. Another technical visit to Thailand will be organised in November this year and I trust this trip will be even more attractive and enjoyable.

The success of the Association will rely on your continuing support in the years ahead. In months ahead, the executive council members and I will continue to strive for better services to all our members. \*

Regards,

**Raymond Synn**  
President

### Contents

- 1 Message from the President  
New Technology
- 2 New Technology (cont,d)
- 3 People Interview - Mr. John Szeto
- 5 Summary of Work done by  
sub-committees
- 7 Trane Factory Introduction
- 8 ACRA Activities
- 12 Member List

### Editorial Board

#### Chairman:

K. L. Chan

#### Members: (in alphabetical order)

Cannisa Au  
Gambi Chiang  
Polly Mui  
Cyril So  
Jason Wan

### New Technology

#### Geothermal Heat Pump (GHP) Air Conditioning System

##### 1. WHAT IS GEOTHERMAL HEAT PUMP (GHP) A/C SYSTEM

In simple term, a Geothermal Heat Pump (GHP) A/C System exchanges heat with the ground. It makes use of the ground as a source of heat when heating is needed and rejects heat into the ground when cooling is required. The ground thus serves as a large heat sink. In fact, it was stated that the ground is a better heat source or heat sink than the ambient air as its temperature swing is more moderate than the ambient air (James E. Bose *et al.*, 2002). Therefore, it allows a steady operation of the heat pump A/C system which would prolong the lifespan of the equipment. Besides the ground temperature is generally cooler than the ambient air in summertime and relatively warmer in winter which enables the A/C equipment to be operated at a higher efficiency. Substantial saving in the running cost of the air-conditioning system can thus be achieved by the proper design and application of the GHP A/C system.

A GHPA/C system may consist heat pump(s) with or without reverse cycle function, water-cooled condensing unit(s) and ground source heat exchanger(s). The ground source heat exchanger is a series of underground or underwater pipes that either extracts or rejects heat to the ground or water. A GHP A/C system can provide year round cooling and heating in a manner similar to conventional A/C systems.

There are different types of GHP A/C system in the market and basically they can be grouped into the following categories:

- A. Ground-Coupled Heat Pump A/C System
- B. Groundwater Heat Pump A/C System
- C. Surface Water Heat Pump (Aqua-therm) A/C System



## 2. GEOTHERMAL HEAT PUMP A/C SYSTEM FOR THE HONG KONG INTERNATIONAL WETLAND PARK

### 2.1 General Description of the Project

The Hong Kong International Wetland Park has an overall site area measures about 640,000 m<sup>2</sup>. It demonstrates the diversity of Hong Kong's wetland ecosystem and provides an educational and recreational venue with a theme on the functions and values of wetlands for used by local residents as well as overseas visitors. The construction of the Park is phased into two stages. The whole project is scheduled for completion by October 2005. Krueger Engineering (Asia) Ltd. is the E&M contractor of this project.

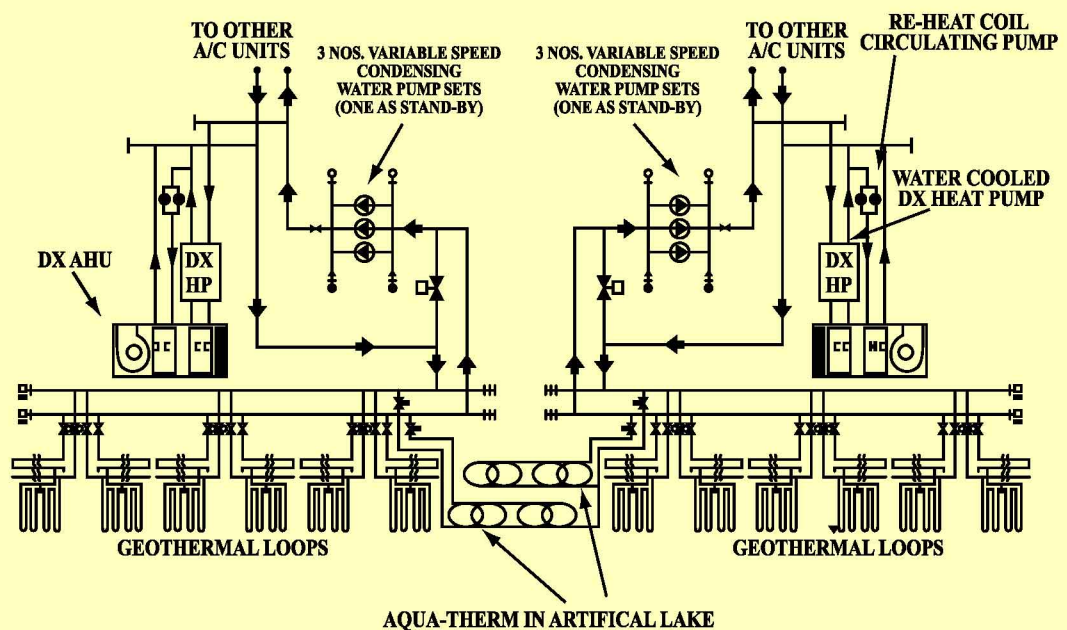
### 2.2 The GHP A/C System for the Visitor Centre

The total installed cooling capacity of the air-conditioning plant for the Visitor Centre is 710 TR (2500kW) but due to high occupancy diversity, the required peak geothermal heat dissipation load is only 390TR (1370kW). The GHPA/C System employed at the Visitor Centre is a hybrid system. It consists of a Ground-Coupled Heat Pump (GCHP) A/C system with vertical pipe loops plus an additional Aqua-therm Heat Exchanger for emergency backup.

An accurate knowledge of the thermal properties of the ground is needed when designing the closed-loop geothermal heat exchanger as this will affect the depth and number of boreholes required (Chad A. Kavanaugh, Stephen P., 2002). A field test was therefore conducted to ascertain the ground thermal conductivity and also to collect information on the drilling conditions of the site.

The geothermal closed-loop heat exchanger consists of 468 numbers 32mm diameter flow and return HDPE pipes of 50m (approx.) long inserted into boreholes and embedded in bentonite clay and cement grouting for better conductivity. The boreholes are placed at 4m center to center so as to ensure that the heat dissipation capacity of each borehole would not be affected by one another. These individual pipes are then jointed together in groups of 8 to 12 to the main headers of the geothermal closed-loop heat exchanger. The whole heat exchanger is sub-divided into 12 headers and each header connects to approximately 40 nos. vertical geothermal pipes. This design is to minimize the amount of trench works as well as to ensure that in case any one part of the geothermal heat exchanger needs to be shut down for repair or maintenance work, it will only affect 8% of the total A/C capacity. Furthermore, there is an additional 350kW of aqua-therm heat exchanger embedded in an artificial lake of the Park to provide further emergency backup or for night use.

In this system, considerable energy is required for circulating the condensing water through the lengthy pipework of the geothermal closed-loop heat exchanger (although polyethylene pipes have friction loss only 25% of the commonly used black steel pipes). In order to reduce the pump energy, the total A/C load is split among small zone A/C units rather than having a large central chiller or heating plant. This is because for large central plant, it is necessary to maintain a minimum flow of condensing water to circulate through the chillers or heat pumps whilst for small A/C units, the condensing water flow rate can be varied according to the actual number of condensing units in use. As for each AHU, there are two circulation pumps (one duty and one standby) of its own for the reheat coil which claims heat from the condensing water for summer humidity control. The schematic diagram of the GHP A/C system is as show in Figure 1. \*



**Figure 1:** Schematic diagram of GHP A/C system for the Hong Kong International Wetland Park

#### Extracted from:

'Geothermal Heat Pump Air-Conditioning System for the Hong Kong International Wetland Park',  
Proceedings of Shandong-Hong Kong Joint Symposium 2003

Special thanks for Mr. Lau Kwok Fan and Mr. Suen Ming Tak of Architectural Services Department



# 當年今日

## 司徒定凱 細訴



獻譽工程界逾三十年的司徒定凱先生 (Mr. John Szeto)，一直極受業內人士敬重。過往曾於怡和公司、政府部門及祥茂洋行工作，七十年代正式創辦景福工程公司，承辦多個香港的大型工程項目，成為冷氣工程界先驅。

「怡和工程公司 (Jardines) 是我首家投身冷氣界的公司，我幸運地可以加入當時怡和冷氣部，那裡有一群卓越的工程師，與他們工作感覺仿如置身少林寺，有機會參與多個香港重大的工程項目，眼界大開。這段時期最難忘的事，應該是遇上我的冷氣行業的啟蒙老師陳廣振先生 (Mr. K.T. Chen)，當時他是怡和冷氣部的總工程師，不久便躍昇為總經理，他對我循循善誘，讓我汲取了很多冷氣的知識，令我獲益良多。」

第二個階段是投身政府部門，由承建商 (contractor) 的身份轉為顧問 (consultant) 角色，首次讓我接觸到一個工程項目招標的前期工作，同時亦加深對政府架構的認識及其內部的工作方式，是個難得的經驗。

離開政府部門後，司徒先生毅然加入了一家專營船隻冷氣工程的小型公司「祥茂洋行」，擔任總工程師 (Chief Engineer) 一職。而年僅廿四、廿五歲的他，已經承擔全公司的工程項目。其中有兩個項目是令他頗難忘：一個是替遊輪「珊瑚公主號」冷氣系統的設計及安裝，另一個項目的對象卻是一批舊船。

「當時 China Navigation 自北方運來一批舊船，那批舊船全都只備有暖氣 (heating) 卻缺乏冷氣 (cooling) 設備，由於船隻大部份行程都在東南亞海域，船員不能忍受長時間高溫，船公司願意出資將暖氣設備改裝為冷氣設備，但規定只能於停港 3 天之內完成，我和同事一口氣於 72 小時內完成了這個被認定「不可行」的工作，成功增設冷氣系統 (cooling system)！」這個工程項目為祥茂賺了一筆可觀的利潤，而司徒先生堅定自信的表現使祥茂公司轉虧為盈。

除了專心工程工作外，年青的司徒先生對公司大小事務都親力親為，他解釋這些點滴對他及後創立景福工程幫助不少。

回憶往日點滴，司徒先生笑稱每個階段都各放異彩。

### 景福工程的光輝歲月

#### 創立期

當時新世界集團的楊秉正先生正欲發展事業，巧遇司徒先生，兩人惺惺相惜一拍即合，共同創辦了景福工程公司，景福公司亦因楊秉正先生的獨有背景順利成為新世界集團的子公司。司徒先生細訴景福的創辦初期，幾經風雨，不斷接辦多個小型項目，那管是三數千元的生意，亦「大小通吃」以維持經營。不久柳暗花明，那天辦公室來了兩位胖男人……。「兩個老外份量十足，體重加起來可能超過四百磅，我的二手陳舊沙發處境危險……。」原來兩位客人來美國自特靈公司 (Trane)，沒想到那次面談後，沙發絲毫無損，司徒先生亦成功獲取 Trane 的代理權。後來，更取得政府的註冊資格。自此，景福工程公司正式發展，銷售與工程並行。

獲取 Trane 的代理權後，景福旋即接到一個挑戰。「由於母公司新世界集團的關係，我們接到一個四萬噸的冷氣工程，對於一家剛踏上軌道的公司來說，這個確實是個很大的挑戰。幸好，我們亦十分順利完成，公司聲名大噪。」這個工程亦成為景福成長期一個重要印記。

#### 轉型期

提到景福另一個轉捩點也跟 Trane 的代理權有關。到了八十年代，由於景福的發展方針跟 Trane 未能吻合，加上司徒先生發現銷售與工程兩者間經常產生矛盾，他毅然將代理權放棄。當年工程需求量仍較大，所以景福轉型為純工程公司後，在成本控制方面有更大空間，而生意利潤也得已改善。不久，景福已成為香港數一數二的冷氣工程公司。

有云：創業難，守業更難。儘管景福公司已得到業內人士的認同及肯定，司徒先生對景福亦從不鬆懈，率先摒棄傳統人手繪圖的方式。司徒先生解釋：「當時我們替母公司接辦一個內地的工程項目，對象是中國大酒店，這是我們首次承造國內的工程。為了提高效率及令工程更為完美，我主張全部工程採用 Auto CAD 軟件繪圖，我承認於當時來說這是個比較前衛的做法，當時亦無一家公司敢嘗試，但我堅決要用電腦繪圖代替人手。最後我們非常成功，我相信這次成功確實可歸功於用電腦繪圖。」其實最功不可沒的該是司徒先生獨有的遠見與膽識。

#### 現況

司徒先生現在已退出景福工程公司的管理層，閒時參與一家在澳門的設施管理 (Facility Management) 公司的顧問工作及享受高爾夫球樂趣，做個開心快活人。

#### 給我們的話

今天本港經濟環境尚未明朗，司徒先生勸勉業內人士要抓緊目標，不要千篇一律，勇於求變，自可做出成績。他的處世態度則「內省自醒」為大前提，「我覺得做人一定要多反省，做錯了，不要退避，要盡快尋出錯處。別人出錯，亦不要因為「錯不在我」而不聞不問，反而要從他人學習，警醒自己不要同樣犯錯。其次是 work hard, play hard，做任何事都要盡心盡性，晚上發個好夢，甚麼壓力煩惱也可迎刃而解！」\*





# SARS Wards Air Handling System



## FEATURES

### Sterilization

- UV Sterilization system to kill virus/bacteria
- Hygienic designed construction with optional stainless steel internal sheet

### Air Purification

- Equipped with HEPA filter to remove 0.3 microns particles at 99.999% efficiency
- Ionization purification system to neutralize VOCs and odour

### Reduction Of Humidity

- Heat pipe technology to help removing moisture from air
- Combi (Super Latent) Coil reduce moisture with 40% energy saving

### System Reliability

- Duty and Standby motor arrangement to avoid system failure

## SARS Wards Job References



Palmela Youde Nethersole  
Eastern Hospital



Princess Margaret Hospital



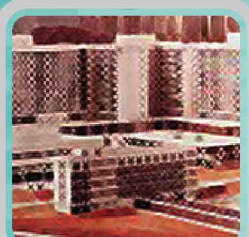
Queen Elizabeth Hospital



United Christian Hospital



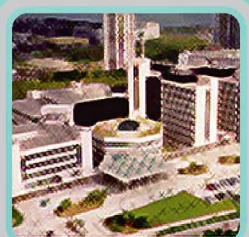
Kwong Wah Hospital



Prince of Wales Hospital



Queen Mary Hospital



Alice Ho Miu Ling  
Nethersole Hospital



## WELCOME AIR-TECH LTD.

Unit B300, 3/F, Block B, Sea View Estate,  
2-8 Watson Road, North Point, Hong Kong  
Tel: (852) 2806-8316 Fax: (852) 2806-2426  
Email: [sales@welcomegroup.com.hk](mailto:sales@welcomegroup.com.hk)  
Website: <http://www.welcomegroup.com.hk>



# Summary of work done by sub-committees

## What have been done & What is ongoing? Sub-committee Report in ACRA Newsletter

### FEMC Liaison

FEMC is currently liaising with HKCA on the Voluntary Subcontractor Registration Scheme (VSRS). ACRA collected & reflected comments from our members to the FEMC.

### FSD Liaison

FSD is working on the consultation of De-merit Point System for managing the Registered Specialist Contractors (RSC) Ventilation. ACRA expressed support to the penalty system in principle.

FSD is reviewing to streamline the procedures for food/restaurant licensing. ACRA is one of the working group members.

### ASD/HD/HS Liaison

ACRA participated in the ASD working group on reviewing the "Control Standards and Operation Procedures for HVAC Installation".

ACRA participated in the ASD working group on reviewing and developing the approach and the methodology for "Identification and verification of the Make and origin for BS/EM Materials and Equipment".

ACRA feedback to HA that there were no accredited trainings to qualify the tradesman in HVAC trade. HA accepted to waive the requirement of qualified tradesman for HVAC trade.

Liaison with HA on the beginning of the works under the condition of contract.

Contract matters for the appointment of contractor supervising engineer and extension of time were being liaised.

ACRA requested HA to release the names of three lowest main contractors at the tender stage was accepted.

ACRA joined the Working Group to draft up the Control Standards and Operation Procedures for HVAC installation.

The sub-committee is currently working for a training course with ASD on handling HFC and blend type refrigerants.

### Safety and OHS Liaison

ACRA joined the FEMC Safety working group and has on-going review on the rate of accident.

ACRA supports the E&M of Safety Walk which to be held on November 30, 2003.

### Technical Liaison

ACRA worked with the task force lead by HKIE comprising CIBSE, ASHRAE & BSOMES for the improvement of air conditioning and ventilation for the hospital wards for prepare for SARS Outbreak in future.

EMSD invited ACRA to comment the Territory Wide Implementation Study for Water Cooled Air Conditioning System in HK. Comments will be finalized by the end of October.

ACRA attended the Organising Meeting for "Trade Tests and Trainings of items in Air Conditioning of E&M Engineering in Construction Industry" held by CITA.

ACRA was one of the co-organisers of the 'Workshop on Hygiene Management of the Air Conditioning and Ventilation System'.

### Contract Committee Liaison

ACRA participated in FEMC's Contract Committee and is currently liaising the following ongoing subjects:

- Management of subcontracting with Provisional Construction Industry Co-ordination Board (PCICB)
- Voluntary sub-contractors registration scheme (VSRS) with PCICB
- Standard form of subcontract with PCICB
- Legal framework of the Construction Industry Council

### Overseas Liaison

Air Conditioning Trade Association was formed in Macau. The subcommittee will explore the opportunity in liaison and experience exchange.

### Consultation Paper Commented

Implementation Study for a District Cooling Scheme at South East Kowloon Development, EMSD - Energy Efficiency Office

Territory Wide Implementation Study for Water Cooled Air Conditioning System in HK, EMSD - Energy Efficiency Office \*

**Brisky Limited**  
3/F, Yau Tak Building, 169 Lockhart Road, Wanchai, Hong Kong.  
香港灣仔道169號裕德大廈3字樓

Tel: 2511-3161  
Fax: 2519-3406  
E-mail: briskylimited@hotmail.com

**防火**

**有**

**PROMAT**



**供應安裝**

**有**

**BRISKY穿梭**

**PROMAT一族全系列**

PROMAT-H 防火板

PROMAT-S 防火硬板(方洞)

PROMINA 防潮隔聲板

PROMINA-HD 防水外牆板

PROMASEAL 防火 FIRE COLLAR

防火 TRUNKING 內置黑膠

防火泥 防火條

防火膠 防火包

BRISKY 穿梭都有其他防火牌子 (全部有 FIRE CERT/TEST REPORT)

RUSKIN, DURASTEEL, SUPALUX, NULLIFIRE, ABESCO, PYROPLEX, BNB, CSR 等

BRISKY 穿梭有供應安裝所有冷氣牌子

美國	CARRIER, YORK, TRANE, PHILCO, WHIRLPOOL, MCQUAY
日本	大金、珍寶、日立、聲寶、三菱、三洋、樂聲、東芝等
韓國/台灣	LG, SAMSUNG, DAIWOO, TECO, GNN
中國	美的、利凱爾、科龍、新科、格力等

BRISKY 穿梭又有所有家庭電器名牌如 BERLIN, GERMAN POOL, PANASONIC, SONY, KDK, DIMPLEX OASIS, SAMSUNG

不論家庭自用或 Project 用都有穿梭

Tel: (852) 2511 3161  
Fax: (852) 2519 3406  
Email: briskylimited@hotmail.com  
往來銀行: 中銀集團

TONY KWAN (關洪安)  
ANGEL CHAN (陳靜儀)  
MAGGIE KOO (古惠媚)  
儲蓄戶口號碼: 012-888-1004-1357

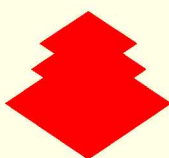
*With the Compliments of*



**KRUEGER ENGINEERING (ASIA) LTD.**

高雅機電工程有限公司

A major Mechanical and Electrical engineering and contracting force in Asia



**SHINRYO CORPORATION**  
**SHINRYO (HONG KONG) LIMITED**

5/F, GUARDIAN HOUSE, 32 OI KWAN ROAD, WANCHAI, HONG KONG.

TEL: 2519 3383 FAX: 2519 6209

E-mail: marketing@shinryo.com.hk

Web site: www.syspro-net.co.jp/shinryo-international



# 完美保温系统 Perfect Insulation System

Phenotherm™ is a rigid phenolic foam thermal insulation product. It is manufactured through the thermosetting process to make the phenolic resin foam become closed-cell structures. These can create an excellent low conductivity (K value) and provide good fire property characteristics.

Phenotherm™ contains no chlorofluorocarbons or hydrochlorofluorocarbons blowing agent. As a result, the totally CFCs and HCFCs free rigid phenolic foam closed-cell thermal insulation material is environmentally friendly as it has an Ozone Depletion Potential of zero during processing. A high quality standard product in the thermal insulation market, Phenotherm™ does not give off an objectionable odour nor breed or promote mould and bacteria growth.



Rigid pipe section provides Z-Shape at longitudinal and Ends Shiplap Joints



Preformed 90° Insulation Elbow

**PHENOTHERM™**

聚温® 環保泡酚

CFCs & HCFCs Free Phenolic Foam Insulation (Zero ODP)

**NEW**



Preformed Valve Insulation Box



#### Advantages :

1. Manufacturer preformed
2. Easy installation
3. Top fit pipe / valve bodies
4. No cut at job site
5. Save labour cost
6. Save time cost
7. Ensure final performance
8. Reduce supervision effort



Manufacturer



**ISO 9001  
FM 40753**

**Phenotherm Asia Ltd.**

P.O. BOX 79583, Mongkok, Kln.,  
HONG KONG

website : [www.phenotherm.com](http://www.phenotherm.com)

Email : [info@phenotherm.com](mailto:info@phenotherm.com)

Sole Agent



**福隆(香港)有限公司  
Fook Loong (HK) Ltd.**

寫字樓 : 香港九龍旺角塘尾道18號嘉禮大廈19字樓  
Office : 19/FI., Skyline Tower, 18 Tong Mi Road, Kln., HONG KONG.

FAX : (852) 2390-6377

Email : [flhk@flhk.com.hk](mailto:flhk@flhk.com.hk)

☎ 2393-7773





**TRANE®** *The Air-conditioning Expert !*

## Factory Introduction

### Trane Taicang Factory

Teling Air Conditioner Co Ltd., a Trane joint venture was established in 1995 and located in the Economic Technology Development Zone in Taicang City of Jiangsu Province. It occupied a total area of over 100,000 m<sup>2</sup>. Over 50,000 m<sup>2</sup> of which have already been developed into three production plants including commercial and domestic air conditioning equipment, as well as other related supporting facilities. Most of the equipments are imported from the US and Japanese production lines, using the US patented DFM (Demand Flow Manufacturing) technology in organizing the production process. It is used to assure the integrity and efficiency of production and on-time shipments. The production line was mainly for domestic air conditioning initially, and then started to produce commercial air conditioning.

The Trane Company has invested US\$60 million and employed over 700 staff in Taicang factory. Currently the product lines include domestic split type air conditioning, ceiling type air conditioning, air handling unit, fan coil unit, small tonnage air cooled chiller and heatpump, water cooled screw chiller, centrifugal chiller, etc. Annual output exceeded 100,000 sets in 2002 and sales figure was achieved to RMB 800 million. Apart from meeting the demand of Chinese market, these products are also exported to other markets all over the world. All products pass ISO 9001, ISO 9001:1994 and ISO 9001:2000 certifications.



Chiller Workshop  
冷水機組工場

Taicang factory also provides consummated facilities. There are all kinds of products being displayed in a showroom for customer enquiry. There is a testing room to test cooling capacity, noise and air flow of products to maintain their quality. Also there is a training center providing training courses such as sales, product information and repairing technique.

Since 2001, Taicang factory has been focusing on the production and sales of central and commercial air conditioning, development of sales strategy and establishment of a customer service team. Trane aim at reaching an annual sales figure of RMB 1 billion. By year 2005 Taicang of Jiangsu will become the City of Air Conditioning and China's most comprehensive air conditioning production centre. An annual sales figure of over RMB 2 billion will be achieved by then.

### 特靈太倉廠房

特靈美國總公司於 1995 年在江蘇省太倉市經濟技術開發區，成立了一家中外合資的特靈空調器公司，公司佔地十萬多平方米，並已在五萬多平方米土地上建成商用空調及家用空調等三個廠房及相關輔助設施。生產設備均引進美國及日本的生產線，並採用美國的需求流動制造 (DFM) 專利技術組織生產，以確保有高效率的生產力及能夠將貨物準時付運。廠房初期以生產家用式空調機組為主，及後增設生產線生產商用空調機組。



Screw Chiller Test Platform  
螺桿式冷水機組測試平台

經過近八年不斷發展及擴張，特靈在太倉廠房總投資額達已 6,000 萬美元，員工逾 700 人。現時生產的空調產品除了家用式分體機組外，還包括暗藏天花式分體機組、空氣處理機組、風機排管機組、小型風冷式冷熱水機組、離心式及螺桿式冷水機組等。2002 年年產量超過 10 萬台，銷售額達 8 億人民幣。產品除了在中國市場銷售外，並出口到世界各地。所有產品均已通過 ISO 9002、ISO 9001:1994 及 ISO 9001:2000 國際標準質量保證體系認證。

太倉廠房設施完善，陳列室陳列不同型號的產品，方便顧客查詢。廠房設有測試室，為機組的冷量、風量及噪音量進行測試，以保持產品質素。廠房附設空調訓練中心，培訓項目包括銷售訓練、產品知識及維修技術。

自 2001 年起，太倉廠房開始主力生產及銷售中央和商用空調機組，營銷策劃及建立顧客服務隊伍，向 10 億銷售目標進發。至 2005 年，特靈將於太倉市興建一座中央空調城，成為中國生產中央空調類規格最齊全的廠家，屆時年銷售量將突破 20 億元。



Trane Taicang Showroom  
特靈太倉陳列室



Trane Taicang Factory  
特靈太倉市廠房



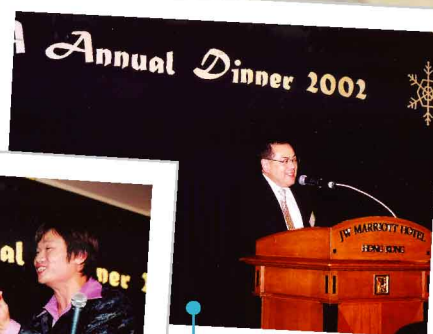
# ACRA Activities

Various activities, functions and trainings have been successfully organised throughout the year. All those events are overwhelmingly participated and greatly supported by our members with highlights as follows:-

- Basketball Tournament was held on August 2003 at Kowloon Bay Sports Centre
- Bowling competition was taken place on July 2003 at AMF Amoy Super Bowl



- IT seminar was conducted by Air Trade Centre on June 2003
- Factory visit to McQuay's chiller manufacturing plant in Ping Wu, Shenzhen was carried out on March 2003



- Spring Dinner at Tao Yuen Restaurant on February 2003
- ACRA Golf Competition had been held on last November 2002 in HKJC Kau Sai Chau Golf Club
- Training for closed cell elastomeric insulation had been conducted on last November 2002.
- The unforgettable Annual Dinner 2002 was held on last November at JW Marriott Hotel with a wonderful classical music performance.
- Factory visit to "Carrier, Trane and Daikin" in Shanghai was arranged on last October 2002.

Please visit our web site: [www.acra.org.hk](http://www.acra.org.hk) for the forthcoming activities for ACRA. \*





# HITACHI

## Air-conditioning and refrigeration equipment

### New high efficiency Hitachi air-cooled chiller

**R407C Refrigerant**

**Top Class high COP 3.41**

**Leading**

**Low noise**

**Advanced Twin screw compressor**



### Variable Refrigerant Volume air-conditioning system

**SET FREE**

**Energy Saving**

**Compact Size**

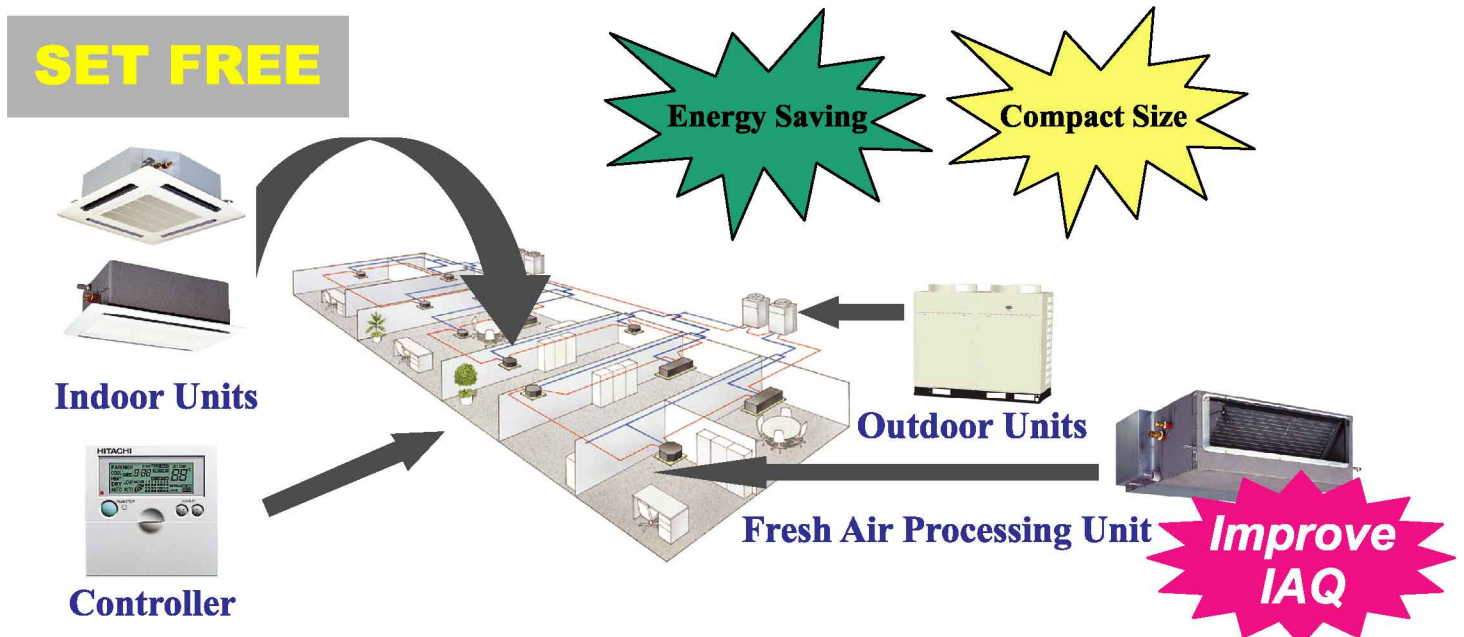
**Indoor Units**

**Controller**

**Outdoor Units**

**Fresh Air Processing Unit**

**Improve IAQ**



Hitachi air-conditioning equipment are now distributed by :-

# ATAL

Analogue Technical Agencies Ltd.

Sales Hotline: (852) 2565 3390

Webpage: [www.analogue.com.hk](http://www.analogue.com.hk)

Email: [enquiry@analogue.com.hk](mailto:enquiry@analogue.com.hk)



*With Compliments of*



**Young's Engineering Co Ltd**  
**景福工程有限公司**

Room 701-4, Eastern Harbour Centre, 28 Hoi Chak Street, Quarry Bay, Hong Kong.

香港鰂魚涌海澤街28號東港中心701-4室

Tel 電話: (852) 2235 0900 Fax 傳真: (852) 2529 8194 [www.youngs.com.hk](http://www.youngs.com.hk)



ISO 9001 : 2000  
Certificate No.: CC 666



ISO 14001 : 1996  
Certificate No.: CC 1971

*Subsidiary of NWS Engineering*

*Member of NWS Holdings*



**"Our customer's  
high quality  
standard is our  
challenge"**

Hans Rudolf Kresse (Chairman)  
Wolter GmbH Co KG

WOLTER offers an almost complete product range of fans from small in-line fans up to tunnel jet-fans. The company based in Malsch-Volkersbach has been producing ventilating equipments at two sites in Germany for more than 30 years now.

WOLTER-products represent up-to-date technology and meet internationally recognised standards. The company has its own laboratories for performance tests and control systems at it's disposal.

WOLTER strategically based its Asian Regional Office in Hong Kong to further strengthen its ability to deliver highest quality support service to all joint venture partners, customers and agents represent the company on all important markets in the Far East.



Wolter Asia Ltd. (HK)  
Tel : 852 - 2456 0198  
Fax : 852 - 2456 0290  
Email: [info@wolter.com.hk](mailto:info@wolter.com.hk)



Golden 金禧 Jubilee  
**50**



**信興集團**  
**SHUN HING GROUP**

**信興機電工程有限公司**

**Shun Hing Engineering Contracting Co., Ltd.**



# TOSHIBA



## MMS

### Modular Multi System

NEW REFRIGERANT **R407C**

TOSHIBA MMS PROVIDES THE MAXIMUM CAPACITY OF 46 HP IN A SINGLE REFRIGERANT PIPING CIRCUIT AND REQUIRES LESS INSTALLATION SPACE. MMS INDUSTRY-LEADING FEATURES ENHANCE DESIGN AND INSTALLATION FLEXIBILITY.

- ENERGY SAVING
- RELIABILITY
- LESS INITIAL COST
- LESS SPACE
- EASY INSTALLATION
- FLEXIBLE DESIGN
- ENVIRONMENT
- COMFORT

*Total Solution to All Applications*

#### AUTHORIZED DEALERS:

GOLDEN LIGHT ENGINEERING LTD.	TEL: 2387 2882	FAX: 2725 0862
PRACTICAL ENG. (H. K.) CO., LTD.	TEL: 2402 2772	FAX: 2402 2966
RAISING ENGINEERING LTD.	TEL: 2395 6081	FAX: 2395 6933
SAM MARK DEVELOPMENT LTD.	TEL: 2308 1806	FAX: 2390 2410

#### TOSHIBA AIR CONDITIONING GROUP

2/F., 1-7 SHING CHUEN ROAD,  
TAI WAI, SHATIN, HONG KONG.

TEL: 2694 5333 FAX: 2694 5358

A DIVISION OF CARRIER HONG KONG LTD.



### Company Name

### Contact No.

### Trade

#### ACRA Fellow Members

ATAT Engineering Ltd.  
Carrier Hong Kong Ltd.  
Krueger Engineering (Asia) Ltd.  
Newland Engineering Ltd.  
Ryden Engineering Co., Ltd.  
Shun Hing Electric Works & Eng. Co., Ltd.  
Trane Hong Kong  
Winston Air Conditioning & Eng. (HK) Co., Ltd.  
Young's Engineering Co., Ltd.

安樂工程有限公司  
開利 (香港) 有限公司  
高雅空調工程有限公司  
新陸工程有限公司  
菱電工程有限公司  
信興電工程有限公司  
特靈香港  
永通冷氣工程 (香港) 有限公司  
景福工程有限公司

2561 8278  
2694 5333  
2860 7333  
2967 8620  
2619 8702  
2419 8282  
2807 4711  
2764 1200  
2235 1803 2235 1177

E&M Contracting  
Air-Conditioning Equipment Supplier  
Air-Conditioning, Electrical, Fire Services & Plumbing & Drainage Installation  
Supply & Installation, Operation & Maintenance of HVAC & Electrical system  
E&M Contracting  
Trading and Engineering Contracting  
Air-Conditioning Equipment Supplier  
Contracting  
Supply & Installation of Electrical & Mechanical Services, Routine Maintenance Work

#### ACRA Corporate Members

Alliance Contracting Co., Ltd.  
Amec Electrical & Mechanical Engineers Ltd.  
Anpoint Engineering Ltd.  
Chevalier (HK) Ltd - A/C Division  
Efatar Engineering Co., Ltd.  
Hong Kong Thermo Industries Ltd.  
Hsin Chong Aster Building Services Ltd.  
Johnson Controls Hong Kong Ltd.  
K-Thorn Engineering Co. Ltd.  
Kervin Engineering Co., Ltd.  
Lee Tack Engineering Company Limited  
Lucky Engineering Co., Ltd.  
Meco Engineering Ltd.  
Meco Services Limited

聯和承造有限公司  
艾銘機電工程有限公司  
恒邦工程有限公司  
其士 (香港) 有限公司 - 冷氣部  
怡輝冷凍工程有限公司  
香港冷凍器材有限公司  
新昌亞仕達電子設備有限公司  
江森自控香港有限公司  
旗鋒工程有限公司  
榮信工程有限公司  
李德工程有限公司  
連通冷氣電業有限公司  
梅實工程有限公司  
梅實工程維修有限公司

2891 9083  
2845 3080  
2851 1816  
2111 4811  
2606 6922  
2674 6876  
2579 8238  
2590 0012  
2481 2918  
2422 3110  
2305 3111  
2780 5285  
2891 8722  
2892 2826

Contracting  
E & M Contracting  
E & M Contracting  
Contracting  
Trading and Contracting  
Trading and Contracting  
E & M Contracting  
Supply, install & maintain HVAC, Fire Service, E&M, Security & extra low voltage system  
Air-Conditioning & Electrical Installation  
HVAC Contracting E & M Engineering  
Contracting  
E & M Contractor  
Engineering Contractor  
Supply, Installation, Operation & Maintenance Servicing of MVAC, Electrical & Fire Services System  
Contracting  
Building Services, E&M Contractor  
Building Services Installation  
Supplier of A/C Equipment  
Design, supply, installation and maintenance of mechanical ventilation and air conditioning  
Contracting  
Building Services Design Installation and Maintenance  
Air-conditioning & related services  
Air-conditioning and Electrical Installation  
Contracting  
Manufacture of Air-conditioning equipment

Quad-Tech Engineering (HK) Co Ltd.  
Shinryo (Hong Kong) Ltd.  
Skyforce Engineering Ltd.  
Southa Co., Ltd.  
Standard Refrigeration & Engineering Co., Ltd.  
Takasago Thermal Engineering Co., Ltd.  
Technicon Engineering Ltd.  
TJ Engineering Services Ltd.  
Wang & Lee Contracting Ltd.  
Westco Air Conditioning Ltd.  
York International (Northern Asia) Ltd.

高得工程有限公司  
新菱工程香港有限公司  
天科工程有限公司  
南龍有限公司  
立燈工程有限公司  
高砂熱學工業株式會社  
得力達工程有限公司  
怡和技術服務  
宏利營造有限公司  
威高冷氣工程有限公司  
約克國際 (北亞) 有限公司

2573 1832  
2519 3383  
2885 1620  
2963 7225  
2388 1213  
2520 2403  
3193 1300  
2807 4888  
2889 1313  
2426 3123  
2331 9286

#### ACRA Associate Members

Air Trade Centre Ltd.  
Air Master International Ltd.  
A&R Engineering Co., Ltd.  
ABB (Hong Kong) Ltd.  
Alpha Appliances Ltd.  
Armaceil Asia Ltd.  
Brisky Limited.  
Bun Kee (International) Ltd.  
Clydeman Engineering Ltd.  
Crowntin Limited  
D & I Engineering Co Ltd.  
Dah Chong Hong (Engineering) Ltd.  
Delta Pyramax Co., Ltd.  
Dura Duct International Ltd.  
Enviro-Tech Engineering Co., Ltd.  
Extensive Trading Co., Ltd.  
Fook Loong (HK) Ltd.  
Fung's Electrical Engineering Co., Ltd.  
GEC Services (Hong Kong) Ltd.  
GELEC (HK) Ltd.  
Gether-Force Air-Conditioning Engineering Co., Ltd.  
Getwick Engineers Limited.  
Glen Dimplex (HK) Ltd.  
Goodway Electrical Engineering Ltd.  
Goodways International Limited  
Grand Luck Engineering Limited  
Hang Shun Engineering Co.  
HUD General Engineering Services Ltd.  
IES (Hong Kong) Limited  
Jardine Engineering Management Services Ltd.  
Jardine M&E Contracting Ltd.  
Kinden Corporation  
Kingspan China Ltd.

裕風先達有限公司  
雅士 (國際) 空調有限公司  
奇樂工程有限公司  
ABB (香港) 有限公司  
第一電業有限公司  
阿樂斯亞洲有限公司  
穿破科技有限公司  
彬記 (國際) 有限公司  
佳電工程有限公司  
冠嚴有限公司  
思達工程有限公司  
大昌貿易行工程有限公司  
佳運科技有限公司  
都得國際有限公司  
廣達工程有限公司  
精基貿易有限公司  
福隆 (香港) 有限公司  
馮氏電器工程有限公司  
英國適用工程 (香港) 有限公司  
香港適用電器有限公司  
群力冷氣工程有限公司  
佳域工程有限公司  
佳鴻電業有限公司  
協進國際有限公司  
運高工程有限公司  
恒信工程公司  
合致工程服務有限公司  
恒豐工程 (香港) 有限公司  
怡和工程有限公司  
固溫中國有限公司

2887 7000  
2764 0307  
2408 2960  
2929 3838  
2529 7555  
2574 8376  
2511 3161  
2748 9319  
2332 3591  
2416 8066  
2480 3791  
2768 3388  
2511 2118  
2605 6806  
2827 0688  
2889 1681  
2393 7773  
2682 7200  
2123 0888  
2919 8383  
2890 2622  
2893 3600  
2790 6600  
2405 0888  
2575 8770 2863 9405  
2389 1517  
2428 8640  
2431 2828  
2992 0830  
2807 1717 (86)21-62183888  
2821 2121  
2368 6136  
2814 8457

Kings View Airconditioning Engineering Co. Ltd.  
Link The Best Company Ltd.  
McQuay Air-Conditioning Limited

景匯空調工程修有限公司  
必發 (香港) 有限公司  
麥克維爾空調有限公司

2796 2417  
2568 4092  
2893 6261

NAP Acoustics (Far East) Ltd.NAP  
Oxprime (International) Ltd.

聲學工程 (遠東) 有限公司  
鑫輝 (國際) 有限公司

2866 2886  
2590 8088

Peterson Engineering Ltd.  
Raising Engineering Limited  
Rockfield Engineering Ltd.  
Sanby Trading Co., Ltd.  
Shun Hing Ref. A/C Engineering Ltd.  
Southa Engineering Limited  
Tom's Equipment Co., Ltd.  
Union Manor Ltd.  
Viewco Building Services & Eng. Co., Ltd.  
Vital Engineering Co., Ltd.  
Wai Luen Air Conditioning Ltd.  
Welcome Oncho Denki Ltd.  
Wolter Asia Ltd.  
Wysermann Co., Ltd.  
Yorkland Engineering Ltd.

必德信工程有限公司  
威信工程有限公司  
榮輝工程有限公司  
聖備貿易有限公司  
順興雪櫃冷氣工程有限公司  
南龍工程有限公司  
義隆設備有限公司  
聯明有限公司  
偉保工程有限公司  
威圖工程有限公司  
偉聯空調設備有限公司  
偉基溫調電機有限公司  
華亞亞洲有限公司  
威士文有限公司  
日島工程有限公司

2365 0372  
2395 6081  
2660 9808  
2573 4219 2572 0271  
2387 2882  
2963 7241  
2757 5539  
2797 2168  
2543 0610  
2571 5382  
2890 9321  
2806 8316  
2456 0198  
2614 2213  
2362 2186

Trading & Engineering  
Mfg of Air Conditioning Equipment & Component  
Contracting  
E&M Contracting, HVAC, Building Services, Power & Control Products  
Supply and Installation of Window Type and Split Type Air-Conditioners  
Insulation Material Supplier  
Supply & install window split & packaged VRV systems  
Whole sale  
E & M Contracting  
Contracting /Supplier /Building Automation  
Engineering & Trading  
HVAC Installation, E&M Package Installation  
Trading  
Supply and Installation of Ductworks and Accessories  
Trading  
Trading - Mechanical Equipment, Building Materials, Environmental Products  
Material Supplier  
E & M Contracting  
Contracting  
Supplier  
Contracting  
Contracting  
Supply & install of Small Kitchen Appliance  
Authorized Distributors  
Manufacturer's Representative  
Building Services Contracting  
Aluminium cladding for air conditioning  
Contracting  
Supply & install central hot water plant and sea water plant, supply of equipment.  
Contracting/ Supplier/ Building Automation/ Energy Service  
Building Services Contracting  
Building Services - E & M Works  
Manufacture phenolic foam insulation products, supply composite wall & roof panel & metal floor decking  
HVAC Contracting & Maintenance  
Trading - Building Material  
Split type air conditioners, chilled water fan coil unit, mini chilec, water cooled package & split type water source heat pump chillers  
Design, Supply & Installation of acoustic treatment and vibration control products  
Pump, Cooling Tower, VAV Box, Vibration Isolators, Dura Duct, Liquid-Solids Separation Systems, Fiberglass  
Contracting  
Air Conditioning Contracting  
HVAC Installation Sales of Carrier A/C Equipment  
Specializing in trading construction insulation materials, such as phenolic foam, fiberglass  
Design, Supply & Installation of Air-Conditioning  
Air-Conditioning & Refrigeration  
Insulation Material Supplier  
Contracting  
Contracting  
Contracting  
Trading of HVAC Equipments  
Supply & Manufacturing of full range of Ventilation Fans  
Trading & Manufacturing Air Conditioning Accessories  
Design, Supply, Installation and Maintenance of HVAC, Electrical and Fire Services System