

MALAYSIA STUDY TOUR BUILDING TECHNOLOGY 2006

REPORT

Organized by

ASHRAE HKU, HKUST, CityU, PolyU Student Branch

Supported by

ASHRAE Hong Kong Chapter



Foreword



It gives me great pleasure to see the engineering students from different universities in Hong Kong to come together to organize this meaningful study tour. The students are the future Young Engineers and Leaders in our society and I believe the experience they obtained from this study tour will enhance their abilities and international exposure.

Our ASHRAE Society and Chapters provide good opportunities for young people to develop themselves and exchange ideas with peer groups and professionals. Through the interactions with local and overseas members, we can understand each other and appreciate the cultures and practices in different countries. This is especially important for those working in the building industry or building services technology fields.

To arrange this study tour, the students need to demonstrate the skills in team working, organization and problem-solving. I hope it will not only stimulate their interests in building technology, but also form a basis for whole-person development. In addition, the tour is full of fun and I am sure all of us will enjoy the true Asia in Malaysia.

Finally, I would like to express sincere thanks to the ASHRAE Malaysian Chapter, Hong Kong Chapter, all related organizations and people for their kind support.

Dr. Sam C. M. Hui
President 2006-2007
ASHRAE Hong Kong Chapter
www.ashrae.org.hk

Acknowledgements

Hsin Chong – K.N. Godfrey Yeh Education Fund for Joint Student Projects

ASHRAE Hong Kong Chapter

ASHRAE Malaysian Chapter

Dr. Sam C. M. Hui (Hong Kong)

Mr. S. L. Li (Hong Kong)

Mr. Ng Yong Kong (Malaysia)

Datun Dr. C. S. Ow (Malaysia)

Mr. Philip Khew (Malaysia)

Mr. Den Low (Malaysia)

Ir Leong Siew Meng (Malaysia)

Mr. Poul E. Kristensen (IEN Consultants Sdn Bhd)

Gas District Cooling (Putrajaya) Sdn. Bhd.

Malaysia Energy Centre

Putrajaya International Convention Centre

American Air Filter Manufacturing Sdn. Bhd.

Carrier International Sdn. Bhd.

Dunham Bush Malaysia

O.Y.L. Research & Development Centre Sdn. Bhd.

Universiti of Malaya

Table of Contents

Foreword.....	I
Acknowledgements.....	II
Executive Summary.....	P.1
1. Introduction.....	P.2
2. Study Tour Arrangements.....	P.3
3. ASHRAE Region XIII CRC.....	P.4
4. Factory Visits.....	P.6
5. Interesting Building Projects.....	P.8
6. University Visit & Cultural Exchange.....	P.11
7. Words form the Delegates.....	P.13
8. Photo Album.....	P.17
References.....	P.20

Executive Summary



Malaysia Study Tour on Building Technology was jointly organized by students from The University of Hong Kong, City University of Hong Kong, The Hong Kong University of Science and Technology and The Hong Kong Polytechnic University from 24th August to 30th August, 2006. There were altogether 18 students joined the tour.

The purposes of the tour were to let students attend the technical seminar in ASHRAE Region XIII Chapters Regional Conference (CRC) – Sustainability: From Design & Installation to Commissioning & Maintenance, in order to know more about the latest thoughts in building services field; visit technical firms like air conditioner suppliers Dunham Bush and Carrier, air filter supplier AAF, and energy saving building like Low Energy Office Building and Gas District Cooling at Putrajaya that rarely found in Hong Kong.

In addition, students from different countries and cities in Region XIII were able to meet together in Kuala Lumpur to join some sessions in CRC, including Hong Kong, Malaysia, Philippines, Singapore, Taiwan and Thailand. Cultural differences were shared during performances, Cultural Night and visit to Universiti of Malaya.

To sum up, students learnt a lot from the technical seminar as well as technical visits. Besides, they made good friends from different nations. They gained a lot and hoped that similar study tour would be held in coming years.

Miss Venice Hung
Team Leader
Malaysia Study Tour 2006

1. Introduction

The ASHRAE Region XIII Chapters Regional Conference was held in Malaysia on 25th and 26th August this year. A study tour – Malaysia Study Tour on Building Technology – was jointly organized by four institutions: The University of Hong Kong, City University of Hong Kong, The Hong Kong University of Science and Technology and The Hong Kong Polytechnic University in order to allow the students to attend the conference and to encourage creative and constructive exchanges.

By organizing the study tour, students could exchange ideas and develop knowledge through technical visits, company visits and attending a professional engineering conference. Moreover, students were able to meet different national students from Philippines, Singapore, Taiwan and Thailand because of the conference, so that cultural values could be exchanged and a better understanding of the Asian countries would be developed.

In this technical report, the study tour will be written in details about the tour arrangement, ASHRAE Region XIII Chapters Regional Conference, factory visits, interesting building projects, and university visit and cultural exchange. In addition, words from delegates and photos during the tour will be shared. It is hoped that readers are able to gain the experiences from the tour from the delegates.

2. Study Tour Arrangements

Flight: Malaysian Airline

Hotel: Sunway Lagoon Resort Hotel, Pyramid Tower



Itinerary:

Day 1 (Thursday, 24 August 2006)

Depart Hong Kong to Kuala Lumpur

Sightseeing tour to KLCC (The Petronas Twin Towers, KL Tower, etc.)

Day 2 (Friday, 25 August 2006)

ASHRAE Region XIII CRC Technical Seminar

Technical Visit to Dunham Bush

Cultural Night

Day 3 (Saturday, 26 August 2006)

University Visit to Universiti of Malaya

Cultural Exchange Program among students from different countries

Day 4 (Sunday, 27 August 2006)

Sightseeing tour arranged by the students

Day 5 (Monday, 28 August 2006)

Technical Visit to AAF McQuay Factory

Technical Visit to OYL R&D Center

Day 6 (Tuesday, 29 August 2006)

Technical Visit to LEO Building and Gas District Cooling System at Putrajaya

Technical Visit to Carrier (Malaysia) at Bangi

Day 7 (Wednesday, 30 August 2006)

Visit to Putrajaya International Conference Centre

Depart Kuala Lumpur to Hong Kong

3. ASHRAE Region XIII CRC

Introduction

ASHRAE Region XIII 9th Chapters Regional Conference was organized on Day 2 of the study tour. There was a technical seminar entitled "Sustainability: From Design & Installation to Commissioning & Maintenance". Three topics were introduced. They were "The business of commissioning" by Carl N. Lawson, "High Performance HVAC Designs Beyond Energy Standard" by Julian R. de. Bullet, and "Sustainability: Closing the Energy & Environment Cycles" by Thiam Leong Chen. On that night, a banquet was given to all the participants in the CRC.

Speech 1: The business of commissioning (by Carl N. Lawson)

The talk conducted the overview of the business of commissioning. The content was divided into 5 main areas. They were: The Definition of Commissioning, The Development of Commissioning, The Operation & Maintenance Manual, Parties involved as well as their responsibilities. Mr. Carl N. Lawson emphasized "We must always remember that Commission is a Quality Process."

Speech 2: High Performance HVAC Designs Beyond Energy Standards (by Julian R. de. Bullet)

The aim was to apply the Energy Standards such as ASHRAE STD 90.1 to achieve sustainability design in HVAC system. Some modern methodologies for high performance HVAC design such as heat recovery technology were talked. Also, this talk focused on environmental friendly refrigerant as well. Mr. Julian R. de. Bullet concluded "supports building sustainability as a means to provide safe, healthy, comfortable indoor environment while simultaneously limiting the impact on the Earth's natural resources"

Speech 3: Sustainability: Closing the Energy & Environment Cycles (by Thiam Leong Chen)

The talk introduced a concept of "High Exergy Efficiency" instead of "High Energy Efficiency", which is to use high quality resources only in high quality applications. As space heating and cooling is regarded as a low quality application, it was suggested that the new generation design of HVAC system should not use high quality energy resources so as to match the trend of sustainable development.

3. ASHRAE Region XIII CRC

The banquet - Cultural Night

In the cultural night, there were distinguish guests, governors and members from different Chapters and students from Chapters of different countries. It was not only an enjoyable dinner with performances but also a good platform to interact with friends from different countries.

The history of ASHRAE was first introduced following with a series of cultural dancing performances. Later that night, there were performances by the students from each Chapter: Malaysia, Philippines, Thailand, Singapore, Taiwan and Hong Kong. Apart from various performances, there was a table-based quiz session having a large variety of questions, such as ASHRAE's background, international sports and entertainment, etc. In the end, many photographs were taken to record this precious and memorable event.

All Hong Kong Chapter's students were dressed in the national costumes for the night. Songs of different languages were sung. There were English, Mandarin and Malaysian song, which was specially learnt for the event. Also, there were guitar playing to accompany the songs. The atmosphere during the performance was great, other Chapter's students also joined to sing and dance on stage.

As the cultural night came to an end, it took a long time for all the participants to leave the banquet room as no one was willing to put it an end. Photographs were taken everywhere, chats were going on continuously, and everyone was enjoying themselves in the gathering, sharing the moments of happiness.



4. Factory Visits

AAF McQuay Factory



It is a worldwide manufacturer of air filters and environmental products. During the visit, the whole manufacture process of different type of filters was learnt, including panel filter, bag filter, etc. Besides, the testing procedures of the most efficient filter, High Efficiency Particulate Air (HEPA) Filters, were observed.

HEPA Filters are the most efficient air filters commercially available. They are used in cleanrooms and other applications which require ultra-clean air, such as hospitals and laboratories. The manufacturing and testing procedure must be processed in a room that is isolated from dusts. For the efficiency of HEPA filters, it must be at least 99.97% testing by 0.3 μm particles. Also, each HEPA filter should be individually tested before shipment to assure it meets rated efficiency and resistance. If it has more than 5 points having leakage during test, the filter will be considered as failed and disposed. It will be repaired if it has less than 5 holes. A scanning machine using computer to compute the leakage and efficiency of the filter will be used if required.

After the visit, not only the production process of air filters was observed, the straightly-controlled testing process was also observed and learnt, this was a precious experience in getting to know the details in fulfilling the international standard of a product.

Carrier (Malaysia)

United Technologies Carrier a USA company, the company is built up by the father of air conditioning - Dr. Willis Carrier. The manufacture product line would be one of the most important parts of the company. The product line of Air Cool Chiller and Air Handling Units (AHU) in the factory was observed. The product line is in ordered sequences. There were chillers of about 5 meters height found, for which, they are not easily found in Hong Kong. The manufacturing procedures are well organized with enough safety devices for the protection of workers. In the end, souvenirs were given to each participant by the company for this visit.



4. Factory Visits

Dunham Bush

Dunham Bush is a USA company; it is one of the leading companies in HVAC&R. There were many product lines in the factory, such as for Heat exchanger, Air Handling Units (AHU), Air Cool Chiller, Water Cool Chiller and the Ice-Cell. The company also manufactures its own compressors, which is one of the leading companies of the product.



As going along the product line, the process of using fundamental elements, such as copper tube and stainless steel plates, to make parts and components in the AHU, Heat exchanger was observed. After fabrication, the testing was done. For example, the Heat Exchanger was filled with gas and was put it into the water to observe any leakages. The Ice-Cell system is a new technology in Hong Kong, it is to save energy. This technology has a different working principle with the traditional air conditioner. The innovation just showing the word is in the step of advancement.

OYL R&D Centre



It is principally engaged in the business of investment holding, manufacture and sale of air conditioning equipment. The OYL R&D Centre is one of the reasons why OYL can be so extensive and innovative in this industry.

It has 11 test rooms to simulate various test conditions. There is a room with outdoor unit simulating outdoor conditions from the intense heat and humidity of a desert to the freezing environment. There is another room with indoor unit to test the system performance under different outdoor conditions. There are special test rooms. For example, the reverberation chamber determines the sound power from the A/C unit while the anechoic chamber determines the pressure emitted from the A/C unit. With these two rooms, the noise level can be verified accurately. Other parts of the systems are under different tests inside the centre. Through the intensive evaluations of different tests, great improvement and innovation could be made.

5. Interesting Building Projects

MEWC LEO Building

The Ministry of Energy, Water & Communications (MEWC) have moved to its own 17,800m², building in the Federal Government Administrative Capital, Putrajaya. The Government of Malaysia wants their new Ministry of Energy building to be a showcase for energy efficiency and low environmental impact. The building demonstrates integration of the best energy efficiency measures, optimized towards achieving the best cost/effective solution in the overall view.



The energy efficiency measures that are expected to contribute to achieving the goal of an Energy Index of 100 kWh/ m²year are:

- Creation of a green environment around and on top of the building.
- Optimization of building orientation, with preference to south and north facing windows, where solar heat is less than for other orientations.
- Energy efficient space planning.
- A well insulated building facade and building roof.
- Protection of windows from direct sunshine and protection of the roof by a double roof
- Energy efficient cooling system, where the air volume for each building zone is controlled individually according to demand
- Maximize use of diffuse daylight and use of high efficiency lighting. Controlled according to daylight availability and occupancy
- Energy Efficient office equipment
- Implementation of an Energy Management System, where the performances of the climatic systems are continuously optimized to meet optimal comfort criteria at least energy costs

In the visit, the importance of energy efficiency was learnt and experienced. The ways to imply the measures effectively in a humid and hot city were observed.

5. Interesting Building Projects

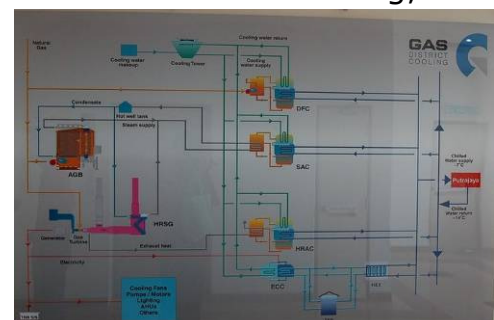
Gas District Cooling System (Putrajaya)

A gas district cooling (GDC) system is a centralized energy plant generating chilled water for air-conditioning needs of buildings within a district. Compared with conventional air-conditioning systems, the district cooling system uses energy more efficiently as a single system applies over a wide area and various buildings, this level off the energy load and saves fuel. In addition, the cooling plant has a dual function of co-generating electricity and thermal energy, thus reducing dependence on the Malaysia's National Electricity Grid. Not only in Putrajaya, Kuala Lumpur City Centre (KLCC) and KL International Airport (KLIA) have also installed the GDC system.

GDC (Putrajaya) Plant No.1 is located in the Government Precinct. It was constructed between 1997 and 1998. Designed with a cooling capacity of 22,500 Refrigeration Tonnes (RT), it is equipped with 18,000 Refrigeration Tonnes per hour (RT/hr) of Thermal Energy Storage to facilitate peak shaving.

At the plant, natural gas piped in from the source is fired to drive gas turbines, producing electricity which can be channeled to client-buildings if so desired. The heat that is "co-generated" with the electricity is harnessed to produce steam which is used to drive the steam absorption or steam turbine chillers that cool the water. The chilled water is piped to the client-buildings. Once thermally spent, the water returns to the plant to be re-chilled. To ensure uninterrupted operation, the system is designed to run on alternative fuels (e.g. diesel) as a backup.

The popularity of the district cooling system is enhanced by its pollutant-free and environmental friendly features. The cooling plant uses natural gas as the main fuel while its chillers use non-CFC based refrigerant 134A. By concentrating the air-cooling and electricity-generating facilities for a district in one building, the system minimizes air and noise pollution. Without the multiplicity of cooling towers within an area, it reduces the "cooling drift" of chemically treated water escaping from conventional cooling towers and reduces "composite noise" caused by many cooling towers.



5. Interesting Building Projects

Putrajaya International Convention Centre (PICC)

The location of the Putrajaya International Convention Centre is on top of the Sports and Recreational Precinct that will be home for residential neighborhoods and waterfront developments. Nearby, there is the Prime Minister's Office. This commanding hill provides an impressive setting for the Putrajaya International Convention Centre.



The shape of the Convention Centre is round. To alleviate the plain roundness of the structure, the structure roof is designed like a folded origami. From the front, its eaves or wings are lifted at the sides creating broad overhangs over the raking wall. Since the walls are made of glass, generous natural daylight will illuminate the auditorium through the raked and shaded windows. The form has been described as distinctive and contemporary.



Within the gross floor area of 135,000 square meters of the centre, there are halls, conference rooms, suites, lounge, meeting rooms, galleries, restaurants, prayer rooms and carparks. The largest hall is of 4,123 square meters which can seat 2,778 people.

A number of halls and conference rooms were visited, they are all equipped nicely to suit each purposes. There were screens displaying welcoming message when arrived. The structure of this building was appreciated, with much use of daylight through tall and large glass walls. Also, there are green plants located, outdoor, in the centre of the building surrounded by glass walls. This gives a natural decoration to the building when viewing from the inside.

Although not much of its HVAC systems were seen due to limited time, the building structure itself and the facilities inside has already driven people's strong appreciation towards it.

6. University Visit & Cultural Exchange

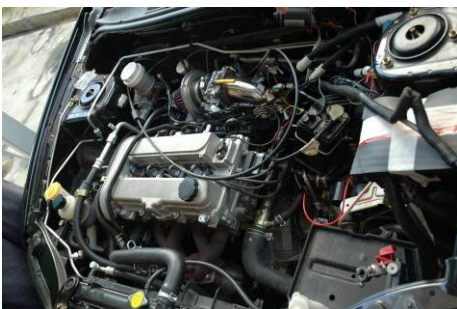
University Visit

Following the warm welcome by the Dean of Faculty of Engineering, a seminar was held with topic called "Energy Savings in Tropical HVAC Systems – A Simplified TRNSYS Simulation" given by Ir. Dr. Yat Yau. In fact, it was about using a simulation program or software which was called TRNSYS to carry out some simulation about HVAC system in tropical region like Malaysia. It included a graphical interface, a simulation engine, and a library of components that ranged from various building models to standard HVAC equipment to renewable energy and emerging technologies. Moreover, it included a method for creating new components that did not exist in the standard package.



▲Dean of Faculty of Engineering - UM

Students of all Chapters were then invited to visit laboratories of the Faculty of Engineering. Unlike Hong Kong, space in Universiti of Malaya is more than enough. The dynamics laboratory has various types of motors which were learnt from textbook. Having to see the practical model had enhanced the interest of students. The scale of thermodynamics laboratory was large. Large scale of air duct testing system was installed in the University. Students of UM could finish their final year project regarding ventilation as well as air-conditioning without limitations of space and apparatus.



Their efforts on solving problems of air pollution and collaborating with local industry were learnt. One of the projects that were shown was a prototype Liquefied Petroleum Gas (LPG) private car (figure on the left) which was jointly invented by local car industry together with the University. Students in UM would have opportunities to save our earth from this, which should be one of the responsibilities of an engineer.

6. University Visit & Cultural Exchange

Cultural Exchange

Following the series of laboratory visits, the student hostels were visited. It is a large piece of area, decorated colorfully with large gardens. The cultural exchange program was held in an assembly hall within the hostel. Students from all Chapters presented the uniqueness of their culture in different ways.

As the majority of populations in Malaysia are Malaysian, Chinese and Indian, their performances included Indian Fashion Show, Chinese Yoyo and Malaysian Folk Dance. Other performances included singing, video shows and PowerPoint presentations. A lot of effort was put to the performances for each Chapter, all of the students were enjoying themselves in such warm and cheerful atmosphere. Also, many interactions were made between students, exchanging information about their country or universities. Habits from different countries were also learnt during the event.

Malaysia is indeed a place where different cultures meet. Through their remarkable performances, it could be seen how well cultures react, interfere and live together.



7. Words from the Delegates

List of Delegates

City University of Hong Kong



Mr Fan Hok Man, FanHok (From left to right)

Ms Fung Man Yui, Candy

Mr Huang Hung Man, Ah Man

Ms Kei Man Ting, Mandy

Mr Tang Ka Ming, KaMing

Mr Yip Wai Tong, Ah Tong

The Hong Kong University of Science & Technology



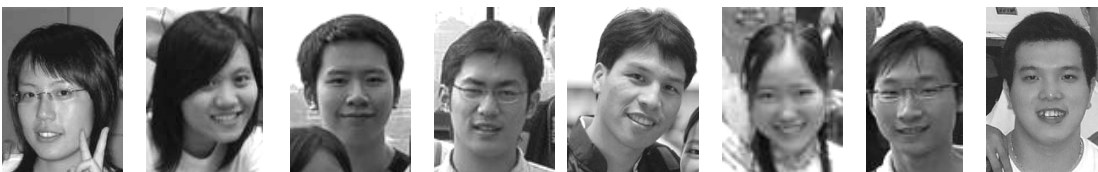
Mr Chan Kwok Choi, Henry (From left to right)

Mr Cheng Tsz Chun, Ah Tsz

Mr Fan Yiu Lun, Ah Lun

Ms Kung Yu Man, Helen

The University of Hong Kong



Ms Chan Hei Man, Heiman (From left to right)

Ms Hung Chun Leung, Venice

Mr Lam Man Yin, Tommy

Mr Lee Chak Yau, Tim

Mr Tan Junyi, Richard

Ms Tong Yuen Ling, Eunice

Mr Tsang Po Choi, Ah Choi

Mr Yiu Chung Wai, Ah Wai

7. Words from the Delegates

"This is the first time for me to visit Malaysia. Its development in the recent decades impressed me a lot. What I found the most impressive thing is that its government is devoted to the development of energy-saving buildings, which I think is worthwhile building a sustainable future."

Ah Tong - CityU

"This tour is such a great memory of mine. It was like a three in one package. Sightseeing is always the basic in traveling. Knowledge gain is an expected achievement during some particular visits. Friendship is always the surprising and unpredictable treasure at any circumstances. Luckily, I got all the three in this trip. I am so happy to have you all!!!!~"

Helen - HKUST

"I am glad to join the Malaysia Study Tour. During the tour, the most impressed activity is exchange with other countries. I make friends from those countries, and mutually understand their culture. I have learnt a lot from their sharing. The students from Malaysian Chapter are very nice, they were the coach during the tour, introduced many things about Malaysia. In short, it is a valuable experience of my life, and I will not forget the memories of the tour, and also thanks to the students from Malaysia."

Ah Wai - HKU

"This tour provided me a very basic knowledge of manufacturing, testing and research on air-conditioner, which greatly enhances my interest in this aspect. Apart from it, pleasant memories in Kuala Lumpur made with students from other Chapters will always stay in my heart. Friendship forever!"

Tim - HKU

"It was my pleasure to go Malaysia Study Tour. I learnt a lot of knowledge about HVAC, especially the structure of chiller. Moreover, it was happy to meet friends from other countries. On the other hand, I can share my school life with them. However, time went too fast. But overall, it gave me, indeed, an unforgettable memory. I hope I can attend, again, the CRC next year."

Mandy - CityU

7. Words from the Delegates

“This is entirely an incredible experience for me. I am so glad to have had the series of technical visits to world-known factories and joined the cultural exchange programs. So, what happened during the cultural night and how the performance was? Haha! You will find the answer when you see our photos!”

FanHok – CityU

“I am so happy to have joined the tour with all the tour-mates. We became good friends among ourselves, and I have made new friends from Malaysia, Singapore, Thailand, Taiwan and Philippines. Also, there were visits to factories that cannot be found in Hong Kong, which gave me a unique experience. Friendship forever”

Tommy - HKU

“This was the first time I visited Malaysia, so I had no idea what it is like. In fact, Malaysia is a beautiful city like Hong Kong. Apart from the great scenery, I visited many companies and factories which gave me a worthwhile experience. Honestly, the happiest gain for me was not the scenery or the technical visits, it was my Malaysia friends! We have been best friends during this tour, and will still keep in touch forever. If there is a chance to go for another study tour, I definitely will!”

Ah Lun - HKUST

“I really enjoyed the tour with all the buddies from HKU and HKUST. In addition, I made many new friends from different Chapters: Malaysia, Thailand, Philippines, Singapore and Taiwan. I will never forget the time of the banquet dinner where we had funs and performed together, we were dancing, singing... what a fantastic moment ever! Apart from the entertainments, I was amused by the large-scale factories which are impossible for Hong Kong to have. Lastly, I would like to take this opportunity to thank ASHRAE Hong Kong Chapter for their support.”

Ah Man - CityU

“It’s indeed a good opportunity for us to join the tour. Besides visiting companies that we hardly reached in Hong Kong, we were able to meet different nation’s students during the tour. We shared a lot and became good friends. I would never forget the days in Malaysia!”

Venice – HKU

7. Words from the Delegates

"A 7-day study tour had never been so worthwhile. It was the mixture of technical knowledge with cultural learning and team cooperation during, before and after the tour that made it fruitful. Indeed I was overwhelmed by the whole experience, which was way-out of my expectation. Just want to say a big thank you to all the people involved. Hope our friendship lasts."

Heiman - HKU

"It was my second time to go for a study tour. The image of Malaysia to me was fresh air, high-production and leisure life-style. In this tour, I met many Malaysian students who were very nice and talkative. I gained a lot of knowledge from so many visits. In addition, I have also learnt a few simple Malaysian sentences, their culture, their eating habit, etc. Overall, the tour is worth the value."

Henry - HKUST

"This tour will be an unforgettable experience in my life. I learnt a lot in building technology and HVAC system. The CRC is most impressive. I gained knowledge through technical seminars and enjoy the cultural night which the atmosphere was very relaxed and mirthful. I made good friends among the tour mates. I look forward to the next CRC which will be held in Taiwan. Lastly, I would like to express my thanks to our advisor Dr. Hui and our leader Venice."

KaMing - CityU

"The study tour to Malaysia is a success. It provided us with up-to-date building technologies and a channel to share among ASHRAE members. Also, it promoted international cooperation, cultural exchange and mutual understanding in Asian countries. All of us became good friends. Thanks for Dr. Hui and our team leader for the fine arrangement and thanks for the ASHRAE HK Chapter for the support."

Richard - HKU

"Through this study tour, I've met a lot of students from other student branches in other Chapters. There will be a stronger communications between the students from different countries and I'm delighted with this. Also, I have developed basic technical knowledge after this study tour. Indeed, I have gained a lot."

Candy - CityU

8. Photo Album



▲ CRC – Speakers & MC



▲ Hong Kong International Airport – Ready on board!



▲ CRC – Technical Seminar



▲ Cultural Night - Invited by Taiwan Chapter



▲ Cultural Night – 18 of us



▲ Cultural Night – We won the quiz !



▲ Cultural Night – Our performance on stage



▲ Hong Kong Chapter

8. Photo Album



▲ Visit to AAF – Going into the cleanroom



▲ Happy Birthday to Mandy 29/8



▲ Visit to GDC – Helmets on!



▲ Visit to AAF – Group Photo



▲ Sightseeing – Packed in train



▲ Sightseeing – Dinner performance



▲ Factory Visit - Dunham Bush



▲ Visit to GDC – Having fun...!?



▲ Sightseeing – beautiful Malaysia



8. Photo Album



▲ Sightseeing – Monorail Station



▲ Chinese Yoyo & Indian Fashion Show – UM



▲ "Guide" – Danny & AhLong

THANK YOU GUYS!
KEEP IN TOUCH!



▲ Inside the Thermodynamic Lab. – UM



▲ Outside PICC – Our last visit in Malaysia



▲ KLIA – "Goodbye" Malaysia!



▲ PICC – "Check it out!!"

References

[AAF McQuay Factory]

<http://www.mcquay.com.my>

[Dunham Bush Malaysia]

<http://www.dunham-bush.com/kualalumpur.html>

[O.Y.L. R&D Center]

http://www.york.com.my/rnd_center.asp?language=English

<http://www/oyl.com.my>

[MEWC LEO Building]

<http://www.mecm-leo.gov.my>

<http://www.ptm.org.my>

[Gas District Cooling]

<http://www.i-putra.com/sites/Site.cfm?id=24>

- "Sustainability: From Design & Installation to Commissioning & Maintenance" Technical Seminar, ASHRAE Region XIII 9th CRC
- GDC, 2002. *GDC and Cogeneration System: For Healthier Living*, brochure from the Gas District Cooling (M) Sdn. Bhd., Kuala Lumpur, Malaysia.
- Tang, C. K., Kristensen, P. E. and Lojuntin, S. A., 2004. *Design Strategies for Energy Efficiency in New Buildings (Non-Domestic)*, Ministry of Energy, Water and Communications, Malaysia.
- DANDIA, 2004. *Energy Performance of LEO Building*, Ministry of Energy, Water and Communications, Malaysia.

**ASHRAE STUDENT BRANCH
BUILDING TECHNOLOGY
2009**



THANK YOU

Organized by

ASHRAE HKU, HKUST, CityU, PolyU Student Branch

Supported by

ASHRAE Hong Kong Chapter

