

# Malaysia Study Tour 2012

Report By ASHRAE Hong Kong Chapter



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## Forewords



It is my pleasure to introduce to you the successful outcomes of the Malaysia Study Tour held on 9-15 August 2012. 15 students from four different universities/institutes in Hong Kong have carried out the study tour with the aim to develop knowledge in building engineering technology and to promote exchanges in Asian countries.

This year is the seventh time such a study tour is organized. The students from Hong Kong have demonstrated very good team work skills and enthusiasm when they were preparing for the study tour. The students have attended the ASHRAE Region XIII Chapters Regional Conference and interacted with the student representatives and ASHRAE delegates from Indonesia, Malaysia, Philippines, Singapore, Taiwan and Thailand. They have also met the ASHRAE President (Mr. Tom Watson) and other ASHRAE USA staff. The experience could expand their vision in regional and international affairs.

To study the building and engineering technologies in Malaysia, they have visited three interesting green building projects including ST (Suruhanjaya Tenaga) Diamond Building, GEO (Green Energy Office) Building and LEO (Low Energy Office) Building. They have also visited the Ministry of Energy, Green Technology & Water (MEGTW) and the Malaysian Green Technology Corporation (GreenTech Malaysia) for discussion on green building technologies. To learn about the manufacture process of HVAC equipment, they have visited Truwater Cooling Towers, Welcome Air-Tech (AHUs) and Nicotra-Gebhardt (fans). An interesting visit has also been made to a sustainable building consulting firm IEN Consultants to exchange ideas on green building projects.

On behalf of the study tour participants, I would like to express sincere thanks to the ASHRAE Hong Kong Chapter, ASHRAE Malaysia Chapter, the study tour sponsors and all related organizations and people for their kind support. I believe this study tour has created a big impact to encourage exchanges and cooperation among the students.

I hope that the spirit of the study tour will be continued and the participants will extend the findings and experience to benefit themselves, other students and our industry.

**Dr. Sam C. M. Hui**  
**Study Tour Advisor, ASHRAE Hong Kong Chapter**

## Acknowledgements

Sincere thanks are expressed to the following organisations and persons.

Ryowo (Holding) Co., Ltd. (Mr. David Chiu)

The Hong Kong Air Conditioning and Refrigeration Association Ltd. (ACRA)

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

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Sustainable Energy Development Authority Malaysia (SEDA)  
Ministry of Energy, Green Technology & Water (MEGTW)  
Malaysia Green Technology Corporation (GreenTech Malaysia)  
Suruhanjaya Tenaga (Energy Commission)  
Universiti Tunku Abdul Rahman (UTAR)  
Welcome Air-Tech (Malaysia) Sdn Bhd (Mr. Albert Lim, Mr. K. N. Lee, Mr. Benz Tan)  
Nicotra-Gebhardt (Mr. Jack Tan and Mr. Ben Koh)  
IEN Consultants Sdn Bhd

Mr. Poul E. Kristensen (Chief Technical Adviser for the UNDP/GEF BSEEP program)  
Mr. Gregers Reimann (Managing Director, IEN Consultants)  
Mr. Brian Klejn-Christensen (Energy Engineer, IEN Consultants)

## Executive Summary

ASHRAE Study Tour is one of the yearly student activities. Similar to the last year, there were 15 participants in total including students from the City University of Hong Kong (CityU), the Hong Kong Polytechnic University (PolyU), the University of Hong Kong (HKU), the University of Science and Technology (HKUST) and Hong Kong Institute of Vocational Education taking part in this Malaysia study tour from 9<sup>th</sup> August to 15<sup>th</sup> August in 2012 summer.

By joining this study tour, it was to enhance students' interests in HVAC&R technologies by talks, seminars and visits. This seven days study tour was a valuable experience for us to broaden our view by culture exchanging and experiencing engineering industry. During these seven days, we joined various excellent activities such as ASHARE Regional XIII Chapters Regional Conference (CRC) and banquet dinner. CRC allowed us to understand the new technology in engineering field and meet more friends in Regional XIII Chapters. The seminars also focused on energy saving and green building. Visiting the cooling tower, AHU and fan factories provided us great opportunities to understand HVAC&R systems.

Moreover, we went ST Diamond Building, GEO Building and LEO Building for the technical visit. These three building showed the Malaysia Government puts a lot of effort to develop Green Building. Apart from technical visits and seminars, we prepared an excellent performance for the banquet dinner. Practicing the performance built up our friendships and developed our talent.

Organizing a successful study tour without supports from ASHRAE Hong Kong Chapter is difficult. I would like to take this opportunity to thank ASHRAE Hong Kong Chapter for supporting students' education and activities. They not only support this study tour, but also help us develop our knowledge in HVAC&R industries.

Thanks all counterparts and helpers in Malaysia, especially students from UTAR preparing an excellent tour to let us know more about Malaysia culture and Green Building Development.

Thanks Dr. Sam Hui for his fully supports and continuous guidance to all of our students.

Thanks all of our tour-mates for their valuable contribution to our wonderful tour.



**Ms. KWAN Sin Ki, Irene**  
**Team Leader, Malaysia Study Tour 2012**

## 1. Introduction

### Background

In August 2012, the ASHRAE Region XIII Chapters Regional Conference was held in Malaysia. This study tour was arranged to allow the students in Hong Kong to attend the conference and to carry out technical and academic visits and exchanges. Successful study tours to the Philippines, Thailand, Singapore and Korea were organized in 2008, 2009, 2010 and 2011 respectively.

### Objectives

The objectives of this study tour are:

- To study the culture and social-economic development of Malaysia
- To enable the students to develop knowledge and skills in advanced HVAC&R technology, building environmental design and creative thinking
- To promote international cooperation, cultural exchange and mutual understanding in Asia

The participants of the study tour come from five student branches including City University of Hong Kong, The University of Hong Kong, The Hong Kong Polytechnic University, The Hong Kong University of Science and Technology and Hong Kong Institute of Vocational Education. Before having the study tour, students had to attend meetings for the preparation works. Through the meetings, students from different institutions learnt the importance of teamwork and organization skills. During the study tours, attending professional engineering conferences, technical visits, company visits and sightseeing had broadened students' horizon. In addition, students were able to meet different engineering students from the Philippines, Taiwan, Thailand, Indonesia, Singapore and Malaysia. Cultural values could be exchanged with different student chapters and a better understanding of Asian countries would be developed.



## 2. Itinerary of Malaysia Study Tour 2012 on HVAC&R Technology

Duration: 9 August 2012 – 15 August 2012

Flight: Cathay Pacific (CX)

Hotel: Dynasty Hotel Kuala Lumpur

### **Day 1 9 Aug 2012 (Thu)**

Depart Hong Kong to Kuala Lumpur CX723 0850/1230

### **Day 2 10 Aug 2012 (Fri)**

Morning: Technical visit: ST Diamond Bldg

Afternoon: CRC technical seminar and banquet dinner

### **Day 3 11 Aug 2012 (Sat)**

Morning: CRC student technical visit (Truwater Cooling Towers)

Afternoon: CRC student programme: visit to Royal Selangor Pewter

### **Day 4 12 Aug 2012 (Sun)**

Cultural exchange and sightseeing

### **Day 5 13 Aug 2012 (Mon)**

Morning: Visit to Greentech Malaysia & GEO Building

Afternoon: Visit to MEGTW & LEO Building

Visit to Universiti Tunku Abdul Rahman (UTAR)

### **Day 6 14 Aug 2012 (Tue)**

Morning: Visit to Welcome Air-Tech (AHUs)

Afternoon: Visit to Nicotra-Gebhardt (fans)

### **Day 7 15 Aug 2012 (Wed)**

Morning: Visit to design firm (IEN Consultants)

Afternoon: Depart Kuala Lumpur to Hong Kong CX724 1740/2130

### 3. ASHRAE Chapter Regional Conference (CRC)

We attended a technical seminar during Malaysia CRC 2012. There are totally two speaker gave three presentations for us. Dr. Peter Simmonds gave two presentations, High Performance Buildings and Occupant Comfort and achieving High Performance and Occupant Comfort in Green Buildings, to us. The first presentation is a brief introduction for the technique or skill that we can use in a high performance building. Also, he talked about the ASHRAE standard 55.1 and other method to achieve thermal comfort.



The second presentation provided more case studies to explain how to achieve High Performance and Occupant Comfort in Green Buildings. All the buildings which mentioned in the case study are irregular shape with curtain wall. It is a great challenge for the building services engineer because it is difficult to provide a good comfort condition to the occupant in an effective way. Dr. Simmonds present his PMV simulation in this seminar. He tried to use different window's material to reduce the heat gain though the window. Also, he used active beam instead of traditional air-conditioning system. It is noiseless, energy saving and low cost. It is a convection HVAC system for the building.

The third Presentation topic is application of UFAD & passive cooling strategies to achieve high performance and occupant comfort. Under Floor Air Distribution (UFAD) are used in raised floor plenum. It provided supply air from the floor. It can provide adequate cooling demand to the target zone without wasting any energy. Ir. Chen also mentioned a case study during his presentation. It is a securities commission HQ in Kuala Lumpur. It included lots of energy saving features in this building. For example, it included UFAD, energy efficiency lighting fixture and thermal flue etc. He also mentioned about the design features of the diamond building which is located in Putajaya, Kuala Lumpur. This building received green mark platinum from Singapore green building council and GBI platinum from Malaysia. Slab cooling is used in this building. It can 'cool' the building at night due to low electric tariff. After the building was 'charged', it will release cool in the day time. Moreover, PV system is used on the roof of the building. It can achieve carbon neutral target. Furthermore, it used a transparent dome to absorb day-light to the occupied zone. It can fully utilize the day-lighting hence it can save the lighting power during the day time.

## 4. Building Visits

### 4.1 Diamond Building

The Diamond Building was designed and built with the concept of a sustainable building with consideration to the aspects including reduction in fossil fuels ,water conservation and construction and demolition management plan,etc. This building is expected to have low energy index which is lower than the standard index.

This building is inspired by the original form of the diamond, which symbolising its transparency, value and durability. The most obvious characteristic of the building represents the mission of energy saving. The diamond shape is found to be the most effective form to prevent air infiltration.

The atrium in the building has been designed to optimise daylight utilisation with reflective panels and an automatic roller-blind system relative to the intensity as well as the angle of the incident sunlight.

Most of the facilities are made from sustainable and energy-saving materials, from energy-efficient computers and lighting systems to non-toxic organic cleaning materials. There is sustainable and recycling system that rainwater is harvested for toilets and gardens while grey water is recycled to irrigate the wetlands outside, thus saving large amount of water usage.

Since the global warming have been an obvious problem in the world ,designing green buildings being a new global trend , the knowledge, technique and design of recycling and energy saving systems are also being improved. The diamond building is one the role models of minimizing energy consumption and reducing environment impacts. I believe that different countries will come to have such a regulation of adopting green development because of the great efficient of green planning.



## 4.2 Green Energy Office Building (GEO Building)

GEO building is one of the green buildings that we visited in this tour. It is the first Malaysia's certified green building and belongs to Malaysian Green Technology Corporation. It is a lively sustainable building applied many green technology that available today.

Before entering the building, we found that the architectural design of the building is well considered with the absorption of radiation. Overhead were constructed near every window to produce Shielding effect to minimize the radiation bring to the building. Also, the windows arrangement is also well designed with minimized the number of windows on east and west side.

During visit of the building, the installation of skylight and the reflective plate and skylight showed the utilization of diffuse sunlight as a light source. It reduced much energy consumption on artificial light.

The use of the chilled metal ceiling and slab technology also reduce much the energy consumption in the HVAC system.

One of the most energy saving system is the PV roof. It not only use to use as a solar cell to produce electric energy but also act as a heat sink for condenser water system. It utilise the hot water that brings form the heat exchanger which connected to the chiller and mix with the rain water to cool down the PV cells surface as to maxize the performance of the PV panel. It demonstrated the utilization of energy in a building.

To conclude, we explore many green energy system and design from the GEO Building and know that green building is not only relying on a green system but also cooperate with the green architectural design.



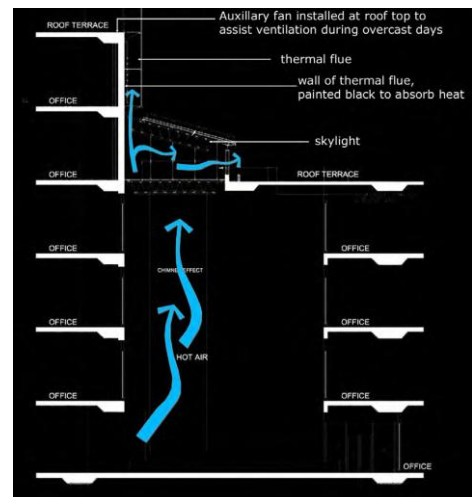
### 4.3 Low Energy Office Building (LEO Building)

The LEO (Low Energy Office) Building in Putrajaya was first occupied in 2004. Building energy management has been practised since then. The building energy index in 2005 was 114kWj / m<sup>2</sup> / year but the index had decreased to 104kWj / m<sup>2</sup> / year in 2006. An energy audit was done on the Block E6 Ministry of Health and Block B6 Economic Planning Unit (EPU) of the Prime Minister's Department buildings in Putrajaya. The audit showed that the energy index of the LEO Building was lower than conventional buildings.

The LEO building won first place in the "Energy Efficient Building Best Practices Competition 2006" at the ASEAN level under the "New and Existing Building" category. The award was presented at a special ceremony organised on 27 July 2006 in conjunction with the 24th ASEAN Energy Ministers meeting in Vientiane, Lao PDR. The Deputy Minister of Energy, Water and Communications received the award on behalf of the Malaysian

The Government of Malaysia is committed to the promotion of energy efficiency and renewable energy for a cleaner environment for our future generations. Malaysia Government has provided fiscal incentives to encourage the wide-scale adoption of these concepts by the public and private sectors. The development of the Ministry's building as a Low Energy Office (LEO) building is an example of the commitment to showcase to the public the economic viability of the venture.

The development of the building is designed to be cost-effective and technically sound and with the use of mostly locally-available materials and components. The savings on energy use is projected to amount to over 50%, compared with typical air-conditioned office buildings in Malaysia, and give a pay back period of less than 10 years on the increased investment for the energy efficiency features. It is an attractive business proposition as the building equipment involved probably lasts as long as 12 to 15 years, while the building itself will last much much longer.



## 5. Company Visits

### 5.1 IEN Consultant

We visited the IEN Consultants Company as the last station in this study tour. The members in the team assembled by the vision of low carbon and balancing the carbon capacity the Earth can hold. They develop and demonstrate low carbon environmentally friendly buildings and make the contribution to future generations.



The method usually used to achieve above results consists of: 1. Integrated Energy and Environment Design; 2. Energy Simulation; 3. Daylight Simulation; 4. CFD (Computational Fluid Dynamics) Simulations; 5. Green Building Rating.

The company was awarded because of his remarkable experience on green building design and energy saving performance. The architecture showed in the above picture named Diamond Building was also designed by IEN consultant.

Its office building was designed by its own consultant. Its name is Syd Kechik Building; surely it is a green building.

The IEN Consultants Company is located on the 8<sup>th</sup> floor of this building.

Syed Kechik Building with its surrounding lush and soothing greenery formed a living microcosm and performed a epitome of Kuala Lumpur's aim in being a veritable garden city.



Plants around the building play the role to absorb CO<sub>2</sub> and reduce influence from air heat transfer. It's artful action to advance energy performance of the building and aesthetics.



The ventilation system within this office building was interesting. From the picture on the left side, pipe surrounding the blue fabric is used to distribute the handled air to conditioned space. During the air supplying, it can reduce the influence from the ambient air, improve the distributing performance to keep the air temperature at the temperature air left from air handling unit.

Stem from this method, operation cost in this building can save significant amount of energy annually.

With economic growth and social progress, people paid more attention to building energy consumption. Energy shortage

emerges as an issue and has been the hot issues all over the world. Energy conservation in buildings has been widely discussed for a long time. The Syed Kechik Building took a good example to minimize energy consumption and environment impacts.

IEN optimize buildings in an integrated design process with the rest of the design team to achieve supreme energy and environment performance and optimal IAQ, used computer tools to optimize the building design to achieve the lowest initial costs and lowest life time costs for the client.

## 6. Factory Visits

### 6.1 TRUWATER

TRUWATER is the cooling tower company over 25 years . The cooling demands of a lots of industries and HVAC system are provided by TRUWATER . Therefore, there are different kind of requirements suited for cooling down the seawater and fresh water .



By the presentation and side visit, we understood that TRUWATER stated the mission. Developing the environmental friendly standard which help to protect the environment and resources.

From the presentation, we found that offering high efficiencies of operation and saving energy are the requirement of district cooling system. Therefore, finding the renewable energy from power generation plants

That aims to advance the technology and machines. We learnt that this is the great way to decrease the carbon consumption then cause the global warming.



Besides, matching for the high demand for steel, TRUWATER provide forceful and perdurable cooling tower to against the high temperature. It shows the ideal design and effective development of energy.

Moreover, we discovered that cooling tower can apply on variable power plants. For instance, the reliable and trouble free cross-flow and counter -flow cooling tower for non-stop petrochemical plants.

Furthermore, precision cooling play the important role in effectively regulating operation. Arraying of processors and servers by data centre. It can ensure the effective cooling and energy usage.





In a conclusion, we learnt a lots of theory and principle about cooling tower during the talk and site visit. We also knew that how to care about environmental friendly and operate effectively which is the major trend of engineering.



## 6.2 SAIVER

SAIVER is one of the most reputable manufacturers among the industry by producing high quality air handling units (AHU).



SAIVER engaged in different projects over the Asia, such as Marina Bay in Singapore, International Financial Centre in Hong Kong, The Venetian in Macao, etc.

The most representative product is the Double skinned Air Handling Unit. What is more, AHU is CUSTOM-MADE in order to cater for different state and custom requirements.



Furthermore, the intelligent Computer Selection Program provides a fast and easy method for customer to make optimum equipment selection by considering local climate, unusual psychometric and physical parameters, etc.

Aside from that, SAIVER also keeps pace with time to do researches about the modification of AHU so as to produce the most economical, efficient and high-qualified AHU. This is the reason why SAIVER represents one of the most outstanding AHU makers in the world.



It was our pleasure to visit the AHU manufacturing factor of SAIVER. As a student of studying Building Services Engineering, it is vital to broaden our horizons not only from books, but also in site visiting. This site visit gave us more detail on how an AHU is produced. Through conversation with the staff of SAIVER, we had a better understanding about the techniques and difficulties of how to produce a high quality AHU.

### 6.3 Nicotra Gebhardt

Nicotra Gebhardt had more than 50 years of experience in manufacturing fans. Nowadays, it is one of the most important manufacturers of centrifugal fan systems. The company sales fan systems into many countries such as France, the United Kingdom, China and Malaysia. Nicotra Gebhardt is not only the specialist in ventilation and air-handling fan systems. The company also offers the right product solution for every need. This could be a plug fan for the air conditioning unit or for an AC installation, or for machines and for production facilities.

Furthermore, they have the own laboratories to test their products which complies with all international directives and the most standard. All the tests can ensure that the products meet their customers' requirements and satisfaction.

In this visit, we see lots of technologies and applications about fans, our engineering fundamentals have further been developed.

## 7. Cultural exchange and sightseeing

### 7.1 Melaka

#### Jonker Walk

A definite haven for antique collectors and bargain hunters. Authentic artifacts and relics, some dating as far back as 300 years, can be found among a host of interesting collectibles, each with its own history and mystery.

Jalan Hang Jebat, formerly known as Jonker Street, is known worldwide among serious antique collectors as one of the best places to hunt and bargain for antiques.

Recently, a new wave of cafes and craft shops have sprouted on this street, lending it a cultured air of old-meets-new.



#### A' Famosa Fort (Porta De Santiago)

The hallmark of Malacca and perhaps the most photographed subject next to the Stadhuys. Built by the Portuguese in 1511, a fortress sustained severe structural damage during the Dutch invasion. The Dutch had set to destroy it but timely intervention by Sir Stamford Raffles in 1808 saved what remains of A'Famosa Fort today



#### Christ Church

Standing exactly as it has always been since 1753, the church is testimony to Dutch architectural ingenuity. Taking note of the church's handmade pews, ceiling beams constructed without joints, Brass Bible, tombstone written in Armenian and 'Last Supper' in glazed tiles



## 7.2 Berjaya Time Square Kuala Lumpur (IMBI)

Time Square, known as an international landmark offering shopping, luxury accommodation, business, fine food and beverage, and abundant entertainment, attracted estimated 2.5 million visitors each month. It is the Malaysia's largest building ever built in a single phase with a gross built-up area of 7.5 million square feet, with over 1,000 shops all under one roof.



### Berjaya Times Square Theme Park

Located at level 5 & 7, Berjaya Time Square Kuala Lumpur, Malaysia largest indoor theme park which covers 133,000 square feet of thrilling rides, 14 specially-designed rides to excite and amaze the senses. Berjaya Times Square Theme Park divided into two theme areas, Galaxy Station and Fantasy Garden. Galaxy Station targeted to adults and teenagers, provided six incredible action-packed rides such as Supersonic Odyssey, DNA Mixer. Fantasy Garden targeted for family bonding, provided eight fun rides such as Crazy Bus, Flying Bumble Bee.

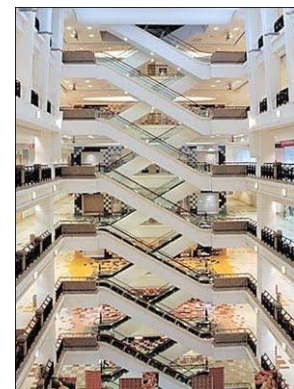


### Golden Screen Cinemas (GSC) & GSC Maxx

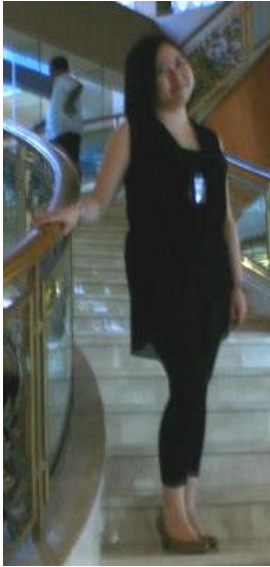
Located at level 1, 3 & 10, the largest 2D & 3D digital hall in Malaysia with a total seating capacity for 2,124. Golden Screen Cinemas (GSC) & GSC Maxx catch up with the latest blockbusters with prestigious audio visual technology system for maximum customer satisfaction. The hall is equipped with dual digital projectors for 24 meter wide screen and Dolby CP750 sound, fulfil the enjoyment of comfort.



Berjaya Time Square Kuala Lumpur, one of the most modern shopping malls we ever visited. This visit could fulfil all kind of enjoyment we wish, included rich type of food and plentiful of choices in fashion apparels and accessories as well as entertainment and lifestyle products. This visit added an unforgettable memory to our ASHARE Malaysia Study Tour 2012.



## 8. Words from Delegates



It was my first time to come to Malaysia. Malaysia giving me the impression was that the weather is hot but less sweaty. People there are very enthusiastic. Food there is spicy but delicious.

For me, Malaysia is a country full of curiosity. In fact, Malaysia is definitely the masterpiece of the blend of the west and the east. It is amazed to discover there are several New Year Festivals for different races. It represents that different cultures are accepted and respected there.

Moreover, the life style in Malaysia is so relaxing and carefree, which is different from that in Hong Kong. Time seems still in Malaysia. The slow pace in Malaysia brought us away from the hustle and bustle life in Hong Kong.

Last but not least, I have met many new friends there. They are very nice and helpful. Without them, I am sure my Malaysia Study Tour would be colorless.

Now, I miss the Malaysian friends so much. Hope that they will visit Hong Kong soon. This tour would be the precious memory in my life!

**Ms. Chan Man Sze, Vicky (HKU)**



Before the tour, I never imagine this study tour can have so much fun and memories. During the 7-days Malaysia study tour, we have been many factories related to HVAC and the famous green building in Malaysia. These are the technical experiences which could not be easily gained in Hong Kong. Beside of technical activities, I would like to show my greatest thanks to ASHRAE Malaysia student branch, they gave me a chance to enjoy Malaysia local culture and taste the amazing Malaysia's food.

Lastly, I would like to express my appreciation to ASHRAE Hong Kong Chapter, Dr. Sam C. M. Hui and all participants for organizing such a wonderful study tour and giving me an unforgettable memory.

**Ms. Law Ting Fung, Michelle (HKU)**



It was my second time to join the ASHRAE study tour; I learnt a lot of building energy saving design and studied building technology during the tour. It is good for my study and working in future. Malaysia is really a well-developed country which included many good conditions for living. In the tour, I met a lot of people, who study or work on energy efficient and building field. Moreover, I would also meet some of the ASHRAE members who taught me many about HVACR. It is not only expands my social network, but also know more about the cultures of Malaysia. Lastly, I am so glad that I can join this study tour and enjoy it so much.

**Mr. Chan Tsz Ho, Harry (HKU)**

It was my first time to join the ASHRAE study tour. I feel lucky being one of the participants in this year as I earn much during this tour. Apart from those experiences on foods and views in Malaysia, the design of the green buildings and those friends that met in this tour are the most unforgettable things in this tour.



From those green buildings and manufactories that we visited in this tour, it broadened my horizon on green designs and technology. Visit the Diamond building and Green Energy Office Building (Geo Building) let me know that to achieve the “Green building” goal not just only design an system with optimal energy consumption, but also require to co-operate with the green architectural building structure or the surrounding environment. This effort from government and companies promotes green city makes me feel appreciated. It is rare to see such “green building” in Hong Kong.

Lastly, I met many friends in this tour. They are enthusiastic and helpful. I would also like to give thanks to all of the persons who put efforts to prepare and organized a colorful and brightness study tour.

**Mr. She Ka Yui, Sky (HKU)**



It is the greatest study tour among those I have experienced before. To me, it is not only a study tour, but also an opportunity to have cultural exchange with the local students there, as well as students from other student chapters around the globe, for instance, Thailand, Philippines, Tai Wan. All present warm-hearted welcome to representatives from different student chapters. From this study tour, I really learnt a lot in terms of mutual communication and understanding with people of different nationalities, building services knowledge, as well as group work, all enrich me from the gain of knowledge to personal development.

In this tour, we have visited the Diamond Building, the Green Energy Office(GEO) Building, the Low Energy Office(LEO) Building, some engineering firms. All pose a great real model for Hong Kong building designers and engineers to take the greening ideas from. The buildings are designed under the considerations of energy saving and greening, which benefit both the company owner and the world in the long run. This tour helps me with understanding the true aim of greening, the significance of energy saving.

I learnt different kinds of architectural design in reducing energy consumption, the most impressive and innovative design to me is the way the Diamond Building utilizes daylight. There are four dominant but simple ways for facilitating the full utilization of daylight. By having a dome shape for the crown of the building, natural light is diffused and filtered for indoor lighting use; in the meantime, the application of low-e glazing reflects light to inside area and minimizes heat gained from the sun; moreover, the reflective panels installed allows better concentration of light; what's more is the split window design, it helps redirect natural light to work place in interior part of the office.

The design ideas inspire me in developing my career path in building services engineering in hope to bring the ideas to Hong Kong, aiding the reduction in energy consumption, as well as the carbon production, which in turn reduces global warming effect.

Everything I learnt and everyone I met in the trip contributed to make the tour meaningful and unforgettable. It is one of my experiences I treasure the most. If I ever have an opportunity to join a study tour like this again, I will not hesitate to be one of the participants.

**Ms. Yiu Man Wai, Choco (HKU)**



For me, this is the first time to join the Chapter Regional Conference (CRC) and ASHRAE study tour. I am glad to become one of the leaders of the tour. It is a great experience to learn how to take care the feeling of my mates and make them become a part of our team.

During the CRC, I meet a lot of friends from different countries, such as, Singapore, Malaysia, Taiwan, Philippine, Thailand and Indonesia. All of them are so friendly and active especially the friends came from Malaysia chapter, some of them became the tour guide for us. I need to say thank you once again to all hospitable friends.

In addition, we visited some outstanding green building in Malaysia. The energy consumption of these buildings is designed to become lower by some special features. Moreover, the season in Malaysia is summer season whole year. It is effective to reduce the power consumption from HVAC system by chilled slab etc. or to use renewable energy such as PV panel. We know that the energy hazard is the most important issue for us or the next generation. So, the green design in Malaysia is a very good sample for us to develop the green building in Hong Kong.

Last but not least, I need to thank ASHRAE, ASHRAE all chapters and all people who is involved in this study tour especially Dr. Sam Hui for preparing a tight but wonderful trip for us. Also, I need to thank all of my mates in the trip for tolerate my fault. I know I am not a good leader. Anyway, thank you all of you to give me unforgettable 7 days in Malaysia.

#### **Mr. Luk Wing Ping, Billy (CityU)**

As a final year postgraduate student, I fortunately catch the last train of the CRC student study tour. It is a great experience both in improving my technical knowledge and broadening my horizon.

Malaysia is a quite competitive country in Southeast Asia. Limited by the geographic environment, Malaysia government takes an effective effort in energy saving program. During the one week site seeing, we have visited the Diamond Building, PTM Green Office Building, LEO Building, etc., as well as the relative consultants company. All of them devote to energy saving, clean energy application, reducing the carbon dioxide release, and developing the building intelligent. It also shows the government's strong ambition in sustainable development. Among the buildings mentioned before, the Diamond Building left a strong impression on me. It combines the practical applicability and architecture aesthetics, with the technology innovation and smart design.





Besides, under the local friends' guidance, I had a chance to take a close look to the Malaysia customs and cultures. Malaysia and Hong Kong have much in common. They both are island district, multicultural society, Chinese population, and large economy market.

Thanks for the organization, thanks for our leaders' hard work, thanks for all the team members.

**Ms. Peng Zhi Yuan, Jane (PolyU)**



I think that it is the last time that I use 'student' identification to join the Chapter Regional Conference (CRC) and join the ASHRAE study tour. I really honor to be one of the leaders of the study tour. It gave me a valuable chance for me to take care of my junior.

During last three year, I meet lots of friends form different countries during the CRC. For example, it included Malaysia, Singapore, Taiwan, Philippines and Indonesia. We were the host of the CRC last year. I became the tour guide for the Malaysia's student from University of Malay (UM) and University Tunku Abdul Rahman (UTAR). All of them became my friend. I am very happy that I can meet my friend during the CRC 2012.

During the CRC, we attended one technical seminar and four site visits. The technical seminar is related on achieving thermal comfort and green building. It is really a hot topic. Reducing Carbon emission is the global target. We should use more advance technology to reduce the energy consumption in the building. Furthermore, education is one of the criteria for energy saving. For example, we should turn off the equipment when we don't use and use higher temperature set point instead of dressing more clothes with lower temperature set point. It is only a little step that we have to do but it can save a lot.

Furthermore, we visited a building called Diamond building. It is a low carbon building. It is lots of advance technology in this building. It use chilled slab with VAV system. Also, it uses PV panel and gray water for harvesting system. It can reuse the waste water and use the renewable energy.

It is really a good chance for me join this tour. Last but not least, I really want to thank ASHRAE, ASHRAE-Hong Kong Chapter especially Dr. Sam Hui for his great effort, ASHRAE-Malaysia Chapter and all sponsors from different organizations from the bottom of my heart. I can't join this wonderful study tour without your help. "

**Mr. Chow Chi Fung, Taylor (PolyU)**



The Malaysia Study Tour 2012 must be one of the biggest highlights in this summer as I was able to join ASHRAE's Chapters Regional Conference in Kuala Lumpur, Malaysia. It was an honor to meet and listen to all the top tier expertise, engineers and designers in the industry as they all showed their passion in advancing the technologies and offering more solutions to build a better environment for humans.

During this tour, we have also joined the student programs and technical visits which were supported by the Malaysia Chapter. In these programs, we had visits including the ST Diamond Building, which was awarded as a green building in Malaysia; and many local manufacturers which specialize in the production of AHUs, fans and cooling towers, as we could look closer to the production process.

Moreover, I was impressed by the warm welcoming of the Malaysia Student Branch in the study tour as they provided strong support and did their best to show us the greatness of Malaysia through cultural and academic exchanges. Although we only stayed together for a few days, we have fun together and developed valuable bonding between us and hopefully to meet them once again in the CRC meeting next year!

Finally, I would like to thank for the effort of ASHRAE providing such a great opportunity for us to join this study tour and make it possible to learn and to share without boundaries.

**Mr. Go Ho Fai, Harvey (IVE)**

It is my pleasure taking part in the Malaysia Study Tour 2012 .It was so much fun that learning with mates who interest in same aspect of knowledge and experience unforgettable moments together.

Being one of the members participating the 27<sup>th</sup> CRC, annual dinner and visiting is grateful , all those events with detailed and thoughtful plan were suitable for students. I realize that it is not enough studying by reading books or having lessons , travelling and exploring around is rather a interesting way of broadening horizons .Meeting people who come from different countries and exchanging ideas and culture is one the most amazing part in the trip.Even everybody comes from different background but interests in same aspects and respect each other.



The mates joined the trip helped each other and they are willing to share their knowledge and ideas with confidence and passion. The performance was one of the most pleasant experiences in the trip due to the team spirit and humorous creativity designed by the

mates.

I could not experience such an unforgettable study tour without every little help and preparation, I would like to show appreciation to people who involved in the great arrangement and organization in the trip.

**Ms.Chung Mei Ying, Jennifer (IVE)**



I am happy to share my first ASHARE study tour with high pride!

It was an unique experience in my life as the culture exchanges with international university students are fruitful and impressive, in particular all local students we met in "Malaysia chapter" are extremely friendly, we will definitely treat them with the same hospitality if they come to Hong Kong.

The Green building services in Malaysia were also impressive that they efficiently utilize sunlight to reduce energy usage in light system, while their solar system not only generate electricity, but also provides heating of water, which is rarely found in Hong Kong.

Although the time in Malaysia was short, it was a valuable and unforgettable!

Thank you ASHRAE and all participants to give me a wonderful study tour!

**Mr. Jim Chin Ho, Jim (IVE)**

It totally broadens my horizon during the study tour. It was the golden opportunity for me to exchange the culture and feel the learning motivation of abounding in this spirited and diversified country. It was a unique experience which I can meet a lots of friendly and enthusiastic friend in Malaysia.

Also, this is the great chance to visit the local green building, company and factories in Malaysia. It all related to the thermal comfort and energy saving which is the interesting and meaningful technical knowledge. It inspired us to concern about the environment and advanced technology of Hong Kong and the whole world.

Moreover, one of the amazing experience which is joining the banquet dinner and student programme . It is the time for us to show our talent during the performance and meet some friends from different chapter. Sharing our school life and cultural that encourage me to learn and admire from the peer. It was my honor to meet different region of friends ,for instance, Malaysia , Philippine, Indonesia, Singapore and Taiwan.



Besides, sightseeing is the best way to feel the local culture in Malaysia. I really appreciate

that the local resistant can respect different kind of races and religious belief. Most of them are helpful and pleasing. We deeply admire that student from Malaysia chapter who guide us to travel around. Also, Malaysia is the fantastic country to enjoy the tasty food and visiting.

Last but not least, we cannot own this wonderful memory without ASHRAE from all chapters. Especially, I would like to present my great thank to Dr. Sam C. M. Hui and all of the marvelous friends from Hong Kong chapter. This is my pleasure to prepare and join this remarkable study tour.

**Ms.Chung Mei Lan, Mina (IVE)**



“This was my first time to join ASHRAE Malaysia study tour, I learned a lots and it was beyond my expectation. It is a valuable chance for a student like me to participate in technical seminar, visit in factory, green buildings and university and learn about the culture and HVAC design and green building development in Malaysia.

In this tour, I learnt technical knowledge from different technical visits. Moreover, I realized more about the local culture from sightseeing. Furthermore, I was glad that I have met new friends from different countries. It was a good chance for me to communicate with them.

Finally, I would like to have a special thanks to ASHRAE Hong Kong Chapter, Dr. Sam Hui for offering us this valuable and unforgettable study tour!”

**Ms.Lee Yu Fong, Tracy (IVE)**

“It is my first time to join ASHRAE study tour and I get such a lot of precious moment during the 7-day trip. Time in Malaysia is memorable and valuable. I have been many factories, such as Savier, Truewater, Nicotra Gebhardt and Acson International. Moreover, we visit Diamond Building. I understood that Malaysia is not only a modern and cosmopolitan city, but also a “Energy Saving” city.”



Moreover, I had the chance to participate in the CRC and met friends from many countries like Philippines, Malaysia, Taiwan, Thailand and Indonesia. We chatted and played together. It was a memorable experience to me.

**Mr.Cheung King Wai, Kenneth (IVE)**

Appendix – Photo Gallery







Jointly Organized by:

- ASHRAE HKU Student Branch
- ASHRAE CityU Student Branch
- ASHRAE PolyU Student Branch
- ASHRAE IVE Student Branch
- ASHRAE HKUST Student Branch

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