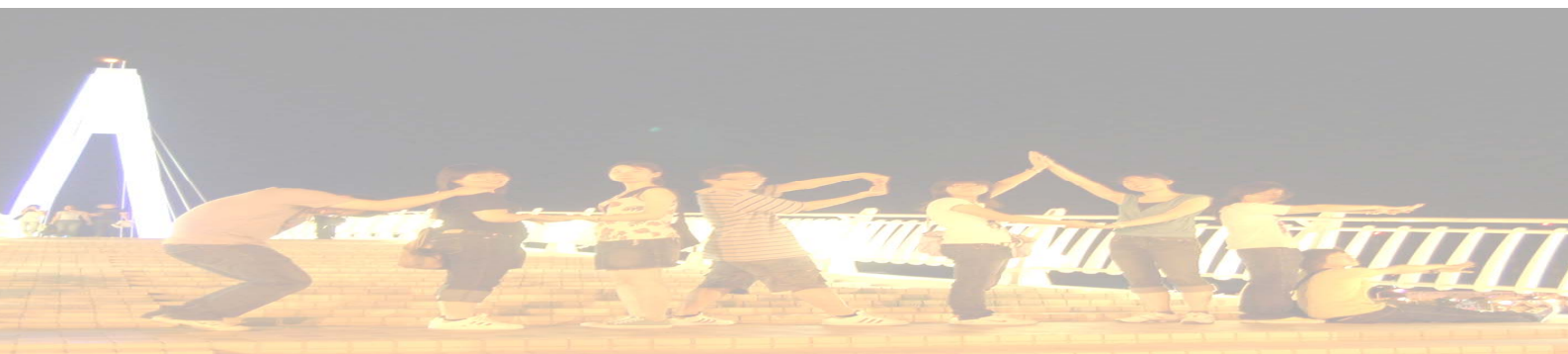


Taiwan Study Tour  
Building Energy & Environmental Technology

2007

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# Report



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## Message from the Advisor

This is the second time our ASHRAE Hong Kong Chapter supports and arranges a technical study tour for the students. Following the success of the Malaysia Study Tour in 2006, we have prepared and designed a very interesting and informative visit programme for this year to Taiwan.

I am very pleased to see the students from different universities in Hong Kong to come together to organize this meaningful study tour. I believe the experience they obtained from this study tour will enhance their abilities and international exposure.

ASHRAE provide good opportunities for young people to develop themselves and exchange ideas with peer groups and professionals. Through the interactions with local chapter and overseas members, we can understand each other and appreciate the cultures and practices in different countries.

To arrange this study tour, the students need to demonstrate the skills in teamworking, organisation and problem-solving. I hope it will not only stimulate their interests in building energy and environmental technology, but also form a basis for whole-person development.

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



Dr. Sam C. M. Hui  
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## Acknowledgements

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## Executive Summary



This 7-day Taiwan Study Tour on Building Energy & Environment 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 2<sup>nd</sup> August to 8<sup>th</sup> August, 2007.

By joining the study tour, the 9 students of the tour were able to attend the technical seminar in ASHRAE Region XIII Chapters Regional Conference (CRC) – Ubiquity: From Equipment to System Integration. In addition, the visits to technical firms such as Fu Sheng Airtech Corporation, NanoTechnology Research Center of ITRI, wind power and nuclear station in Taiwan provided a great opportunity to understand the latest technology in Taiwan.

On the other hand, as the main theme of this study tour was “building energy and environment technology”, green firms and technologies in Taiwan were investigated, such as NTUT, New Energy Center of National Taiwan University, and Chinese Architecture & Building Center. Moreover, the green buildings like Beitou branch of Taipei Public Library and Orient Golf & Country Club gave students ideas of how an artificial building integrated with the environment.

In spite of learning technical knowledge, students had cultural exchange with students of other Chapters during the banquet dinner and visits of firms. Giving thanks to the host Taiwan Chapter, the students could have wonderful city tour of the Taipei city during the leisure time.

This study tour provided a memorable experience to students as they could learn the latest technical knowledge in Taiwan which cannot be found in Hong Kong textbooks. Moreover, having friends of different nations was an additional bonus to this tour.

Miss Jenny Law  
Team Leader  
Taiwan Study Tour 2007

# 1. Introduction

The ASHRAE Region XIII Chapters Regional Conference was held in Taiwan on 2<sup>nd</sup> and 8<sup>th</sup> August 2007. This was the second study tour held by the student branch of ASHRAE Hong Kong Chapter. This study tour – Taiwan Study Tour on Building Energy and Environment 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.

Before the study tour, students had to attend meetings for the preparation works. Through the meetings, students from different universities learnt the importance of teamwork and organization skills. During the study tour, attending a professional engineering conference, technical visits and company visits have broadened students' horizon. In addition, students were able to meet different national students from Taiwan, Philippines, Malaysia and Thailand by joining the conference. Cultural values could be exchanged with different student chapters and a better understanding of the Asian countries would be developed.

In this report, the study tour will be written in details about the tour arrangement, ASHRAE Region XIII Chapters Regional Conference, factory visits, green building projects, and university visits 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:** Eva Air

**Hotel:** KDM Hotel, Taipei City, Taiwan



### **Itinerary:**

Day 1 (Thursday, 2 August 2007)

Depart Hong Kong to Taipei

Sightseeing tour to Taipei city

Day 2 (Friday, 3 August 2007)

ASHRAE Region XIII CRC Technical Seminar

Student Workshop program (visit to ITRI in Hsinchu)

CRC Banquet Dinner

Day 3 (Saturday, 4 August 2007)

Student workshop program (lab tour of NTUT)

City tour (guided by Taiwan students)

Day 4 (Sunday, 5 August 2007)

Sightseeing tour arranged by the students

Day 5 (Monday, 6 August 2007)

Visit to New Energy Centre, National Taiwan University

Visit to Chinese Architecture & Building Center

Visit to Beitou Branch of Taipei Public Library

Day 6 (Tuesday, 7 August 2007)

Technical Visit to Wind power station and nuclear station

Technical Visit to Fu Sheng Airtech Corporation

Day 7 (Wednesday, 8 August 2007)

Visit to The Orient Golf & Country Club

Visit to National Environment Analysis Building

Depart Taipei to Hong Kong

### **3. ASHRAE Region XIII CRC**

#### **Introduction**

ASHRAE Region XIII 10<sup>th</sup> Chapters Regional Conference was organized on Day 2 of the study tour. There was a technical seminar entitled "Ubiquity – From Equipment to System Integration". Three topics were introduced. They were "The Technology Development of Inverter-Fed Screw Compressors and Chiller Units" by Dr. Hsu-Cheng Chiang, "Mega HVAC Projects in Asia's Las Vegas" by Mr. Vincent Tse and "Humidity Control for the Commercial Building" by Mr. Mark Nunnally. On that night, a banquet was given to all the participants in the CRC.

#### **Speech 1: The Technology Development of Inverter-Fed Screw Compressor and Chiller Units (by Dr. Hsu-Cheng Chiang)**

In order to protect the ozone layer and prevent global warming, the HVAC industries have to create new compressors to achieve the requirement of high efficiency and environmental friendly. A full comparison between the FSSC (Fixed Speed Screw Compressor) and IFSC (Inverter-Fed Screw Compressor) was made during the speech. It is found out IFSC will be a promising measure for future energy saving in central air-conditioning system, although still many problems IFSC have to overcome.

#### **Speech 2: Mega HVAC Projects in Asia's Las Vegas (by Mr. Vincent Tse Kam-Chuen)**

Macau is well known as the Asia's Las Vegas. In the coming years, twenty new hotels will be built and their total cooling load is as large as three hundred thousand tons. It is essential to determine which system to be used in those hotels and also in the casinos. Numbers of systems were proposed and some general information of different systems was present during the speech. The speech ends with a numbers of photos showing the Mega projects and also the impact that Macau made to the Asia was addressed.

### Speech 3: Humidity Control for the Commercial Building (by Mr. Mark Nunnelly)

The speech starts with "mold", the fungi that grow on surface of object with high humidity. It is important that humidity should be taken into consideration during the design of an air condition system. Result of high humidity may be serious such as damage to duct system and the mold many cause allergic reaction to asthma patients. Psychometrics was introduced during the speech such as the dry and wet bulb temperature, relative humidity and humidity ratio. Dehumidification technologies and typical dew point for commercial building for different purposes were also mentioned.



## 4. Factory Visits

### **Fu Sheng Airtech Corporation**

In Tuesday afternoon, we have a chance to visit the Fu Sheng Airtech Corporation, which is the biggest Compressor Manufactory in Taiwan having a long history, good reputation and accomplishment.

Fu Sheng Group was found since 1953, which is the first local air and refrigerant compressor manufactory. Recent years, their affairs spread into many industry cities in China such as Beijing, Shanghai, and Hebei, in which the demand utilities of HVAC system are being higher. Moreover, factories and research groups are built in America and the up-to-date technology can be easily absorb and introduced.

After the use of air compressor was being diminished in HVAC market, she catches her eye onto the production of the refrigerant compressor including scroll and screw type compressor. In our trip there, the host showed us the progress of manufacturing each component of a compressor. After the semi-manufactured products of rotor were transported to the workshop, we could see how they were polished and cut by a sequence of progress and eventually the rotor with silver shining were placed in front of each visitor.

The Group has a strict system to maintain her product's quality. We had visit their electronic managed Products Testing System and Clean Room for equipping the compressors. Actually, her products are widely supplied to 60 – 70% of the entire local market, so she has to keep their reputation by maintaining a fast manufacturing and delivering process and good quality of hr goods.

There is no compressor manufacturing factory in Hong Kong; it is difficult to have a chance visiting manufacturing factory. This chance enhances our knowledge on structure of each type of compressor. Moreover, the visit also gives us the 'real image' of compressors, that is, not only just a picture of HVAC products that we known on books but understanding the size and the location the components of a compressor. Furthermore, the process on manufacturing a compressor is also a new knowledge that has never learnt in textbooks before.

## Shihmen Wind Power Station

In order to cope with the global climate change and comply with the policy of reduction in carbon dioxide release, the Taiwan government has made efforts in promoting renewable energy production. Administrative Yuen has stipulated the power capacity percentage of renewable energy increase from current 5.45% to the target of 10% by the year 2010 with 2159 thousand kilowatts from wind power. To comply with the policy, Taipower has announced a long term wind power development project to install at least two hundred wind turbines along the western coast area of Taiwan.



The planning includes two phases. Shihmen Wind Power Station has become the first accomplishment during phase I of the ten-year wind power development project of Taipower. It is located within the west side area of Chinshan Nuclear Power Plant. It consists of six wind turbine sets with 660 kilowatts for each set. The wind turbines can have constant output whatever the direction and speed of wind. The expected life of the wind turbines is around 20 years and ideally expected to recover the capital in 12 years. Since it is located next to the sea, sea water droplets cause turbine blade corrodes. Every 1.5 year, qualified people climb up the wind turbine to do the maintenance work.

The working principle of wind power generation is quite simple. When the wind flows, it is harvested by the wind turbines. The wind turbines trigger the blades to rotate and generate electricity. This generated electricity is then transmitted to the local consumers through the nearby power distribution system. The wind turbines are automatically controlled power generators with following characteristics:

1. Automatic upwind control

The wind turbines will automatically adjust the turbine blades for the upwind direction to generate electricity.

2. Optimum pitch angle control

The pitch angle will be changed automatically according to the wind speed. Pitch angle becomes smaller at low wind speed so as to have a larger wind facing area and vice versa.

3. Optimum slip control

The patented optimum slip control design feature enables to improve the quality of delivered electrical energy and optimize the energy production during high or unstable wind speed periods.

4. Automatic power connection/disconnection

When the wind speed is higher than 4m/s and generator speed reach 1800rpm, there will be automatic connection to the grid. On the other hand, the grid will automatic disconnect with free rotation of turbine blades when wind speed lower than 4m/s and generator speed smaller than 1800 rpm. At that time, no electricity will be generated. For the safety reason, when the wind speed is larger than 25m/s (~Typhoon signal no.10 in Hong Kong), the wind turbine will auto-lock to prevent damage.

A nuclear power station is divided into three parts: fuel storing place (3 chambers of storing fuels), reactor and the place for generating nuclear power.



**Fuel storing**



**Reactor**



**Generate nuclear power**

The uranium is formed into pellets and arranged into long rods, and the rods are collected together into bundles. The bundles are then typically submerged in water inside a pressure vessel. The water acts as a coolant. In order for the reactor to work, the bundle, submerged in water, must be slightly supercritical. Raising and lowering the control rods allow operators to control the rate of the nuclear reaction. The uranium bundle acts as an extremely high-energy source of heat. It heats the water and turns it to steam. The steam drives a steam turbine, which spins a generator to produce power.



In Taiwan, most of nuclear wastes from the power station are the low-level radioactive waste. For the solid wastes, they are all handled by the method of "cement solidification". The wastes are compressed to a smaller volume and being put into steel barrels. Cement is added to solidify and prevent the leakage of the radioactive substance. Then, it will be put inside the station until the radioactive power to become low enough and finally shipping to the low-level radioactive storing place in Lanyu Island.

For the peaceful use of radiation, it can be treated as medical usage, e.g. sterilization for medical instruments. Also, for agriculture usage, the potatoes can prevent germinate by  $\gamma$ -ray irradiating. For the industrial usage, radiation can detect the thickness of paper, plastic and aluminum.

## NanoTechnology Research Center (NTRC)



The NanoTechnology Research Center (NTRC) was the center of the Industrial Technology Research Institute (ITRI), which was founded by the government of Taiwan as a non-profit R&D institution.

Nanotechnology has been designated one of the major development areas in Taiwan. The interdisciplinary nature of nanotechnology calls for the integration of electronics, materials science, optoelectronics, chemistry and/or biotechnology domain, and a world-class assembly of processing and testing facilities.

There are five main Research and Development (R&D) activities:

- Information and Communications
  - o eg. High thermal-conductivity phase change materials
- Energy Applications
  - o eg. Photonic crystal application on solid state lighting
- Nanomaterials
  - o eg. Wear-resistant super-amphiphobic and self-cleaning coating
- Biomedical Applications
  - o eg. Functional nano-micelle technology
- Process and Equipment Development
  - o eg. Advanced nano-scale inspection technology

## 5. University Visits

### National Taipei University of Technology (NTUT)



On the third day of the study tour, we visited the National Taipei University of Technology (NTUT). The university was established in 1911 and used to be an industrial institution. It was titled as university in 1997. There are five colleges in the university now and the College of Mechanical and Electrical Engineering is the largest and the oldest among the five. We were interested in the researches about air-conditioning and refrigeration and hence we mainly had laboratory tour related to this topic.

The first laboratory visited was a one dealing with research on applying PLC on chillers in order to collect data about maintenance and faults of the chiller as well as to enhance their COP.



The next laboratory was concerned with the heat rejection methods of electronic products. Since heat rejection methods highly affected the efficacy of electronic products, it became another research topic of the university.

In the experiment, the experiment chamber was made by stainless steel, quartz glasses and a material maintaining air-tight in the chamber. FC-72 was the coolant used in the experiment, which was pressurized in a micro-pump and flew through a flow meter. It then entered the distribution plate and dropped on the heat source.

This heat rejection method, droplets cooling was high efficiency and superior in heat transfer mechanism. It also had advantages of low noise and low pressure inside the chamber. However there were limitations of droplets cooling, thus amendments were required in practical situations.

In addition, there were studies about fluid mechanics. When materials were melted and moulded, bubbles were formed. These bubbles highly influenced the moulding of the materials and the quality of the products. Hence experiments were conducted to figure out the problems and try to improve the conditions.

There was a wide variety of researches in NTUT which covered air-conditioning, heat rejection and fluid mechanics, etc. It could be seen that they worked very hard to have innovation in their studies and made an effort to benefit the society in return.

## New Energy Center, National Taiwan University

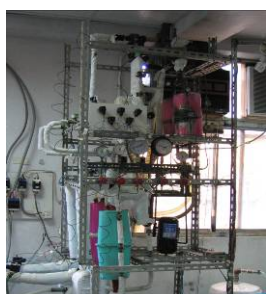
New Energy Centre is one of the major research centers of Mechanical Engineering, National Taiwan University. Development of new and renewable energy such as solar energy is a major research for this centre. During this visit, there was a presentation held by the research students from the National Taiwan University, including intelligent LED solar lighting system, solar energy refrigerator, solar energy heater and technology using solar energy.

Using solar energy stored during the day time for LED lighting in the night is a new and applied technology. They make good use of sunlight to store energy into a battery which is already installed the researched products in the campus. From the photo taken, we could observe that the lighting is similar with most of typical lighting. They used PWN to control the electric supply efficiency without using traditional converter.



Other than the lighting, they also make a good use of solar energy to provide electricity for refrigerator. The temperature at the inner of the refrigerator can be cooled down to about 5° C with 5 minutes. Indeed, this refrigerator is able to operator all the time without any electricity supply from Power Company. Once it gains ground, it can be used in many ways, such as using in rural area and emergency medical events.

In the New Energy Centre, they make a lot of improvement from the traditional type solar heater to make it becomes popular by improving its efficiency, appearance, installation method and materials used. The photo on the right hand side is the third generation of their design without the problems mentioned above which is easier to carry and install.



Their research of using solar energy for cooling technology make the cooling system can be operated with a very low electricity consumption under bright-light and provide a stable cooling effect when it is cloudy. Moreover, their system has a better performance under a higher evaporation temperate.

## 6. Green Building Projects

### Chinese Architecture & Building Center

Chinese Architecture & Building Center (CABC) is developed by the Ministry of Interior, Executive Yuan. It is an organization for building inspection, evaluation and certification of related building materials and construction technologies both for the government and the private sectors. It also assists and promotes the developments of new construction techniques and materials to enhance building quality and living environment.

One of the certificates it issued is the "Green Building" Logo. The purpose is to build the ecological, energy saving, waste reduction, and healthy habitats for our living environment. The certificate started issuing in 1999. The assessing committees in the various parts in Taiwan make effort for the issuing process. So, it takes only around 18 days from the application to the issuing of "Green Building" Logo.



There are nine aspects which are classified into four categories to determine the approval of "Green Building". These indicators include:

#### Ecology

- Biodiversity
- Greenery
- Soil Water Content

#### Energy saving

- Daily Energy Saving

#### Waste reduction

- CO<sub>2</sub> Emission Reduction
- Waste Reduction

#### Health

- Indoor Environment
- Water Resource
- Sewage and Garbage Improvement

Nowadays, Taiwanese are more and more concern about green building and quite a number of buildings in Taiwan have already obtained the "Green Building" Logo. Between which the Taiwan Public Library (Beitou Branch) have obtained the diamond prize in Green Building.

## Taipei Public Library (Beitou Branch)

The Beitou Branch is the first library structure in Taiwan which is built based on the eco-architectural concept. It is even the only building that attains the diamond prize of green building in Taiwan.



The building has two upper levels and one lower level and is constructed by wood and steel with the appearance of an oversized tree house. The southern facade of the library faces the Beitou Park, and the northern side faces the stream. The windows on all four sides of the library are of French type so as to let in more natural lighting for exquisite views. Further, the bookshelves in the library are limited to not taller than 1.1m so that the natural lighting can spread all around the corner inside the library without blocking.

It is different from the library in Hong Kong. The windows in Beitou Library can be opened and there is local lighting with separate on/off switch for each reading desk. It allows windows to be opened in winter time when the ambient air is cool enough to save energy on air-conditioning. And the local lighting allows users to switch the light on open when necessary and switch off the light after use. It can greatly reduce unnecessary lighting.

On the roof, there are several solar panels which are used to collect natural light energy to generate power up to 16 thousand watts for the use of the library. However, it is observed that the solar panels are not completely covered over the roof. This is because some of the location of the roof is shaded by the tall buildings around. The efficiency of the system may be lowered if solar panels are installed there.



Also, the roof is slightly sloped with several plant species. The soil is covered with textile which helps to preserve water which will run down the slope and to be collected for the use in toilet or watering plants.

## **The Orient Golf & Country Club**

The Orient Golf & Country Club is one of green building in Taiwan. The site area of the club is 10000m<sup>2</sup> and the total floor area is 5600 m<sup>2</sup>. The main design concept combined with land level, building position and sunshine, which also are the considerations of energy saving. In order to suit the requirement of green building, the developer used lots of natural materials for achieving energy saving and the best environmental impact in the overall view. The following are the design concept and the consideration of energy saving in the orient golf & country club:

1. The buildings build as lowest as possible to prevent to block the environmental view.
2. Less light are on when day-time since there are lots of sunshine through the windows to the building, that's why the trees can grow inside the building.
3. There are few little lake inside the orient golf & country club, all the water insides the building or in the lake also can recycle.
4. The grass can grow in the whole year; there is automatic sprinklers system for supplying water.
5. The toilet insides the building are using lots of natural materials. Rattan are used as floor, therefore, we need to take off our shoes to enter into the toilet. The main concept for using rattan is that it can easy to clean and maintain, which also can match the green building concept insides the building.
6. Although this orient golf & country club has thirteenth years history, the facilities are still last, the natural materials are maintained, obviously, it has the best management system.

In this visit, the important of using direct sunshine and land level were learnt and experienced. The methods of maintenance and energy saving inside the building were observed.

## The National Environment Analysis Building

The national environment analysis building has a ground area of thirty-six thousand square meters. The central building is office surrounded by laboratories on two wings. Environmental protection, energy savings, safety, and efficiency were all considered in the national environment analysis building.



Built to the highest international standards, the building features:

1. A super-high tension electricity system from Taiwan Electricity Power Company to ensure maintenance of electrical quality  
Violation isolation floor system
2. Fireproofed acid and alkali resistant laboratory tables
3. Acid and alkali resistive and slip free epoxy painted floors
4. Emergency shower and eye washing equipment
5. Toxic and leaking gas detection and alarm system.

And the national environment analysis building follows the standards of the green building:

1. green standard
  - Plant the plants on the building to absorb carbon dioxide, reduce the speed of global warming.
2. Conserve water resources
  - Save the water – Use the automatic turn on/off equipment to reduce the water use.
  - Reuse the waste water – After the water treatment, reuse the waste water as flushing water, irrigation water.
3. Reduce exhaust of carbon dioxide
4. Reduce energy use
  - Use the ice-storage system, provide chilled water then used for cooling purposes during peak hours.
  - Use the energy saving fluorescent lamps to save the electrical energy.
5. Sewage and rubbish improvement
  - Reuse the waste water after water treatment and recycle the rubbish.

## 7. Words from the Delegates



"This is the first time I go for a study tour. I gained far beyond than what I expected. During the tour, I made friends from different countries and I enjoyed the banquet dinner very much, we shared a lot and we had a happy moment there.

Special thanks to TO Shu-Min from NTUT. He was the tour guide of us in the trip."

**CHAU Chun Shing, Bobby - HKU**

"It was an incredible experience in Taiwan. Not only could I realize the technologies of air-conditioning and green buildings there, but also I met professionals and students in the Southeast Asia. These people had different cultures and backgrounds but we got along well with each other.



Moreover, in the seven-day study tour in Taiwan, I learned the unique culture of Taiwan where used to be a colony of Japan. Besides, there were many night markets in Taiwan serving with various foods which made us very full after each meal. One thing I treasured the most is that we still have communication with friends met in Taiwan after we back to our countries or cities."

**CHEUNG Man, Sandra - HKU**



"This study tour is a wonderful and memorable trip. During these 7 days, we can learn technical knowledge related to MVAC. On the other hand, we can have cultural exchange with students of other chapters. Give special thanks to Taiwan Chapter, they are the best tourist guides so that we can have wonderful city tour of Taipei during the free time. Thanks a lot!"

**LAW Tsui Yuen, Jenny - HKU**

"In this trip, we had joined the ASHREA technical seminar, student workshop and the banquet dinner. Also, we had visited some green buildings, new technologies. The most memorable part is the banquet dinner. We can have a deep talked with other chapter's student during dinner. Furthermore, by the help of Taiwan chapter, we can have a perfect trip in our free time. As a result, we had been to many places in Taiwan on our own such as Chiufen, Pingxi, Tamshui etc. They are all my enjoyable memory in Taiwan. And finally, I am so happy that I have met many new friends in this study tour."



**LEUNG Yin Ping, Pinky – HKU**



"This was my first time to visit Taiwan. We visited some green building in Taiwan and I learnt a lot of knowledge about green building in this tour. Also, it was so happy to make friend with other chapter. Thanks for Dr. Sam Hui and our team leader and thanks for Hong Kong chapter give me a chance to join this study tour."

**LO Siu On, Andy – CityU**

"These 7-days trip was a good opportunity for us to taste Taiwan's culture. Other than the technical information, we also make a lot of friends from other countries and share a lot. The most interesting circumstance was the number of girls from our chapter is the most and surprised all participated people from other countries. Overall, it is valuable and very successful study tour. I am glad to have the chance to join it."



**NG Hung Yung, Ice – HKU**



"There is nothing better than you can both learning and playing together. In the tour, I spend my time with other students, including our tour mates and the students in other four chapters. This broadens my horizon while chatting with them and I can make friend with them at the same time. Meanwhile, I travel to many of the famous spot and have a fun there with sightseeing. I have to thanks ASHRAE Hong Kong Chapter, especially Dr. Sam Hui, for giving a chance to visit Taiwan."

**TSANG Wai Man, Wyman – CityU**

"This is entirely an unforgettable study tour for me. In this 7-day study tour, I gained lots of knowledge from many visits, especially the green building and energy saving. Besides, I feel glad to meet many people from different countries; it is a really good opportunity for me to speak Putonghua and English. This incredible experience gives me the most impressive. Overall, the tour is worth the value."

**WONG Hoi Ying, Eva – CityU**



"Joining gives me an opportunity to attend the Chapter Regional Conference which is a valuable chance. Besides, I can meet friends from other countries and know about their culture. Visits to different buildings and organizations also make me know more about green building technology. Thanks Dr. Sam Hui and my friends for giving me such an unforgettable and valuable tour."

**YEUNG Wing Yee, Winnie – HKU**

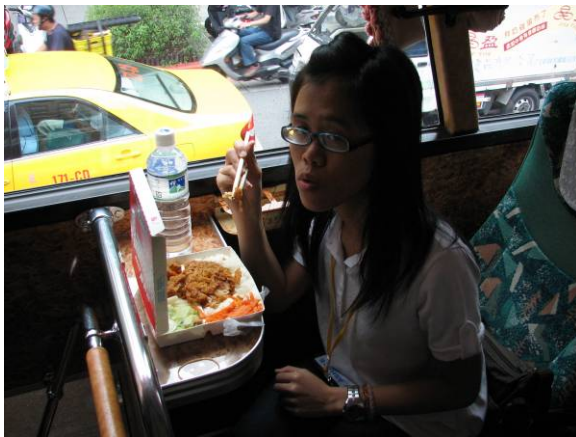




▲ Taiwan's Underground railway



▲ In CRC – YEAH!



▲ Very Hot??



▲ Lunch time again !! @ NTUT



▲ Observatory Lobby @ Taipei 101



▲ Outside Taipei 101

**Taipei visit**



▲ Good! Ichiban!



▲ BAD people arrested!



▲ Shoes Cleansing Service ~



▲ ~ Help ~



▲ Thief !



▲ WHO ??





▲ Eat Again ??



▲ At Fishermen Pier - Ladies



▲ What are the men doing ?? ▲



▲ Wind power station – COOL!



▲ Departure – Back to Hong Kong

## References

- Nano Technology Research Center of ITRI  
<http://www.ntrc.itri.org.tw>
- Chinese Architecture & Building Center (CABC)  
<http://www.cabc.org.tw>
- National Taipei University of Technology (NTUT)  
<http://www.ntut.edu.tw>
- National Taiwan University (NTU)  
<http://www.me.ntu.edu.tw/~nec/>
- The Orient Golf & Country Club  
<http://orient.golf.net.tw/>
- Beitou Branch of Taipei Public Library  
[http://www.tpml.edu.tw/TaipeiPublicLibrary/index.php?page=common-divlink-branch\\_introduction.php&id=111&subsite=chinese](http://www.tpml.edu.tw/TaipeiPublicLibrary/index.php?page=common-divlink-branch_introduction.php&id=111&subsite=chinese)
- National Environment Analysis Building  
<http://www.niea.gov.tw/about/?id=53>

# Taiwan Study Tour 2007

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