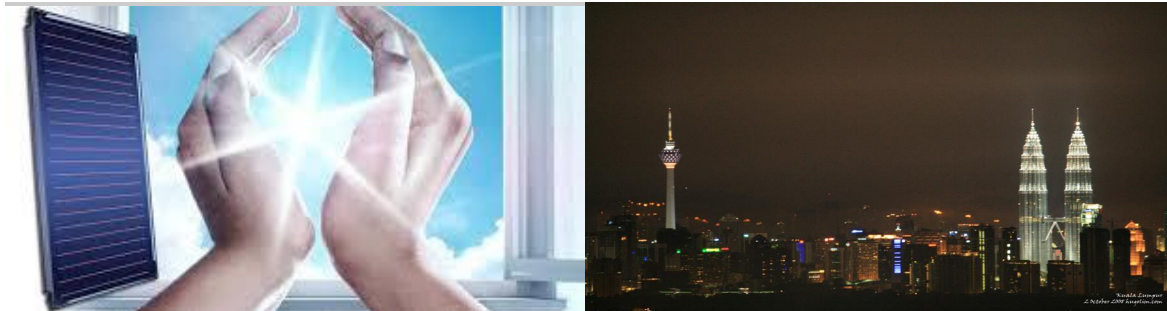


ICCHT 2014



# 7<sup>th</sup> INTERNATIONAL CONFERENCE ON COOLING & HEATING TECHNOLOGIES

*"Innovation And Sustainability In Heating & Cooling Technologies"*



4<sup>th</sup> – 6<sup>th</sup> November 2014  
Grand Dorsett Hotel, Subang, Malaysia

## CONFERENCE PROGRAMME

*Organised by:*



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Malaysia Branch

Institution of  
**MECHANICAL**  
ENGINEERS

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## Message from Organizing Chairman



"Selamat Datang" and Welcome to ICCHT 2014!

The global energy demand has been steadily increasing for the past two decades, largely caused by the rapid population growth and industrial development. The Energy Information Administration (EIA) in its International Energy Outlook 2013 projected that the world energy consumption will grow by 56% between 2010 and 2040, from 524 quadrillion British thermal units (Btu) to 820 quadrillion Btu and it is envisaged that most of this growth will come from non-OECD (non-Organization for Economic Cooperation and Development) countries, where demand is driven by strong economic growth.

The International Conference on Cooling and Heating Technologies offer a strategic platform for sharing of knowledge and experience on the development of the cooling and heating technologies - two areas that consume substantial amount of energy in both the commercial and industrial sectors. Successes in improvement of these technologies will not only contribute considerable reduction in the energy consumption, but also help to reduce greenhouse gas emission that have caused the global warming.

Since its inception, the ICCHT has been held in Hanoi (Vietnam, 2005), Dalian (China, 2006), Tokyo (Japan, 2007), Jinhae (Korea, 2008), Bandung (Indonesia, 2010) and Xian (China, 2012). The Institution of Engineers, Malaysia is proud to be given the mandate to organize the 7th ICCHT and we would like to welcome all of you to this important bi-annual conference in Kuala Lumpur, Malaysia.

Last but not least, the organizing committee hope all of you will have a fruitful discussions and deliberation during the 2-day conference, and we wish you a pleasant stay in Malaysia!

A handwritten signature in black ink, appearing to read 'Fam Yew Hin'. The signature is stylized and includes a horizontal line extending to the left.

Ir. Fam Yew Hin  
Organizing Chairman  
ICCHT 2014

## Foreword from IEM President



First of all I would like to thank the Organising Committee namely The Mechanical Engineering Technical Division of IEM (METD) for inviting me to pen a short message in this Conference Souvenir Programme Book.

I understand that this is the seventh time the International Conferences on Cooling & Heating Technologies (ICCHT 2014) is being organized, with this year's theme "*Sustainable and Innovation in Heating & Cooling Technologies*".

I would like to take this opportunity to congratulate the Organizing Committee for their efforts in organizing ICCHT 2014. ICCHT 2014 would be a good platform for to exchange experiences as well as to assimilate the latest information and technology in this field.

It is my sincere hope that at the end of this Conference, the participants would have gained a better insight on the topics, which I was told range from CO2 Reduction and Low Carbon Technologies, Efficient Cooling and Heating, HVAC System and Natural Ventilation, Heat transfer, Fluid and Thermal Engineering, Computational Fluid Dynamics and many, many others. The presence of esteemed experts from overseas would definitely enrich our own local knowledge and experiences.

I am confident that ICCHT 2014 will be a huge success and that participants will have the opportunity to renew contacts, interact and exchange ideas and experiences for their personal development as well as for the progress of the engineering profession. Finally, I hope that the proactive initiative and cooperation in organising ICCHT 2014 will continue to receive your full support for future activities of our organisation and profession.

A handwritten signature in black ink, appearing to read 'Lim Chow Hock'. The signature is stylized and cursive.

Dato' Ir. Lim Chow Hock  
President

# ICCHT 2014 – Organizing Committee

Chairman : Ir. Fam Yew Hin

Advisor : Y.Bhg Datuk Ir. Prof. Dr Ow Chee Sheng

Committee Members:

Ir. Noor Hisham Yahaya

Ir. Dr. Cheong Thiam Fook

Ir. Gopal Narian Kutty

Ir. Luk Chau Beng

Ir. Dr. Kannan M. Munisamy

Ir. Dr. Tan Chee Fai

Engr. Moey Lip Kean

Engr. Dr. Lim Chin Seong

Dr. Chan Hoy Yen

\*Collaboration with IEM Training Centre

Co-chairmen:

- Prof. Shengqiang Shen, Dalian University of Technology, China
- Prof. S.H. Winoto, National University of Singapore, Singapore
- Prof. Aryadi Suwono, Institut Teknologi Bandung, Indonesia
- Prof. Hanshik Chung, Gyeongsang National University, Korea
- Prof. Maogang He, Xi'an Jiaotong University, China

International Scientific Committee:

- Maogang He, Xi'an Jiaotong University, China
- Yuanyuan Duan, Tsinghua University, China
- A. Nagashima, Keio University, Japan
- A.M. Jacobi, University of Illinois, USA
- A. Ambari, Arts et METIERS Paris Tech, France
- T.W. Lee, Arizona State University, USA
- H. M. Jeong, Gyeongsang National University, Korea
- M.G. Kim, Inje University, Korea
- M.Y. Choi, University of Connecticut, USA
- A. Suwono, Institut Teknologi Bandung, Indonesia
- A.D. Pasek, Institut Teknologi Bandung, Indonesia
- Y.S. Indartono, Institut Teknologi Bandung, Indonesia

# Seventh International Conference on Cooling & Heating Technologies 2014

## Guidelines for Participants

Dear Participants,

Welcome to the Seventh International Conference on Cooling & Heating Technologies 2014. In order to facilitate the operation of this Conference, the Organizing Committee would like to seek your co-operation in the following:

### **NAME BADGES**

All participants are advised to wear their name badge at all times during the Conference so that they can be easily identified. Participants without name badges may be refused entry to all technical sessions and other official functions organized for the Conference.

### **SECRETARIAT**

The Conference Secretariat is located at Boardroom 2, Mezzanine Floor.

### **REGISTRATION**

The registration will be at the Subang Room Foyer, Mezzanine Floor.

### **SAFE KEEPING OF CONFERENCE BAGS**

Participants are advised to take good care of their Conference bags. All personal items such as cameras, wallets, handphones, etc. should not be left unattended.

### **TELEPHONE MESSAGES**

Announcements will not be made on all in-coming calls but the telephone messages will be pinned on the notice board outside the Conference Hall. However, if you are expecting an urgent call, please make arrangements with the Secretariat. **Handphones should be put on silent mode during the conference session.**

### **PARKING AT THE HOTEL PREMISES**

Participants are requested to validate their parking tickets before exiting. A flat rate of RM7.00 per entry would be charged.

### **OPENING CEREMONY**

**Y.Bhg. Dato' Ir. Lim Chow Hock, President of The Institution of Engineers, Malaysia** will officiate the Opening Ceremony at 9.00 a.m. on Tuesday, 4<sup>th</sup> November 2014 at the Melati Room 123, Mezzanine Floor.

### **CLOSING CEREMONY**

Ir. Tan Yean Chin, Deputy President of IEM will close the Conference on 5<sup>th</sup> November 2014 at the Selangor Ballroom.

### **PRAYER ROOM**

The prayer room is located at the Mezzanine floor of the hotel. For directions, please refer to front desk / hotel staff.

### **MORNING AND AFTERNOON TEA BREAKS**

The morning and afternoon tea break will be served at the Subang Room foyer, Mezzanine Floor.

## **LUNCH / VEGETARIAN FOOD**

Lunch would be provided for both days of the Conference at Melati Room 123. If you require vegetarian food, please inform the Secretariat not later than 10.00 a.m. each morning. During lunch, please inform the waiter where you will be sitting so that the vegetarian food can be served to you.

## **SESSION PROCEDURES**

**Presenting authors in each session are requested to be in the respective lecture room 15 minutes before the session starts so that their power-point presentation could be saved into the laptop.**

## **PROGRAMME**

The programme booklet, distributed to each participant, contains the programme of the Conference with the schedule for the Plenary Sessions and Technical Sessions. Participants are advised to take note of the time of each Technical Session, tea breaks and lunches.

## **EXHIBITION**

The exhibition in conjunction with the Conference is at the Melati Foyer, Mezzanine Floor. Participants may invite friends and colleagues to visit the exhibition, which will be open during the Conference.

## **HERITAGE VISIT**

A Heritage Visit to Malacca is scheduled on 6<sup>th</sup> November 2014. The Heritage Visit is limited to 30 seats only. Due to limited seats available, participation would be on a first-come-first-served-basis. Registration fee is RM170.00 per pax (inclusive of lunch).

The travel itinerary is as follows:-

Assembly and boarding at Front Lobby of Selangor Ballroom	-	7.30 a.m.
Coach departs for Malacca	-	8.00 a.m.
Arrival at Malacca	-	10.30 a.m.
Return to Dorsett Grand Subang Hotel	-	4.00 p.m.
Arrival at Dorsett Grand Subang Hotel	-	6.30 p.m.

Any changes of boarding instruction will be posted on the notice board in the Subang Room foyer.

## **FLIGHT INFORMATION**

Please request the Hotel Concierge service counter at the Front Lobby to assist on your flight confirmation.

## **OTHER INFORMATION**

Should you require any assistance from the organisers, please do not hesitate to contact the IEM Secretariat or any of the Organising Committee members.

Thank you.

**Ir. Fam Yew Hin**  
**Organizing Chairman**  
**ICCHT 2014**

# Conference Programme

## Monday, 3<sup>rd</sup> November 2014

14:00 - 18:00 Registration

## Tuesday, 4<sup>th</sup> November 2014

08:00 - 09:00 Registration

09:00 - 09:30 **Opening Address**  
by Y.Bhg. Dato' Ir. Lim Chow Hock  
President  
The Institution of Engineers, Malaysia

09:30 - 09:35 Tour of the Exhibition Booths by Guest of Honour and Guests

09:35 - 10:00 Coffee break

10:00 - 10:30 **Plenary 1**  
Chairman: Ir. Fam Yew Hin

**On Generating Counter-Rotating Streamwise Vortices**  
Professor S.H. Winoto  
National University of Singapore, Singapore

10:30 - 11:00 **Plenary 2**  
Chairman: Ir. Fam Yew Hin

**Mechanical Engineering Education and its Challenges**  
Y.Bhg Datuk Ir. Prof. Dr Ow Chee Sheng  
Universiti Teknologi MARA

11:00 - 13:00 **Parallel Sessions**  
**Session 1: Theoretical Analysis, CFD, Modelling**  
**(Subang 1, Mezzanine Floor)**  
Chairman: Dr. Chuah Keng Hoo

**Adaptive Flux-based Nodeless Variable Finite Element Formulation with Error Estimation for Thermal-Structural analysis (ANA042TH)**  
Suthee Traivivatana  
Chulalongkorn University, Thailand

**Double Droplets Simultaneous Impact on Liquid Film (ANA095CH)**  
Yali Guo  
Dalian University of Technology, China

**Large Eddy Simulation of Natural Ventilation for Idealized Terrace Houses Due to the Effect of Setback Distance (ANA060MY)**  
Tuan Liyana Tuan Ab Rashid  
Universiti Teknologi MARA

**Natural Convection Heat Transfer in Vertical Triangular Sub-Channel in Zirconia-Water Nanofluid (ANA061ID)**  
Nathanael P Tandian  
Institut Teknologi Bandung, National Nuclear Energy Agency, Indonesia



**Numerical Modelling of Multi-Pass Solar Dryer filled with Granite Pebbles for Thermal Storage Enhancement (ANA065MY)**

MW Kareem  
Universiti Teknologi PETRONAS

**The Theoretical Analysis of the Fog Removal in the LNG Ambient Vaporizer (ANA100KR)**

Tae Jin Lee  
Gyeongsang National University, Korea

**Sensitivity Study of Bubble Diameter for Prediction of Flow Pattern in Homogeneous Bubble Column Regime (ANA010MY)**

M. Pourtousi  
University of Malaya

**Solidification of Cu-Water nanofluid in a Trapezoidal Cavity: A CFD study (ANA084MY)**

R.K. Sharma  
University of Malaya

***Session 2: Industry Applications  
(Subang 2, Mezzanine Floor)***

Chairman: Dr. Savithry K. Thangaraju

**A Study on the Structural Characteristics and Shape of Outfitting Equipment Support in 300,000 DWT Crude Oil Tanker (IND037KR)**

Kwang-Woon Jeong  
Gyeongsang National University, Korea

**Experimental Analysis and FEM Simulation of Loop Heat Pipe charged with Diamond Nanofluid for Desktop PC Cooling (IND036MY)**

P. Gunnasegaran  
Universiti Tenaga Nasional

**A Study on the Compensation Margin on Welding Joint of Large Steel Plates in Shipyards (IND038KR)**

Jeong-Tae Kim  
Gyeongsang National University, Korea

**Design Of Radial Turbo-Expander For Organic Rankine Cycle System (IND024ID)**

Maulana Arifin  
Center for Electric Power and Mechatronics – LIP  
Institut Teknologi Bandung, Indonesia

**Study of Indonesian Low Rank Coal Utilization on Modified Fixed Bed Gasification for Combined Cycle Power Plant (IND074ID)**

Toto Hardianto  
Institut Teknologi Bandung, Indonesia

**Temperature Distribution and Stress Analysis of a Thermal Heat sink Undergoing Thermal Loading in a Mobile Computer (IND082MY)**

Albinus E. Xavier  
The University of Nottingham, Malaysia

**Analysis of the Impact on Water-based Fire Extinguishing Pipe on the Earthquake (IND051KR)**

Jeong- Kyoong Lee  
Incheon National University, Korea

14:00 - 15:30 **Session 3: HVAC, Refrigeration, Heat Pump**

**(Subang 1, Mezzanine Floor)**

Chairman: Professor Maogang He

**A Study on the Ventilation Method for a Factory Exposed to High Temperature (REF040KR)**

Yeong-Sik Kim

Gyeongsang National University, Korea

**A PID De-tuned Method for Multivariable Systems Applied at HVAC Pplant (REF001MY)**

Abu Bakar Ghazali

Universiti Tenaga Nasional

**ACMV Energy Analysis for Academic Building: A Case Study (REF049MY)**

Tee Boon Tuan

Universiti Teknikal Malaysia Melaka

**Theoretical Study of New Combined Absorption-Ejector Refrigeration System (REF008MY)**

Ali Najah Al-Shamani

Universiti Kebangsaan Malaysia

**Thermal Environmental Case Study of an Existing Underfloor Air Distribution (UFAD) System in a High-Rise Building in the Tropics (REF080MY)**

Poh Kai Sin

University of Malaya

**Applications of Jet Ejectors for Efficient Refrigeration and Modelling of Multi Phase Multi Fluid Flow in Ejectors (REF016IN)**

D Konar

IIT Kharagpur, India

**Session 4: Material Engineering**

**(Subang 2, Mezzanine Floor)**

Chairman: Dr. Abreeza Manap

**A Study on the Surface Shape and Roughness of Aluminum Alloy for Heat Exchanger by Ball Endmilling (MAT012KR)**

Eunju Lee

Department of Korea Polytechnics, Changwon, Korea

**Heat-Assisted Machining for Material Removal Improvement (MAT044MY)**

A.B Mohd Hadzley

Universiti Teknikal Malaysia Melaka

**Physical Properties Variation of Graphene and Multi Wall Carbon Nanotubes by Planetary Ball Mill and Heat Treatment (MAT098KR)**

Gunwoo Jo

Gyeongsang National University, Korea

**The Empirical Correlations for Natural Convection Heat Transfer Al<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub> Nanofluid in Vertical Sub-channel (MAT076ID)**

Ketut Kamajaya

National Nuclear Energy Agency, Indonesia

**Investigation on Stability and Density of Methanol based TiO<sub>2</sub> Nanofluids (MAT109MY)**

R.M. Mostafizur

University of Malaya

**An Experimental Study of Thermal Performance of GN and MWCNTs-based Aqueous Nanofluids with Surfactants SDS and SDBS (MAT027KR)**

A.K.M Mahmudul Haque  
Gyeongsang National University, Korea

15:30 - 16:00 Coffee break

16:00 - 17:00 **Session 5: HVAC, Refrigeration, Heat Pump  
(Subang 1, Mezzanine Floor)**

Chairman: Professor Maogang He

**Effects of Air Outlets Geometry on Predicted Human Comfort inside Rooms: CFD vs. ADPI (REF053EG)**

Essam E. Khalil  
Cairo University, Egypt

**An Integrated Solar assisted Heat Pump System for Space Cooling, Water Heating and Air Drying (REF092MY)**

Sany Izan Ihsan  
International Islamic University Malaysia

**Performance Evaluation of KTE-1000BA by Controlling Evaporator Pressure (REF067KR)**

Wook Jin Kim  
KTENG Co, Korea

**Study on the Performance Characteristics with Design Parameters of Geothermal Heat Pump System (REF075KR)**

Myoung-kuk Ji  
Solar Energy & System Co. Ltd, Korea

**Session 6: Material Engineering  
(Subang 2, Mezzanine Floor)**

Chairman: Dr. Abreeza Manap

**Thermal Characteristics Of Non-Edible Oils As Phase Change Materials Candidate To The Application Of Air Conditioning Chilled Water System (MAT031ID)**

Muhammad Irsyad  
Lampung University, Indonesia

**Effect of Pervaporation Plate Thickness on the Rate of Methanol Evaporation in a Passive Vapor-Feed Direct Methanol Fuel Cell (MAT106MY)**

U.A. Hasran  
Universiti Kebangsaan Malaysia

**Effect of Surface Tension on SiO<sub>2</sub> –Methanol Nanofluids (MAT107MY)**

M.H.U. Bhuiyan  
University of Malaya

**Simulation and Experimental Study on Effect of Phase Change Material Thickness to Reduce Temperature of Photovoltaic Panel (MAT013ID)**

Y.S Indartono  
Institut Teknologi Bandung, Indonesia

**Wednesday, 5<sup>th</sup> November 2014**

09:00 - 09:30 **Plenary 3**  
Chairman: Ir. Dr. Kannan Munisamy, Universiti Tenaga Nasional

**Thermodynamic Losses in Multi-effect Process**

Prof. Shengqiang Shen  
Dalian University of Technology, China

09:30 - 10:00 **Plenary 4**  
Chairman: Ir. Dr. Kannan Munisamy, Universiti Tenaga Nasional

**Research Trends of Cooling and Heating Technologies**

Prof. Hanshik Chung  
Gyeongsang National University, Korea

10:00 - 10:30 Coffee Break

10:30 - 13:00 **Parallel Sessions**  
***Session 7: Theoretical Analysis, CFD, Modelling***  
***(Subang 1, Mezzanine Floor)***  
Chairman:

**Wavelet Transform of Acoustic Signal from a Ranque-Hilsch Vortex Tube**  
***(ANA034MY)***

Yusman bin Istihat  
Universiti Teknologi MARA

**New Vehicle Bumper Design for Pedestrian Protection during Impact**  
***(ANA103MY)***

Hatam Samaka  
Universiti Tenaga Nasional

**A Study on the Air flow Outside Ambient Vaporizer Fin** ***(ANA039KR)***

Geum-Seok Oh  
Gyeongsang National University, Korea

**CFD Analysis of the Anti-Surge Effects by Water Hammering** ***(ANA094KR)***

Tae-oh Kim  
Gyeongsang University, Korea

**Geometric Optimization of Thermo-electric Coolers Using Simulated Annealing** ***(ANA083MY)***

Doan V. K. Khanh  
Universiti Teknologi PETRONAS

**Indoor Airflow Simulation inside Lecture Room: A CFD Approach**  
***(ANA059MY)***

Tee Boon Tuan  
Universiti Teknikal Malaysia Melaka

**Study of Heat Transfer due to Turbulent Flow of Nanofluids through Rib-groove Channel** ***(ANA099MY)***

Ali Najah Al-Shamani  
Universiti Kebangsaan Malaysia

**Theoretical Model of Static Semi-ellipsoidal Droplet on a Horizontal Surface**  
***(ANA101CH)***

Shi Chen  
Dalian University of Technology, China

**CFD Analysis of LNG Vaporizer with Tube Bundle Distance (ANA017KR)**

Sin-il Lee  
Gyeongsang University, Korea

***Session 8: Energy Efficiency, Efficient Cooling, Efficient Heating  
(Subang 2, Mezzanine Floor)***

Chairman: Dr. Chong Perk Lin, INTI International University, Malaysia

**A Study of the Heat Transfer Coefficient of a Mini Channel Evaporator with R-134a as Refrigerant (EEN047PH)**

Elmer B. Dollera  
Xavier University, Philippines

**Experimental Investigation and Flow Process Computer Simulation of the Single Mini Channel Condenser for Vapor Compression Refrigeration System (EEN054PH)**

Leonel L. Pabilona  
Mindanao University of Science and Technology, Philippines

**Experimental Investigation of Shell-side Steam Pressure Drop in Crossflow in a Horizontal Falling-film tube Bundle (EEN096CH)**

S.Q. Shen  
Dalian University of Technology, China

**Optimizing the Operational Parameters of a Spherical Sterilizer for the Treatment of Oil Palm Fresh Fruit Bunch (EEN086MY)**

K H Chuah  
INTI International University

**Experimental Study on Submerged Steam Jet for Side Hole Nozzle (EEN056CH)**

D T Chong  
Xi'an Jiaotong University, China

**Numerical Investigation to Study Effect of Radiation on Thermal Performance of Radiator for Onan Cooling Configuration of Transformer (EEN088IN)**

Vipul Chandak  
Crompton Greaves Ltd., Mumbai, India

**Experimental Investigation on Design Enhancement of Axial Fan Using Fixed Guide Vane (EEN006MY)**

Kannan M. Munisamy  
Universiti Tenaga Nasional

**Heat Transfer, Erosion and Acid Condensation Characteristics for Novel H-Type Finned Oval Tube (EEN058CH)**

Guihua Tang  
Xi'an Jiaotong University, China

**Experimental Investigations on Fixed Guide Vane Application with Varying Rotor Blade Pitch Angles (EEN110MY)**

Kannan M. Munisamy  
Universiti Tenaga Nasional

13:00 - 14:00 Lunch

14:00 - 15:30 ***Session 9: Renewable Energy, Fuel Cell, Low Carbon Technologies  
(Subang 1, Mezzanine Floor)***

Chairman: Prof. Dr. Ir. Aryadi Suwono, Institut Teknologi Bandung, Indonesia

**A Computation ANN Model for Quantifying the Global Solar Radiation: A Case Study of Al-Aqabah-Jordan (*REN091MY*)**

M.A. Alghoul  
Universiti Kebangsaan Malaysia

**A Study on the Performance of the Split Reaction Water Turbine with Guide Ribs (*REN035PH*)**

Deuel H. Allen  
MSU-Iligan Institute of Technology Iligan City, Philippines

**Characteristics of Electricity Production by Metallic and Non-metallic Anodes Immersed in Mud Sediment using Sediment Microbial Fuel (*REN087KR*)**

Niamul Haquea  
Gyeongsang National University, Korea

**Cooling Channel Designs for Air-cooled PEM Fuel Cell Application using Numerical Approach (*REN002MY*)**

Wan Ahmad Najmi bin Wan Mohamed  
Universiti Teknologi MARA

**Study of Solar Driven Silica gel-Water based Adsorption Chiller (*REN019MY*)**

Khairul Habib  
Universiti Teknologi PETRONAS

**Temperature Dependences on Various Types of Photovoltaic (PV) Panel (*REN004MY*)**

Ivan Adidharma Audwinto  
Universiti Kebangsaan Malaysia

***Session 10: Theoretical Analysis, CFD, Modelling (Subang 2, Mezzanine Floor)***

Chairman: Dr. Chan Hoy Yen, UKM, Malaysia

**Effect of Attack and Cone Angles on Air Flow Characteristics for Staggered Wing Shaped Tubes Bundle (*ANA102EG*)**

Mohamed atia  
Zagazig University Egypt

**Thermal Comfort Investigation on a Naturally Ventilated Two-storey Residential House in Malaysia (*ANA085MY*)**

N A Malek  
Universiti Tenaga Nasional

**Modeling of the Pores Form Influence on the Hydraulic Resistance of Membranes and their Permeability (*ANA097*)**

Zhanat Umarova  
South Kazakhstan State University

**Effect of Temperature on the Melt Filling during Injection Moulding Process (*ANA033MY*)**

M S Rusdi  
Universiti Sains Malaysia

**Numerical Investigation of Jet Impingement of Water on a Flat Plate Surface (*ANA062MY*)**

Husam A. Hasan  
Universiti Kebangsaan Malaysia

16:00 - 17:00 **Session 11: Renewable Energy, Fuel Cell, Low Carbon Technologies (Subang 1, Mezzanine Floor)**  
Chairman: Dr. Abdulwehab, INTI International University, Malaysia

**Viscosity Model for Predicting the Power Output from Ocean Salinity and Temperature Energy Conversion System (OSTEC) Part 2: Computer Simulation (REN015MY)**

S.K. Lee  
Universiti Malaysia Sabah

**Feasibility Study on Pliant Media Drying using Fluidized Bed Dryer (REN057MY)**

Jamal Hazri Zakaria  
Universiti Tun Hussein Onn Malaysia

**Performance Analysis of Solar-Wind-Diesel-Battery Hybrid Energy System for KLIA Sepang Station of Malaysia (REN108MY)**

S.K.A. Shezan  
University of Malaya

**Experimental Study Of Additives On Viscosity Biodiesel At Low Temperature (REN055ID)**

Berkah Fajar  
Diponegoro University, Indonesia

**Session 12: Energy Efficiency, Efficient Cooling, Efficient Heating (Subang 2, Mezzanine Floor)**

Chairman: Dr. Chong Perk Lin, INTI International University, Malaysia

**A Study of Condensation Heat Transfer Correlation (EEN046KR)**

Yun-jae Ju  
KTENG Co, Korea

**Review of Nanofluids for Improvement the Efficiency for Solar Collectors (EEN070MY)**

Husam A. Hasan  
Universiti Kebangsaan Malaysia

19:30 - 22:00 Awards Presentation  
Closing Ceremony  
Banquet

**Thursday, 6<sup>th</sup> November 2014**

07:30 - 18:30 Heritage Visit to Malacca

# Renewable Energy Boiler System Course

## Programme

### Subang 3

Tuesday, 4<sup>th</sup> November 2014

08:30	-	09:30	Registration
09:30	-	11:00	<b>Project Development Do and Don't</b> <i>by Ir. Mohamad Adan Yusof</i>
11:00	-	11:15	Tea Break
11:15	-	12:00	<b>Feedstock Supply &amp; Fuel Quality Management</b> <i>by Ir. Zaki Anhar</i>
12:00	-	13:00	<b>Specific Issues on Biomass Boiler Design</b> <i>by Ir. Luk Chau Beng &amp; Engr. Chong Thiam Heng</i>
13:00	-	14:00	Lunch
14:00	-	14:45	<b>Environment Acts &amp; Control</b> <i>by DOE</i>
14:45	-	18:00	<b>Forum Panel Discussion</b> & Tea concurrently
18:00			End of Short Course



# Forum on Developing a Renewable Energy Project in Malaysia

## Subang 3

Wednesday, 5<sup>th</sup> November 2014

### **Synopsis : Introduction of Technical Challenges of RE in Malaysia, Regulations of RE, Feed-in Tariff and Project Financing**

The electricity demand in Malaysia is anticipated to continue to rise in the next decade due to population growth and industrial development, and it is important for the nation to diversify its fuel mix to reduce the dependency on the fossil fuels. Hence, the Government has set a target for Renewable Energy to comprise 11% or 2080 MW of the overall electricity in the nation by 2020.

As there are a number of queries that have been raised by the developers, engineers and other stakeholders in the past in relation to the implementation of RE projects in the country, this forum is aim to provide and share the following information:

- The Acts and Regulations governing RE projects in Malaysia
- Mechanism of Feed-in Tariff and type of RE projects that are entitled to such tariff
- Project Financing of RE projects, current challenges and way forward
- Available funds and the processes
- Technical challenges of RE projects

### **TENTATIVE PROGRAMME:**

8.30 am	Registration
9.00 am – 10.00 am	<b>Challenges of RE in Malaysia</b> <i>Ir. Dr. Cheong Thiam Fook</i>
10.00 am – 10.20 am	Tea break
10.20 am – 11.30 am	<b>Regulations on Renewable Project, Feed in Tariff and Future of RE in Malaysia</b> <i>by Ir. Dr. Ali Askar</i>
11.30 am – 12.30 pm	<b>Financing of Renewable Energy Projects in Malaysia</b> <i>by En. Amiruddin Kemat</i>

## Biodata of Speakers



Ir. Dr Cheong Thiam Fook is a graduate in Mechanical Engineering and pursued his Master Programme research in Renewable Energy and completed the PhD programme in Manufacturing Management. Ir Dr Cheong started his career as a mechanical engineer in a construction company and had successfully completed many highrise building projects in KL and few other major infra projects in Malaysia. He worked his way from an engineer to manager, general manager and ultimately became chief executives of public listed companies in Malaysia before his retirement in Dec 2013. Besides working as professional manager for private companies, he and his business partner started an engineering consultancy company and completed many building projects particularly the hospitals in Malaysia both in the public and private sector. He is still active in M&E Services consultancy business and serves as Director in PE Associate Sdn Bhd.

Ir. Dr. Cheong is a registered Professional Engineer with the Board of Engineers Malaysia and a Fellow of The Institution of Engineers Malaysia. He has served as Interviewer for the Professional Interview (IEM) and PAE (BEM) for both engineering organizations since 1996 and he is the Chairman of the Membership Drive & Promotion Subcommittee for IEM and had served the Mechanical Engineering Technical Division as Committee Member, Secretary/Treasurer, Deputy Chairman, Chairman since 2004. He is very active in representing IEM in many engineering working groups for Green Technology, Renewable Energy and Energy Efficiency issues. He has contributed to education sector as the Chairman of PIBG and School Board of the Balakong NTP(C) School since 1997. He also served as Industry Advisory Board Member of Inti International University and the IAP of the Mechanical Engineering Faculty of Inti. He has conducted many talks and courses under IEM in the field of career & leadership development, Green Technology, and Total Quality Management system for engineering organizations and universities.



Ir. Dr. Ali Askar Sher Mohamad graduated with a BSc (Electrical Engineering) from Purdue University, West Lafayette, and a Masters in Power Engineering from UNSW, Sydney. He completed his PhD at UNITEN on the technical impact of connecting large scale solar PV plants to the medium voltage network. He has served TNB in various capacities, including engineering and management positions. He taught at Uniten from 2009 to 2011, teaching renewable energy and power systems subjects where he also acted as a consultant for Power System Studies and Feasibility Studies for various renewable energy plants, including hydro, solar PV and biomass. He acted as the Technical Advisor to the Ministry of Energy, Green Technology and Water on RE generation grid connection issues and related legislation. In November 2011, he was appointed the Chief Operating Officer of the newly set up Sustainable Energy Development Authority (SEDA) Malaysia. Ir. Dr. Ali is the Chairman of the SIRIM Technical Committee on RE, member of the Publication Committee of the Board of Engineers Malaysia (BEM), as well as being a panel member of the Engineering Accreditation Council (EAC).



En. Amiruddin Kemat is currently the Vice President, Corporate Planning & Communications Division in Malaysia Debt Ventures Berhad. Mr. Amiruddin Kemat is a graduate of University of Alabama, USA and obtained his degree in Bachelor of Science & Business Administration majoring in Corporate Finance & Investment Management. He has over 15 years of broad-based management and extensive business development experience in various industries. His credentials also include more than 10 years in the financial institutions undertaking credit evaluation, stakeholders management, business development and structuring credit facilities for the SMEs. He was previously with PBA Holdings Bhd (PBAHB) undertaking responsibilities on enhancing business network, strengthening stakeholder relations, identifying business opportunities, ensuring good corporate governance and overseeing the group risk management plan. His scope of work also expanded after being appointed as the Risk Management Committee Chairman of PBA Holdings Berhad group who leads and facilitates the implementation of risk management plan holistically.

## Industrial Talks

### Subang 3

Wednesday, 5<sup>th</sup> November 2014

- |                   |                                                                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.00 pm – 3.00 pm | Talk by ALCO Sales & Services Sdn Bhd - Green Cooling Utilizing Innovative Hybrid Technology incorporating Free Cooling Heat Recovery Energy Conservation Feature |
| 3.00 pm – 4.00 pm | Talk by Insafoam Insulation (M) Sdn Bhd - District Cooling Solution for mega cooling projects in the Middle East                                                  |

## Acknowledgement

The Organizing Committee wishes to express its gratitude and appreciation to:

### Sponsors

- Tenaga Nasional Berhad
- Smartech Sales & Services Sdn. Bhd.
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- IMZ Sdn. Bhd.

Speakers - Plenary Sessions & Technical Papers

All authors & co-authors

All exhibitors

All participants

All others who have in one way or another contributed towards the success of this Conference.