



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

CEES NEWSLETTER

**Centre of Electrical Energy Systems
(CEES)**

www.utm.my

Innovative Research and Developments in Power and Energy Systems

Issue 1: August 2014

www.cees.utm.my

Vision

To be an internationally renowned R&D Centre of Excellence

Mission

To provide innovative ideas and solutions in electrical power and energy systems

Staff

Director

Assoc. Prof. Dr.
Mohammad Yusri
Hassan

Deputy Director

Dr. Hasimah Abdul
Rahman

Research Fellow

Prof. Dr. Zainal Salam
Dr. Mohamed Shaaban
Dr. Dalila Mat Said
Fatimah Salim

Research Associate

Dr. Md. Pauzi Abdullah
Assoc. Prof. Ir. Hayati
Abdullah
Faridah Hussin
Wan Zaidi Wan Omar

Postgraduate Students

24 Ph.D Students
16 Master Students

Message from Director



Every now and then, people do come and leave. While the change of people in organization might alter the working culture or environment, what matters most is the work in progress and that the tasks are still carried out efficiently and successfully. That was the mission I envisage when I first stepped up as CEES's Director in 2012, replacing the centre's founding Director, Prof. Dr. Khalid Md. Nor.

Since then, CEES had Prof. Dr. Zainal Salam from the Energy Research Alliance joining us in 2012. Then, a research officer was appointed on April 2014. On the other end, we had two of our staff leaving early this year.

Notwithstanding the staff movement, much has been going on at the Centre for the past 2 years.

Last year, our Power Quality Lab held training seminars on energy measuring tools for the centre's postgraduates. Early this year, two CEES staff were involved with the International Energy Alliance (IEA) meeting in Germany. They also visited the PV test centre in TUV Rheinland. Then, on mid-April, CEES organized a short course on Green Energy Technologies.

One of the actively studied field in renewable energy is smart grid technologies. Recognizing that this field is fairly new in Malaysia, CEES is taking the initiative to further expose local academicians

and industries to its application through hosting a short course on smart grid technologies. This is one of the highlights for the year 2014 .

We collaborate with University of Newcastle, which already developed Australia's Smart Grid Smart City, to share their expertise. More on this will appear in later sections of this newsletter.

Mohammad Yusri Hassan,
Director,
Centre of Electrical Energy
Systems CEES

Research and Development Teams

TEAM	LEADER
Electrical Energy Markets and Energy Efficiency	Assoc. Prof. Dr. Mohammad Yusri Hassan
Renewable Energy	Dr. Hasimah Abdul Rahman
Power Systems Engineering - Analysis, Design, Planning and Optimisation	Dr. Mohamed Shaaban
Power Quality and Energy Supply Reliability Engineering	Dr. Dalila Mat Said

PEOPLE

Organisation Chart



Visiting Professors



Prof. Hamdy Ashour is CEES's visiting professor from 25th May to 26th May 2014. The visit was a continued effort from the signed MoA regarding academic collaboration with Arab Academy for Science, Technology and Maritime Transport (ATSTMT). He is currently a full time lecturer in ATSTMT, Egypt, and has served since 1999. His interest includes renewable energy, smart grid systems, electrical machines, industrial automated systems and energy efficient systems. He holds official certificates from SIEMENS to teach the company's industrial automation courses. To date, he has worked in different industrial automation projects. Currently, he is working with official Energy Audit Team that prepares industrial ISO 50001 certificates.



CEES is hosting Associate Professor Dr. Wu Yuan Kang as the visiting Professor to the Universiti Teknologi Malaysia for its Green Energy Technology short course from April 15-16, 2014. He received his Ph.D. degree in Electronic and Electrical Engineering from the University of Strathclyde, Glasgow, in 2004. He is presently an Associate Professor in the Department of Electrical Engineering at National Chung Cheng University, Chiayi, Taiwan, working in the area of wind power system, renewable energy forecasting techniques, power system control and management, distributed generation and smart grid control. He has carried out 12 national research projects and 1 international project in the past five years.

Centre of Electrical Energy Systems (CEES)

Recent Activity

GREEN ENERGY TECHNOLOGY SHORT COURSE

PALM GARDEN HOTEL, PUTRAJAYA

On 15-16 April 2014, CEES successfully organized a short course on Green Energy Technologies (GET) at the Palm Garden Hotel, Putrajaya. The 2-day course was officiated by the CEES Director, Assoc. Prof. Dr. Mohammad Yusri Hassan. Twenty-two participants from various disciplines, attended the course. Among the important topics discussed are integration of green technologies into buildings, impacts of renewable energy on system utility, prospect of renewable energy in Malaysia, and economics of renewable energies.



The course ended with a two-side forum between participants and speakers. Despite tightly scheduled the event was successfully held, special thanks to CEES's visiting professor, Prof. Wu Yuan Kang and Malaysian Greentech Corporation's COO, Ahmad Zairin Ismail.



Participants pose during a photo session



Participants attentively listening to valuable input



Lecture session by CEES's visiting professor, Prof. Wu Yuan Kang

Networking/Collaboration



Training Seminars at PQ Lab

The Power Control and Systems Measurement (PQ) Lab held a series of training seminar starting from last year:

- ◇ Fluke 435 and Fluke 435-II training session (introduction and demo) by Dr. Dalila Mat Said (13th April 2014)
- ◇ Chroma Programmable AC Source training session by Trastech Sdn. Bhd (30th September 2013)
- ◇ Fluke 435-II Power Quality Analyser training session by Trastech Sdn. Bhd. (18th September 2013)

The programs involved CEES members and postgraduate students. The training seminars aimed towards preparing researchers with skills for handling power quality measurement tools.



GCPV Competency Training by SEDA

In February 2013, Dr. Hasimah Abdul Rahman attended a 10 day training course on Design & Installation of Grid-Connected PV (GCPV) by Sustainable Energy Development Authority (SEDA) Malaysia. The training, held in UiTM Shah Alam, involved theoretical and practical aspects on:

- the design of GCPV systems that include solar PV modules inverter and their related equipment
- the installation of the GCPV systems up to the inverter.

The successful participants were awarded the SEDA-ISPQ competency certificate.



Wrapping Up: KPI Workshop

CEES wrapped the year 2013 with a workshop regarding the centre's performance and plans for 2013 and 2014 respectively. The workshop was held late December 2013 at Hotel Pantai Puteri, Melaka. The aim was to increase the publication, research grant, and income generation for the year 2014.

CEES members had a prudent discussion from which activities for 2014 were planned accordingly. They include:

- ⇒ setting targets for top-notch journal and scholarly publication
- ⇒ gaining international and national grants as well as contract grants
- ⇒ Planning for consultancy work, short courses, and equipment rental services.



We also managed to slot in a short presentation for effective writing in high impact factor journals in addition to KeTTHA grant application. These discussions were aimed to further expose CEES members with tips for quality writing and grant application opportunities.

IEA Task Force '13 Meeting in Germany



On April 1-3 2014, the 9th International Energy Agency (IEA) PV Power System Task Force 13 Meeting was held at Fraunhofer Institute for Solar Energy (ISE), Freiburg, Germany. CEES delegated the national expert representative, Prof. Zainal Salam (left in adjacent picture on the right), to the meeting.

Malaysia, represented by UTM (CEES) and UiTM, was given the specific task of conducting studies of performance of PV inverter system in tropical countries and looking at degradation of PV modules over long period of environmental exposure. These tasks are part of a 7-year project starting from 2000-2007 sponsored by The Malaysia Building Integrated PV (MBIPV).

Following the meeting was a workshop on Reliability of PV Systems and a general tour to the Fraunhofer ISE Labs and Freiburg Renewable Energy facilities.



Goodbye and Welcome to Old and New Staff!



Siti Alliyah giving her farewell speech



Norhazlina receiving gift from CEES Director



Newly appointed RO, Muhammad Thalbah

CEES research assistant Mrs. Norhazlina Omar and tutor Mrs. Siti Alliyah Mohd Salleh have left the centre on April 2014. We would like to thank both of them for their great services at CEES and wish them all the best in their future undertakings. On the other hand, we cordially welcome our new research officer, Muhammad Thalbah to the centre.

Short Course: Smart Grid



FEES: RM 1950 **HRDF CLAIMABLE**
 Fees are inclusive of course materials, lunch and refreshments

Discount RM150/person for Group Registration (minimum FOUR) or IEM / IEEE-PES members

11.5 CPD Hours

For further info, contact:

- 1) Muhammad Thalbah
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- 2) Dr. Mohamed Shaaban
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Collaboration with University of Newcastle, Australia

CEES selected to collaborate with University of Newcastle (UoN), Australia, for its expertise in the field of micro-grid technologies. UoN is currently leading the operation of Australia's Smart Grid Smart City. Prior to hosting a smart grid short course, CEES staff visited UoN and its Smart City control room in Sydney. It was agreed that Prof Joe Dong from UoN and Mr. Eric Pozorski from Ausgrid (Australia Grid) will contribute as the course's main speakers.

get background at www.twitterevolutions.com



CEES members with Dr. Mohammad Hadi Zulfiqar (second from left), Business Developer Officer of Newcastle Innovation Ltd. during UoN visit to CEES



Smart Grid Smart City representative explaining the City's control systems to CEES staff



CEES staff with UoN smart grid team



A quick snapshot at the Newcastle Institute for Energy and Resources



Smart Grid Smart City headquarters in Newcastle, Australia

Prof. Joe Dong



Prof Joe Dong is CEES's invited speaker for the

Smart Grid Short Course that will take place end of September 2014. He is the Director of the Centre for Intelligent Electricity Networks at The University of Newcastle, Australia. Prof. Dong has been involved with consultancy projects in the areas of power system planning, electricity market analysis, and load modelling areas. His area of expertise includes smart grid, load modelling, renewable energy systems, and electricity market. To date, he has published over 430 technical papers and journals.

Visit to ADTEC

CEES postgraduate students are just as active as the staff. Early this year, 2 of our students under the supervision of Dr Hasimah Abdul Rahman visited the Advanced Technology Training Centre (ADTEC) in Bintulu, Sarawak. The main objective was to acquire and learn how the real New Energy Lab system works, with the anticipation of installing the same system in UTM. The program was sponsored by Mr. K. Bala from United Integration Technology Sdn. Bhd.



Explanation by ADTEC expert (left) on available facilities

The Heliocentris facility



Students exploring the Helio-centris facility



Students at the ADTEC

Solar Decathlon China: UTM Solar Home



UTM Solar Home under construction



UTM Staff for team Malaysia



Proud UTM students

CEES postgraduates students competed in the Solar Decathlon, an annual event aimed at producing creative innovations of solar houses. This competition, fully participated by university students, took place in Datong, China. Malaysia, represented by 23 UTM postgraduates, was among the 23 contenders from 36 universities around the globe. The UTM Solar Home project was lead by Construction Research Alliance Dean, Prof. Muhd. Zaimi, and was supported by other disciplines.

The project involved the design and assemble of a solar home. The quality and functionality tests are done at UTM before reinstalling the house at the competition site. The house was equipped with 40 solar panels that could generate about 29 kilowatts of power a day. It also features a centralised controller that could control lights and AC units from a fixed-line phone. Despite humbly ranked 16th overall, team Malaysia won the 1st place in the subcategory of Energy Balance.

Graduating Students

Graduated 2013

- ◆ Mohd Hamizan Omar
- ◆ Muhammad Amjad
- ◆ Tan Wei Shan

Will Graduate 2014

- ◆ Mohamed A.M. Almaktar
- ◆ Syarifuddin Nojeng
- ◆ Zulkifli Ramli
- ◆ Nurehan Othman
- ◆ Mohd Zulhafizi Mohd Usman
- ◆ Che Ku Farhana Che Ku Amran
- ◆ Suhaila Samsuri
- ◆ Nor Shahida Hasan
- ◆ Abdul Moeed Amjad

Postgraduate Research Opportunities in the fields of :

- ⇒ Power System Engineering
- ⇒ Electrical Energy Markets and Generations Studies
- ⇒ Renewable Energy
- ⇒ Power Quality Engineering
- ⇒ End-user and Customer Side Energy Efficiency
- ⇒ Grid-Connected Cogeneration Systems

Join CEES to share our experience and enhance your knowledge from our expertise. Visit us at www.cees.utm.my

Awards

I) Associate Prof. Dr. Yusri Hassan

- i) Chartered Engineer (CEng), Engineering Council, UK, 2014
- ii) Appointed as Registered Electrical Energy Manager (REEM) by Energy Commission (Dec '13)
- iii) Global Institute of Science and Technology Award 2013

II) Prof. Zainal Salam

- i) Publication Award, Citra Karisma UTM 2014
- ii) High Impact Journal Publication 2012, September 2013

III) Dr. Hasimah Abdul Rahman

- i) SEDA-ISPQ Competency Certificate Holder, 2013

IV) Dr. Mohamed Shaaban

- i) Chartered Engineer (CEng), Engineering Council, UK, 2014
- ii) Senior Member, IEEE 2013

Selected Journal Publications

- ◇ Z. Salam, M. Facta M. Amjad , "Dielectric Barrier Discharge Ozonizer Using the Transformerless Single Switch Resonant Converter, IEEE Transactions on Industry Applications, Vol. 40, No. 3, pp. 2107-2206, May 2014. (Impact Factor: 5.165)
- ◇ M. Shaaban, J.O. Petinrin, "Renewable Energy Potentials in Nigeria: Meeting Rural Energy Needs", Renewable and Sustainable Energy Reviews, 29(2014), pp. 72-84, January 2014. (Impact Factor: 5.627)
- ◇ S. Nojeng, M.Y. Hassan, D.M. Said, M.P. Abdullah, and F. Hussin, "Improving the MW-Mile Method Using the Power Factor-Based Approach for Pricing the Transmission Services", IEEE Transactions on Power Systems, 2014. (Impact Factor: 2.921)
- ◇ S. Mirsaedi, D.M. Said. M.W. Mustafa, M.H. Habibuddin, and K. Ghaffari, "Review and analysis of existing protection strategies for micro-grids" Journal of Electrical Systems, Vol. 10, No.1, pp 1-10, March 2014.
- ◇ M. Almaktar, H.A. Rahman, M.Y. Hassan, I. Saeh, " Artificial Neural Network-based Photovoltaic Module Temperature Estimation for Tropical Climate of Malaysia and its Impact on Photovoltaic System Energy Yield", Progress in Photovoltaics: Research and Applications, (2013).(Impact Factor: 7.712)

Undergoing Projects

- ◆ An Experimental Study of Harmonic Impacts on Step-Down Transformer In End User Equipment
- ◆ Power Quality Baseline Study for Peninsular Malaysia
- ◆ International Energy Agency (IEA) PVPS Task 13: Performance and Reliability of Photovoltaic Power System
- ◆ Maximum Power Point Tracker for PV System Based on Differential Evolution Method
- ◆ PV Charging for Electric Vehicle
- ◆ Evaluation Study on the Impact of Hybrid Photovoltaic-Wind System in a Micro-Grid System
- ◆ A Novel Distributed Control Approach for Smart Power Grids Using Spectral Cluster Analysis
- ◆ Development of a Smart Micro Grid Energy Management System
- ◆ Impact of Soiling and Vegetation on Photovoltaic Systems Performance and Reliability
- ◆ Constant Slip Control of Wind Turbine Induction Generator at Low Wind Velocity

For more information
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