

TECHNICAL VISIT TO THE ENERGY SPHERE (TES), UNITEN KAMPUS PUTRAJAYA

(Organized by Seniors Special Interest Group, IEM)
 BEM Approved CPD/PDP Hours: 4.0 Ref no: IEM22/HQ/130/V

Date : 24 May 2022 (Tuesday)
Time : 8.15am – 1.00pm
Venue : The Energy Sphere (TES),
 Level 1, Block BE,
 UNITEN Putrajaya Campus

Transport : OWN TRANSPORT

Commitment fees (inclusive of SST)
 (Non refundable & non transferable)

IEM Member : RM 50.00
 Non Member : RM 70.00

(STRICTLY REGISTRATION AND PAYMENT VIA
 IEM ONLINE)

SYNOPSIS

Introduction to Institute of Energy Infrastructure (IEI):

Institute of Energy Infrastructure (IEI) is a research institute at the Universiti Tenaga Nasional (UNITEN), established in 2016 and focuses on the development and advancement of sustainable infrastructure in the energy sector. IEI's mission is to research, develop and solve problems in a way of innovative and integrated solutions related to geospatial technology, energy water security, sustainable building environment, geohazard risk reduction and energy science to meet the needs of its customers. Research and application development of products, equipment and systems produced by IEI researchers aims to conserve the environment and natural resources minimizing and reducing the negative impacts of human activities and development.



Introduction to Institute of Power Engineering (IPE):



well as practising engineers and technologists from its parent electric utility group, TNB.

Institute of Power Engineering (formerly known as Power Engineering Centre) was established in April 2005 as part of Universiti Tenaga Nasional (UNITEN) initiatives to spearhead research and consultancy activities in the field of power engineering widely considered as a niche to UNITEN. IPE effectively taps the multidisciplinary expertise of various colleges within UNITEN to carry out research and consultancy projects in areas related to the power industries. The institute draws its multidisciplinary expertise from academicians and researchers from various colleges within UNITEN and TNB Research, as

Brief info for talk: **Integrated 3D Geo-Hazards Data Visualization, Exploration, and Simulation using Virtual Reality**

Prediction of potential geo-hazard occurrence affecting assets as well as an area becomes more and more important for the mitigation and in many cases, the prevention of geo-hazards disasters. There is an increasing demand for simulation systems that use virtual reality (VR) technologies to simulate major geo-hazards. The simulation system related to geo-hazards provides a new way for disaster emergency rescue, to improve emergency response capabilities, mitigation, and prevention. Along with the advancement of VR utilization, IEI has developed a geo-hazards simulation utilizing VR technology to monitor geo-related disaster situations; before, during, and after. Decision-making and data monitoring can be carried out based on integrated data from various resources in real-time. Geo-related disaster areas can be identified as hot spot zone, thus identifying high-risk areas that require attention and assistance for emergency decision-making. The data accumulation in the simulation consists of data acquisition, data processing and analysis, data integration, and data visualization. Data acquisition was acquired from 2-Dimensional (2D) imagery (such as Joint Polar Satellite System (JPSS), Suomi National Polar-orbiting Partnership (S-NPP), Aqua and Terra missions) and from 3-Dimensional (3D) images (such as Terrestrial Laser Scanning (VZ400i) and Unmanned Aerial Vehicle (UAV)). The output data from 2D and 3D were analysed using GIS software to get the base map and data analysis. The base map was analysed with spatial data which consist of a digital elevation map (DEM), boundary, geology, river, landslide hazard map, flood-prone area and etc. For data analysis, the information from the satellite was analysed using specialized software such as Quantum GIS (QGIS), and Erdas Imagine in order to generate vegetation index, hot spots area, flood forecasting, slope failure, and route selection. Data integration was performed after the completion of the analysis phase. The integration of data was done using VR software where terrain data were overlaid with satellite imagery data to create a 4-dimensional environment for topology in Peninsular Malaysia. The 3-dimensional data were directly imported to this software to create a VR environment for Peninsular Malaysia. From this output, all the assets and geo-hazards can be monitored directly which is near to real-time imagery from the satellite. Users can feel the same environment as the real site because, in VR, the scale was based on a 1 to 1 scale, and the image depends on the quality of the data that were used. Using this VR platform, users can do planning and monitor assets and geo-hazards from the office. Thus, reducing any work safety issues with less labor and time costs.

Brief info for talk: **Introduction to Real Time Power System Simulator**

Simulations are done in order to predict the behaviour of a system through mathematical models which are solved using computers. However these simulations are not necessarily done in real time in which case means the simulation does not have a one to one relation with the wall clock. One drawback from this condition is the fact that testing of equipment using the simulated data will not be possible. Real time simulations using real time targets such as Simulink desktop real time, Simulink real time using speedgoat as a target or RT-Lab using the Opal RT as a real time target will enable simulations of physical systems to be done in a real time environment. Due to the real time nature of the simulations, the output of the simulations can be directly transmitted via outputs ports to hardware devices such as controllers and relays. This also implies that the real time targets can also be receiving input from external hardware that influence the real simulation results. This gives an alternative to experimental methods in proving certain algorithms for regulating quantities in the physical world

ITINERARY OF THE VISIT

TIME	ITINERARY
8.15 AM - 8:45 AM	Registration Breakfast
9.00 AM	Welcome remarks by TES and IEM Reps.
9.15 AM – 11.00 AM	First Session Talk by Gs. Rasyikin Bte. Roslan Topic: Integrated 3D Geo-Hazards Data Visualization, Exploration, and Simulation using Virtual Reality
11.00 AM – 12.30	Second Session Talk by Dr. Aidil Azwin Bin Zainul Abidin Topic: Introduction to Real Time Power System Simulator
12:30 PM – 1.00 PM	Q & A Session & Photo Session
1.00PM	End of Session

- ✓ The visit is strictly limited to **25 participants** registered on a first-come, first-served basis.
- ✓ Interested participants are to register and pay online at www.myiem.org.my or register by returning the appended registration form **before 17 May 2022** together with the payment.
- ✓ Cheques are to be made payable to **The Institution of Engineers, Malaysia.**
- ✓ Please note that the commitment fee must be settled prior to the visit. Payment on the day of the visit is not acceptable.
- ✓ After this closing date, IEM reserves the right to allocate seats on first come first pay basis.
- ✓ Members are also reminded that if a place is reserved, IEM **may** cancel the reservation if payment is not received.

"IEM reserves the right to alter or cancel the programme due to unforeseen circumstances at its discretion". For intending participants who choose to 'walk in without prior registration', IEM SHALL NOT be responsible for any direct or consequential losses".

REPLY SLIP

(Fax to: 03-7957 7678) (Email: suriani@iem.org.my)

Technical Visit to The Energy Sphere (TES), Uniten Kampus Putrajaya

I wish to participate in the above visit on **15 April 2020**. I enclosed herewith a cheque No.....for the amount of RM..... as my commitment fee for the visit.

Name: Member No: Grade:

Company:..... Designation :.....

Contact number :..... IC Number :.....

Email address : Company address

.....

I will be participating in the visit at my own risk and hereby indemnify fully the IEM from all claims arising from any injury, damage or loss that may be sustained by me.

Chairman Session 2021/2022

Ir. Lalchand A/L Gulabrai

Seniors Special Interest Group, IEM