

MyHVnet

Newsletter

ISSN 2462-1994

ISSUE 6

JANUARY 2021

MyHVnet

is the abbreviated name for Malaysian High Voltage Network – a networking group for high voltage engineering in Malaysia.

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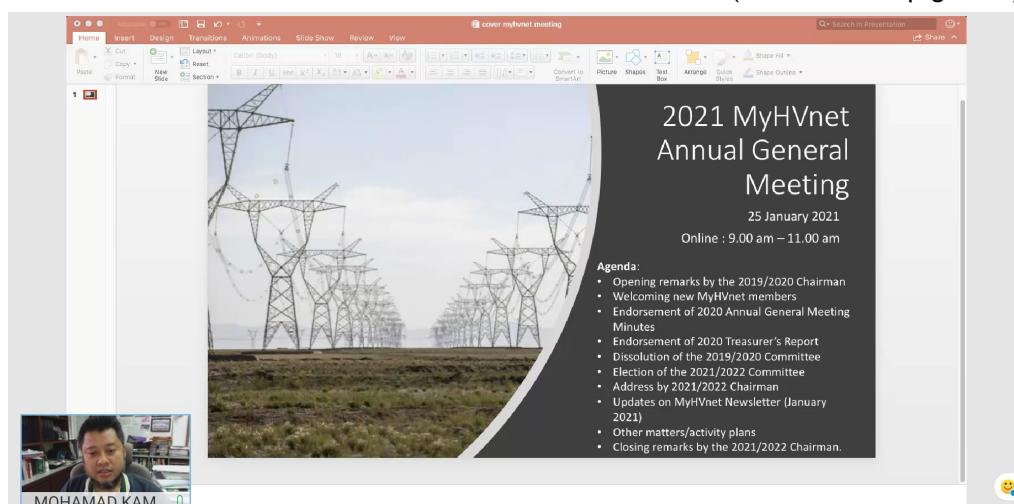
Smart Hybrid Solar Energy Harvesting and Storage System Design Challenge

2021 MyHVnet AGM

NIBONG TEBAL, 25 January 2021 – Malaysian High Voltage Network's (MyHVnet) 2021 Annual General Meeting (AGM) was held on 25 January 2021 virtually, in view of the rising COVID-19 cases throughout Malaysia. It was attended by nearly 50 high voltage experts from different universities and industries across Malaysia.

The AGM began with its 2019/2020 Chairman Assoc. Prof. Ir. Dr. Mohamad Kamaorol Mohamad Jamil of Universiti Sains Malaysia (USM) delivering his opening speech. Assoc. Prof. Dr. Kamarol also extended his warm welcome to new members of MyHVnet. This was followed by the endorsement of the

(continued on page 5...)



Assoc. Prof. Dr. Kamarol delivering his speech at the 2021 MyHVnet's online AGM.

ICPADM 2021 Virtual Conference

JOHOR BAHRU, 1 December 2020 – The 2021 International Conference on the Properties and Applications of Dielectric Materials (ICPADM) will be held virtually from 11-15 July 2021. The International Advisory Committee and the Local Organizing Committee of ICPADM 2021 have been monitoring the impact of COVID-19 disease crisis worldwide and consequently decided to change the format of ICPADM 2021 into a virtual conference.

ICPADM 2021 is the 13th meeting of this conference series. The IEEE Dielectrics and



(continued on page 7...)

MyHVnet 2021-2022 Chairman's Remarks



Assoc. Prof. Dr. Hidayat Zainuddin, Universiti Teknikal Malaysia Melaka.

I am delighted that the 2021 Annual General Meeting of MyHVnet was successfully held online with nearly 50 members joining it. Indeed, it is a history for MyHVnet in the increasingly challenging situation of COVID-19 pandemic in our country. The whole world has to accept the new norms to adapt with the many challenges and changes.

MyHVnet is entering its 7th year since its establishment in 2015 and all activities and achievements seen today would not be materialised without the collective effort and continuous support of all MyHVnet members, from universities and industries. This is our strength to ensure the sustainability of this networking group for years to come. I would like to take this opportunity to express my sincere appreciation to all former Chairmen, for their leadership, commitment and enthusiasm in steering MyHVnet to the present level. Special credits to Assoc. Prof. Ir. Dr. Mohamad Kamarol Mohamad Jamil of Universiti Sains Malaysia who has led

MyHVnet throughout the challenging year of 2020, during which out of sudden the world was dealing with a global outbreak of COVID-19.

Now, it is my turn to take on the responsibility to lead the agenda of MyHVnet establishment. I know it is a tough task especially during which the COVID-19 pandemic situation is unknown when it will subside or end. However, I believe with the potential that we have and continuous support from all members, we can make MyHVnet greater in the future. The growing membership of MyHVnet depicts an increasing number of players in high voltage research and development activities. Hence, it is a great opportunity to increase our visibility and continue making ourselves relevant through collaborations between academia and industries. It is hoped that we can work as a team towards research and development of high voltage infrastructure in Malaysia.

Lastly, I wish all the best to all members. Stay safe from COVID-19 and "We Take Care of Ourselves".

MyHVnet 2019-2020 Chairman's Remarks



Assoc. Prof. Ir. Dr. Mohamad Kamarol, Universiti Sains Malaysia.

I am pleased that the 2021 Annual General Meeting of MyHVnet was successfully held virtually during the COVID-19 pandemic. Nearly 50 members of MyHVnet participated in this first experience of virtual meeting via Webex. It has been an honor serving MyHVnet for two years which has been really wonderful and fruitful.

We have been facing some tough issues in these two years: the competency issue for high voltage laboratory's operation in universities that has been raised by the Engineering Accreditation Council (EAC) of Malaysia and the difficulties in conducting high voltage experiments caused by the COVID-19 pandemic. Alhamdulillah, most of us managed to solve the competency issue with the EAC with the undergraduate programmes being awarded full accreditation. Although the COVID-19 pandemic limited our activities in 2020, we managed to conduct several activities in 2020 either by face-to-face meetings or virtual webinars.

For the past two years, MyHVnet, in collaboration with the Institute of Electrical and Electronics Engineers (IEEE) Dielec-

trics and Electrical Insulation Society (DEIS), has successfully conducted numerous activities such as industrial visits, seminars, workshops, trainings and technical talks, including our biennial colloquium in February 2020. Such activities provided networking between academia and industries which could enhance knowledge in high voltage related research and development. We hope that these activities of MyHVnet would be continuously organised in the future. Without the full support and effort from MyHVnet members, the strength of MyHVnet could not be maintained as it is presently.

I hope that MyHVnet can continue to be a key platform for high voltage research and development in Malaysia. I would like to take this opportunity to thank all MyHVnet members for their tremendous support, effort and contributions in making MyHVnet activities a success. I would also like to wish our new Chairman, Assoc. Prof. Dr. Hidayat Zainuddin from Universiti Teknikal Malaysia Melaka all the best. We look forward to MyHVnet being recognised both locally and internationally. Lastly, let us pray together that the COVID-19 pandemic will end this year.

MyHVnet Newsletter's Editorial Board

Advisors: Prof. Dr. Zulkurnain Abdul Malek (Universiti Teknologi Malaysia); Assoc. Prof. Ir. Dr. Mohamad Kamarol Mohd Jamil (Universiti Sains Malaysia)

Editor-in-Chief: Assoc. Prof. Ir. Ts. Dr. Lau Kwan Yiew (Universiti Teknologi Malaysia)

Editor: Assoc. Prof. Ts. Dr. Muzamir Isa (Universiti Malaysia Perlis)

Contributors: Members of MyHVnet

2020 PTeC & MyHVnet Colloquium Successfully Held

PERMATANG PAUH, 4 February 2020 – The 2020 Power Technology and Research (PTeC) and Malaysian High Voltage Network (MyHVnet) Colloquium was successfully held at Universiti Teknologi MARA, Penang, on 3 February 2020. The colloquium, co-organised by IEEE Dielectrics and Electrical Insulation Society (DEIS) Malaysia Chapter, MyHVnet and Universiti Teknologi MARA, has seen a strong presence of the high voltage community in Malaysia.

The colloquium, as its name implied, was the first colloquium organised by PTeC, but the third colloquium organised by MyHVnet since MyHVnet's informal inception in 2015 by members from various Malaysian organisations. In the 2020 PTeC and MyHVnet Colloquium, the topics of interest have been expanded to include high voltage, power systems, power electronics and renewables. The colloquium featured 2 keynote speeches, entitled "Large Scale Solar Photovoltaic Power Plant System Implementations, Trends, Future Devel-

opment and Challenges in Malaysia" and "Grounding in Electrical Power Systems", delivered by Dr. Mohd Najib Mohd Hussain of Universiti Teknologi MARA and Ir. Ts. Dr. Syahrul Nizam Md Arshad @ Hashim of Universiti Malaysia Perlis, respectively. There were about 40 paper presentations that offered an excellent opportunity for researchers and engineers to present and discuss their latest findings. More details about MyHVnet Colloquium are available at <https://ivat.utm.my/myhvnet/news/>

MyHVnet wishes to thank all the committee members, reviewers and participants for sharing their works with all MyHVnet members through the colloquium and making the colloquium a success.

Ir. Dr. Lau Kwan Yiew, Universiti Teknologi Malaysia.



Various scenes during 2020 MyHVnet Colloquium.

About IEEE DEIS Malaysia Chapter

MALAYSIA, 1 January 2021 – The IEEE Dielectrics and Electrical Insulation Society (DEIS) Malaysia Chapter was established in Malaysia in May 2015 with the aims to enhance networking and stimulate research and development in the field of dielectrics and electrical insulation in Malaysia. Its field of interest is in line with that of DEIS, i.e., the study and application of dielectric phenomena and behavior and the development, characterization and application of all gaseous, liquid and solid electrical insulating materials and systems utilized in electrical and electronic equipment. Through committees, IEEE DEIS Malaysia Chapter hopes to promote the close cooperation and exchange of technical information among its members.

Those joining DEIS will have the possibility of networking with a large number of experts worldwide, including Malaysia (through IEEE DEIS Malaysia Chapter), to show the results of their research activity or remain informed in the latest developments in their field. For more information, please visit:

<http://deis.ieeeemy.org/> (IEEE DEIS Malaysia Chapter)

<http://www.ieeedeis.org/> (IEEE DEIS)

News on MyHVnet

In case you missed the previous news on Malaysian High Voltage Network (MyHVnet), Issues 1 to 5 of MyHVnet Newsletter (an initiative for the dissemination of high voltage related news, with particular emphasis on MyHVnet's activities) can be downloaded from the following link:

<http://ivat.utm.my/myhvnet/news/>



IEEE DEIS Malaysia Chapter

About IEEE DEIS Malaysia Chapter

- The Institute of Electrical and Electronics Engineers (IEEE) Dielectrics and Electrical Insulation Society (DEIS) Malaysia Chapter was established in Malaysia in 2015.
- IEEE DEIS Malaysia Chapter's establishment stems from the need of the dielectrics community in Malaysia to enhance networking and stimulate research and development in the field of dielectrics and electrical insulation.

About DEIS

- DEIS is interested in the study and application of dielectrics from the molecular level, through nano-structured materials, to insulation systems in industrial, commercial, and power system equipment, to emerging applications such as those at high power levels and in biological and other small-scale systems.
- DEIS supports the entire scope of the field from advancing the basic science, to enhancing the ability of practicing engineers to use emerging dielectric materials, to the development of standards for the prudent application of existing and new insulation systems.



All kind of dielectrics are dealt within DEIS scope: solid, liquid and gaseous dielectrics

Picture courtesy of DEIS

- The field of interest of DEIS shall be the study and application of dielectric phenomena and behavior and the development, characterization and application of all gaseous, liquid and solid electrical insulating materials and systems utilized in electrical and electronic equipment.
- DEIS is also involved in the creation of voluntary engineering standards and the recommended practices related thereto.
- DEIS promotes the close cooperation and exchange of technical information among its members and to this end holds meetings for the presentation of papers and their discussion.
- Through committees DEIS stimulates research, develops appropriate studies and standards, and sponsors periodic and special publications in the field of dielectrics and electrical insulation.

DEIS Membership

- Joining IEEE DEIS will offer you the possibility of networking with a large number of experts to show the results of your research activity or remain informed in the latest developments in your field.
- For more information, please visit:
<http://deis.ieeeemy.org/> (IEEE DEIS Malaysia Chapter)
<http://www.ieeedeis.org/> (IEEE DEIS)

MyHVnet 2021/2022 Committee

(...continued from page 1)

2020 AGM minutes and the 2020 treasurer's report. Prior to the dissolution of the 2019/2020 committee, Dr. Kamarol thanked all the 2019/2020 committee members and all MyHVnet members for their voluntary and co-operative effort to ensure the success of MyHVnet under his leadership.

The election of the 2021/2022 Committee (with specific tasks) came next, and the newly elected 2021/2022 MyHVnet Committee members are as follows:

Chairman

- Associate Prof. Dr. Hidayat Zainuddin (Universiti Teknikal Malaysia Melaka)

Co-chairman

- Ir. Dr. Mohd Aizam Talib (TNB Research Sdn. Bhd.)

Secretary I

- Dr. Aine Izzati Tarmizi (Universiti Teknikal Malaysia Melaka)

Secretary II

- Dr. Noradlina Abdullah (TNB Research Sdn. Bhd.)

Treasurer

- Ts. Dr. Mohd Shahril Bin Ahmad Khair (Universiti Teknikal Malaysia Melaka)

EXCOMM Members (Specific Portfolio)

Industrial Relations and Industrial Visit:

- Ir. Dr. Nor Asiah Muhamad (Universiti Sains Malaysia)
- Huzainie Shafi Abd Halim (TNB Research Sdn. Bhd.)
- Dr. Mohd Fikri Hilmi Mohd Taib (Universal Peak)

Newsletter:

- Assoc. Prof. Ir. Ts. Dr. Lau Kwan Yiew (Universiti Teknologi Malaysia)
- Dr. Nur Fadilah Ab Aziz (Universiti Tenaga Nasional)
- Dr. Wan Fatinhamamah Wan Ahmad (Universiti Putra Malaysia)

Database and Website:

- Dr. Nik Hakimi Nik Ali (Universiti Teknologi Mara)
- Dr. Wooi Chin Leong (Universiti Malaysia Perlis)
- Dr. Zulkarnain Ahmad Noorden (Universiti Teknologi Malaysia)

General:

- Assoc. Prof. Ir. Dr. Hazlee Azil Ilias (University of Malaya)
- Dr. Amir Izzani Bin Mohamed (Universiti Malaysia Pahang)
- Dr. Mohd Fairouz bin Mohd Yusof (Universiti Tun Hussein Onn Malaysia)
- Dr. Yanuar Zulardiansyah Arief (Universiti Malaysia Sarawak)
- Nor Darina Ahmad (Universiti Teknologi Mara)

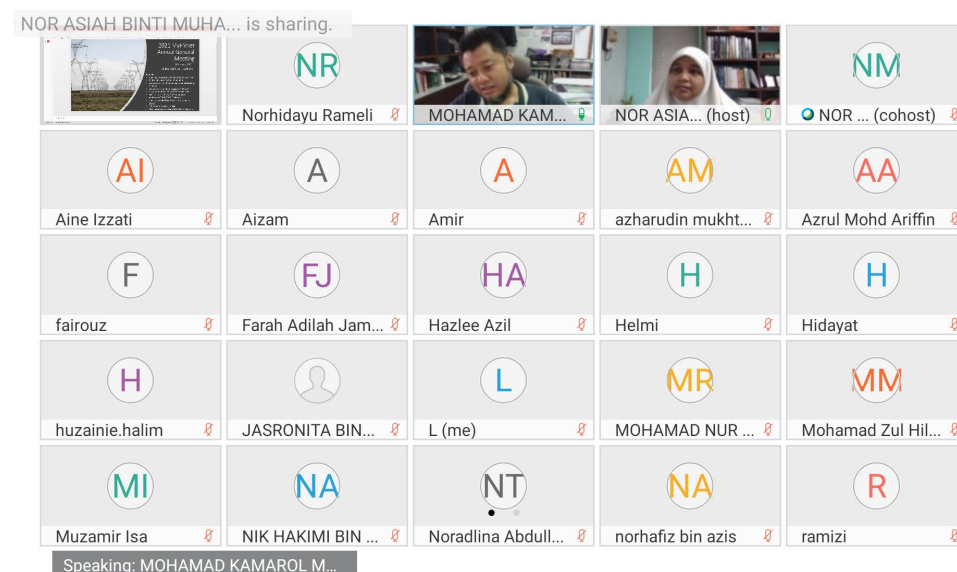
Among the highlights concluded from the 2021 MyHVnet AGM were the coordination of the competence requirements of high voltage related personnels, the suggestions of industrial related activities and the planning of the International Conference on the Properties and Applications of Dielectric Materials (ICPADM) 2021.

In the closing remark, the new Chairman of MyHVnet, Assoc. Prof. Dr. Hidayat Zainuddin, thanked the 2019/2020 MyHVnet committee on their relentless contributions for MyHVnet. He hoped that MyHVnet will continue to be the best platform to establish a strong collaboration between

universities and industries in Malaysia in high voltage related matters. He also wished all the best to the newly elected 2021/2022 MyHVnet Committee members.

Dr. Aine Izzati Tarmizi, Universiti Teknikal Malaysia Melaka.

A screenshot showing some of the MyHVnet members attending the online AGM.



ICCECN 2020 Successfully Held at the Faculty of Engineering, University of Malaya

KUALA LUMPUR, 2 February 2020 – The first International Conference on Communication, Electrical and Computer Networks (ICCECN 2020) was successfully organised at the Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia on 1st and 2nd February 2020. The conference was co-organised by the Faculty of Engineering, University of Malaya, IEEE University of Malaya Student Branch, Malaysian High Voltage Network (MyHVnet), IEEE Dielectrics and Electrical Insulation Society (DEIS) Malaysia Chapter and Faculty of Computer Science and Information Technology, University of Malaya.

The objectives of ICCECN 2020 were to share the latest research and development in the field of communication, electrical and computer networks among students and researchers from public and private academic institutions; and to provide a platform for students and researchers from various affiliations to meet and discuss on common research interest.

ICCECN 2020 consisted of four main tracks, which included Communication Systems and Networks, Electronic Engineering, Electrical Engineering and Computer Science. The conference programme consisted of 2 keynote speeches, 2 workshops and 4 presentation sessions.

On the first day of the conference, the Conference Chair and the Counselor of IEEE University of Malaya Student

Branch, Associate Professor Ir. Dr. Hazlee Azil Illias, gave a welcoming remark during the opening ceremony. Then, the conference was continued with the first keynote speech entitled “The Role of Power Electronics in Providing a Sustainable Energy Supply,” delivered by Professor Dr. Saad Mekhilef from University of Malaya. After that, two oral sessions were conducted, where papers from various themes were presented. At the end of the first day of the conference, a workshop entitled “Learn algorithms: Sorting it out with Python” was delivered by Dr. Raja Jamilah Raja Yusof from University of Malaya.

On the second day of the conference, the day was begun with the second keynote speech entitled “Routing Strategy for Post Disaster Communication Network” delivered by Professor Ir. Dr. Kaharudin Dimyati from University of Malaya. After that, another two oral sessions were conducted, where papers from various themes were presented. Before the conference ended, a workshop entitled “Academic digital platforms and its role on increasing researcher impact” was delivered by Dr. Saif Alsewaidi from Arabic Researcher ID. Finally, the conference was concluded with a closing remark by Associate Professor Ir. Dr. Hazlee Azil Illias and award presentation.

Assoc. Prof. Ir. Dr. Hazlee Azil Illias, Universiti Malaya.



Participants at ICCECN 2020.

ICPADM 2021 Call for Papers



(... continued from page 1)

Electrical Insulation Society (DEIS) undertook sponsorship of the conference after the first meeting on June 24-28, 1985. ICPADM has a long history. So far the conference venues have been in Xi'an, China (1985); Beijing, China (1988); Tokyo, Japan (1991); Brisbane, Australia (1994); Seoul, Korea (1997); Xi'an, China (2000); Nagoya, Japan (2003); Bali, Indonesia (2006); Harbin, China (2009); Bangalore, India (2012); Sydney, Australia (2015), Xi'an, China (2018). ICPADM 2021 will be organised by Universiti Teknologi Malaysia via the Institute of High Voltage and High Current and sponsored by the IEEE DEIS. The theme of the conference this time is 'Emerging Dielectrics for Energy Sustainability'. All accepted papers for ICPADM 2021 will be included in the IEEE Xplore Digital Library (subject to approval from the IEEE Technical Committee).

The conference currently seeks papers in all aspects of dielectric materials. Specifically, it covers (but not limited to) the following key areas:

- Aging and life expectancy of HV insulation,
- Bio-dielectrics,
- Conduction and breakdown in dielectrics,
- Dielectric materials for electronics and photonics,
- Dielectric phenomena and applications,
- Dielectrics for superconducting applications,
- Eco-friendly dielectric materials,
- Electrical insulation in high voltage power equipment and cables,
- Electrical and water tree development and surface tracking,
- Emerging dielectric materials,
- Gaseous electrical breakdown and discharges,
- High voltage insulation design using computational analysis,

- HVDC Insulation systems,
- Monitoring and diagnostic methods for electrical insulation degradation,
- Nano-technology and nano-dielectrics,
- New diagnostic applications for dielectrics,
- New functional dielectrics for electrical systems,
- Partial discharges,
- Space charge and its effects,
- Surface and interfacial phenomena.

Prospective authors are invited to submit their unpublished work in full-paper format before the deadline. For details, please visit the conference website: <https://attend.ieee.org/icpadm-2021/>

Important dates:

- Receipt of Full Paper (Including New Submission): 15 February 2021
- Notification of Paper Acceptance: 15 March 2021
- Registration Deadline: 30 May 2021
- Final Camera Ready Deadline: 30 May 2021
- Conference Dates: 11-15 July 2021

We look forward to meeting you at ICPADM 2021 virtually.

With our best regards,
ICPADM 2021 Organising Committee
Email: icpadm2021@gmail.com

2020 MyHVnet Annual General Meeting

PERMATANG PAUH, 4 February 2020 – Malaysian High Voltage Network's (MyHVnet) 2020 Annual General Meeting (AGM) was held on 3 February 2020 at Universiti Teknologi MARA (UiTM) Kampus Permatang Pauh, Penang, in conjunction with the 2020 PTeC & MyHVnet Colloquium. It was attended by High Voltage experts from various organisations in Malaysia. The meeting was chaired by Assoc. Prof. Ir. Dr. Kamarol Mohamad Jamil of Universiti Sains Malaysia, the 2019-2020 MyHVnet Chairman.

The first agenda was the endorsement of 2019 MyHVnet AGM minutes. The treasurer's report on 2020 MyHVnet Colloquium were presented next by 2019-2020 MyHVnet Treasurer, Ir. Ts. Dr. Syahrin Nizam Md Arshad @ Hashim (Universiti Malaysia Perlis). Later, various MyHVnet activities, including feedbacks for the 2020 PTeC & MyHVnet Colloquium,

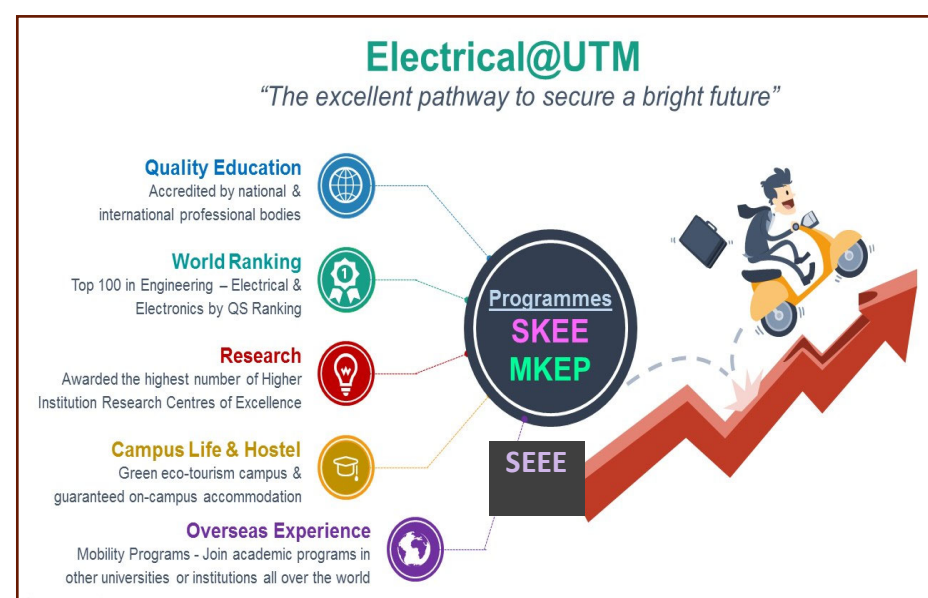
um, were discussed. This was followed by an update by the MyHVnet Newsletter's Editor-in-Chief, Ir. Dr. Lau Kwan Yiew of Universiti Teknologi Malaysia, on the successful publication of the 2020 MyHVnet Newsletter (issue 5) in conjunction with the 2020 PTeC & MyHVnet Colloquium. During the meeting, Assoc. Prof. Ir. Dr. Kamarol also encouraged everyone to actively involve in various high voltage related activities for the benefit of MyHVnet.

In the closing remark, Assoc. Prof. Ir. Dr. Kamarol looks forward for the expansion of MyHVnet's activities in the near future and wishes MyHVnet a continued success.

Ir. Dr. Nor Asiah Muhamad, Universiti Sains Malaysia.



Photos during 2020 MyHVnet AGM.



The Bachelor of Engineering (Electrical) programme, codenamed SEEE, is one of the undergraduate programmes offered by the Division of Electrical Power Engineering (POWER), School of Electrical Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, to prepare graduates for positions as electrical engineers. The SEEE programme has been designed to emphasise not only on the understanding and acquisition of basic principles and skills in the field of electrical engineering, but also on a wide range of subareas including electronics, control systems, instrumentation, signal processing, telecommunications and power systems. The division also offers the Master of Engineering (Electrical Power) programme, codenamed MKEP, for those interested to pursue a postgraduate degree (by taught course). For more information, please visit POWER's webpage at <https://engineering.utm.my/electrical/power/> [Picture courtesy of the Division of Electrical Power Engineering, Universiti Teknologi Malaysia]

2021 IEEE DEIS Malaysia Chapter AGM

PUTRAJAYA, 25 January 2021 – The 2021 Annual General Meeting (AGM) of the IEEE (Institute of Electrical and Electronics Engineers) Dielectrics and Electrical Insulation Society (DEIS) Malaysia Chapter was successfully held on 25 January 2021, virtually. The meeting was attended by active members of IEEE DEIS Malaysia Chapter and chaired by Chapter Chair Assoc. Prof. Dr. Mohamad Kamarol Mohamad Jamil.

The meeting began with an opening remark by Assoc. Prof. Dr. Kamarol, followed by the endorsement of the 2020 AGM minutes and the presentation of the chapter's activities and account matters. Prior to the dissolution of the 2020 committee, Assoc. Prof. Dr. Kamarol thanked all the committee members and DEIS members for their voluntary and co-operative effort to ensure the success of DEIS Malaysia Chapter.

The meeting continued with the election of the 2021 committee members of DEIS Malaysia Chapter, summarised as follows:

Chair

- Ir. Dr. Nor Asiah Muhamad (Universiti Sains Malaysia)

Past Chair

- Assoc. Prof. Ir. Dr. Mohamad Kamarol Mohamad Jamil (Universiti Sains Malaysia)

Vice Chair

- Assoc. Prof. Ir. Dr. Hazlee Azil Illias (University of Malaya)

Secretary

- Ts. Dr. Wong Jee Keen Raymond (Tunku Abdul Rahman University College)

Treasurer

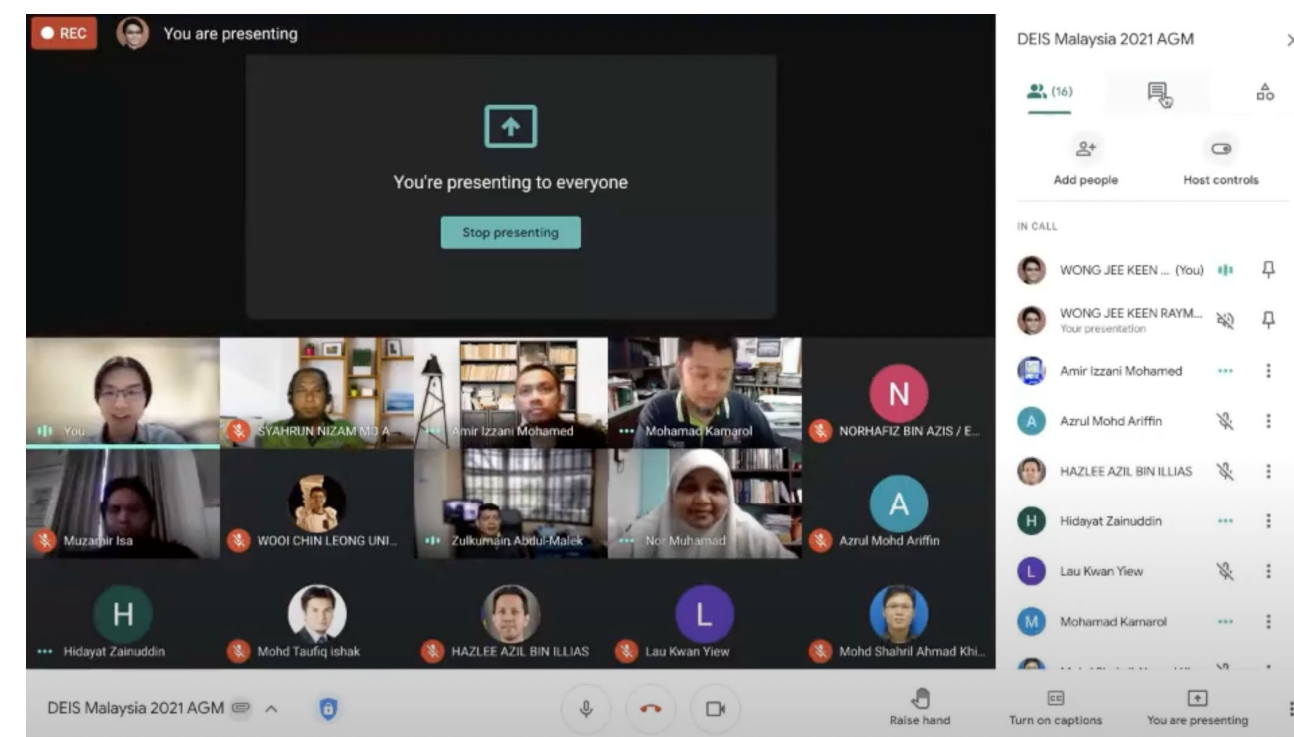
- Dr. Amir Izzani Mohamed (Universiti Malaysia Pahang)

Executive Committee

- Assoc. Prof. Ir. Ts. Dr. Azrul Bin Mohd Ariffin (Universiti Tenaga Nasional)
- Assoc. Prof. Dr. Norhafiz Azis (Universiti Putra Malaysia)
- Ts. Dr. Mohd Shahril Ahmad Khair (Universiti Teknikal Malaysia Melaka)
- Dr. Wooi Chin Leong (Universiti Malaysia Perlis)
- Dr. Zulkarnain Bin Ahmad Noorden (Universiti Teknologi Malaysia)

The new Chapter Chair, Ir. Dr. Nor Asiah Muhamad, later delivered her welcoming speech to the new committee line-up and made a brief planning for the activities in 2021. Dr. Asiah is hopeful that DEIS Malaysia Chapter will continue to contribute actively in the field of dielectrics and electrical insulation and looking forward to lead the DEIS Malaysia Chapter to a greater height.

Ts. Dr. Wong Jee Keen Raymond, Tunku Abdul Rahman University College.



2021 DEIS Malaysia Chapter's Online AGM.

High Voltage Calibration, Testing, Consultancy, Training, Research and Development at Institute of High Voltage and High Current, Universiti Teknologi Malaysia

Introduction

- The Institute of High Voltage and High Current, or in Malay, Institut Voltan dan Arus Tinggi (IVAT), was established in Universiti Teknologi Malaysia in 1991
- IVAT's establishment stems from the need of the country for a centre which carries out research and development, testing and calibration work, and training in the field of high voltage engineering
- IVAT is a laboratory accredited under the Laboratory Accreditation Scheme of Malaysia and meets the requirements of MS ISO/IEC 17025:2017 (general requirements for the competence of testing and calibration laboratories)

Accredited Calibration and Testing Services



Ensure the reliability of your high voltage equipment through

Accredited Calibration & Testing Services



Accredited scope of calibration:

- AC – up to 180 kV rms
- DC – up to 180 kV
- Impulse – 50 kV to 140 kV
- High current – up to 1000 A



Accredited scope of testing:

- Power cable AC voltage withstand test from 2 kV to 180 kV at 50 Hz

Research and Development

IVAT has 2 main research themes covering comprehensive research on high voltage engineering:

Lightning Research and Safety:

- Lightning monitoring, detection, and protection system
- Lightning characterization, electromagnetic field, and radio frequency emission
- Overvoltage protection system and insulation co-ordination, measurement techniques, surge arresters, and magnetic engineering
- Grounding system improvement and measurement method
- Super capacitor application in high voltage systems
- Electromagnetic compatibility and interference in high voltage systems



Dielectrics, Discharges and Diagnostics:

- Electrical discharge, detection, and monitoring
- Partial discharge analysis on polymeric insulating materials
- Condition monitoring of high voltage equipment
- Diagnosis and fault analysis
- Forensic investigation
- Material assessment
- Plasma and ozone generation applications
- Low voltage and telecommunication surge protective devices

Consultancy and Training Services

IVAT offers consultancy services for the following areas:

- Laboratory accreditation based on MS ISO/IEC 17025: 2017
- Lightning protection systems for buildings
- Protection systems for electrical power networks
- Grounding systems installations
- High voltage product development
- Low voltage and telecommunication surge protective devices

IVAT also organises training, visits, workshops, seminars and short courses. Some popular modules include:

- Electrical Safety Seminar
- Fundamentals of High Voltage Technology
- Three-day Short Course on High Voltage Testing Techniques and Safety
- Two-day Short Course on Grounding Systems
- Short Course on Lightning Protection for High and Low Voltage Systems
- Short Course on Partial Discharge Phenomena

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ADVANCED LIGHTNING, POWER AND ENERGY RESEARCH (ALPER)



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INTRODUCTION

Was previously under two different research centre:

Centre for Electromagnetic and Lightning Protection (CELP) - focuses on researches related to lightning protection and high voltage and;

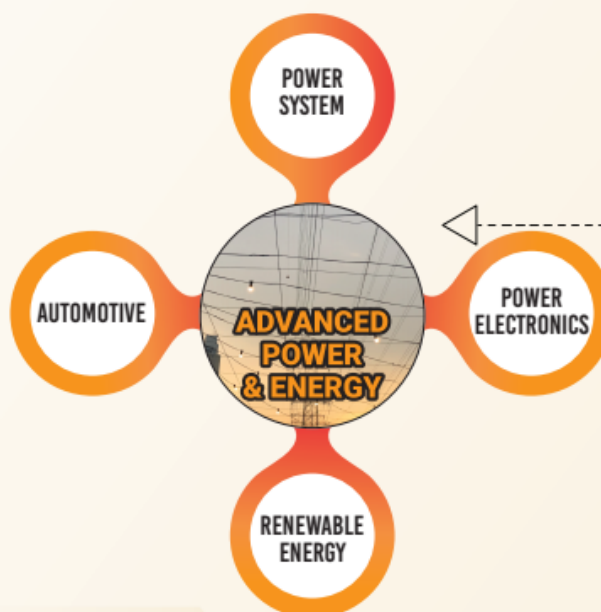
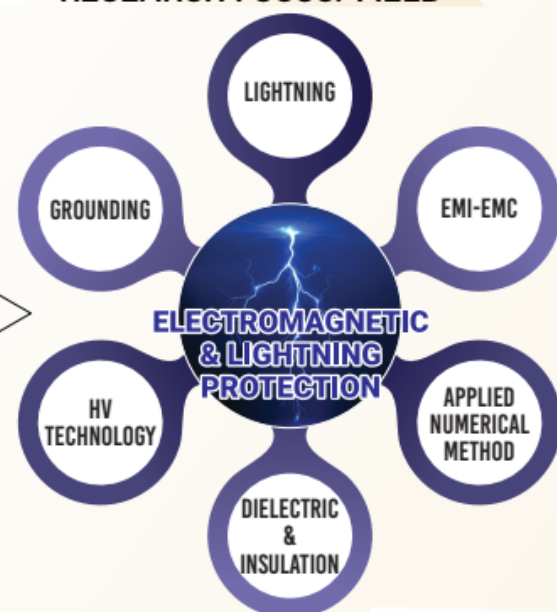
Centre for Advanced Power and Energy (CAPER) - focuses on power and renewable energy.

VISION

To be the global hub that dedicated to the research, engineering, education and public awareness promotion in lightning physics, protection technologies, and safety methodologies.

To be a leader in advanced power and energy research which would include power system, renewable energy, power electronics and drives.

RESEARCH FOCUS/FIELD



LABORATORY/FACILITIES

- High voltage and high current generator
- Electromagnetic transient software – CST, ATP/EMTP, PSCAD/EMTDC, DigSilent
- RF EMF measurement systems
- High Speed Camera
- Thermal Imager
- Oil Tester (Transformer)

- Solar power plant, Wind turbine
- AC Programmable AC power supply
- Transformer and load
- DC simulator, Solar simulator
- Machines
- PCB (power electronics)
- Measurement tools – PQ analyser, high performance oscilloscopes, special probes

COLLABORATIONS



CONTRIBUTIONS

Agro-PV Farm, UPM
Orthosipon Stamineus plants (Misai Kucing herbs) underneath PV panels can achieve faster maturity under PV inherent environmental conditions
Development of Clustered Misai Kucing Plots in Solar PV Farms for natural Cooling Mechanism Sustainable Hydrokinetic Renewable Energy (SHRE) – for Rural Electrification
Collaboration with Department of Public Works (JKR)
A full-fledged Integrated 40kW Commercial Ready Prototype (CRP)
Hydrokinetic Turbine Green Power Generator
Floating microhydro turbine that transforms hydrokinetic energy from the river current to electrical current
Projects:
• Hydrokinetic Power & Control Protection System (HPCPS)
• Hydrokinetic Green Energy Converter (HGEC)
• Hydrokinetic Crude Energy Stabilizer (HCES)
Global Lightning Network (GLN)
A collaborative effort between WSI Corporation USA and Universiti Putra Malaysia in providing lightning data detection for South-East Asia. GLN provides high-quality real-time lightning stroke data throughout the world



ADVANCED LIGHTNING, POWER AND ENERGY RESEARCH (ALPER) CENTRE UNIVERSITI PUTRA MALAYSIA

ABOUT US

Advanced Lightning, Power and Energy Research (ALPER) was previously under two different RCoE; Centre for Electromagnetic and Lightning Protection (CELP) and Centre for Advanced Power and Energy (CAPER). The merging of the two RCoE was approved by Senate on September 18th, 2018 in order to improve the visibility and the strength of the research for both RCoE. ALPER's researches are focused into two; i) lightning protection and high voltage, and ii) power and renewable energy where the two were previously under CELP and CAPER respectively.



SERVICE INFORMATION

List of Services

- Lightning Protection & Earthing Systems.
- Transmission & Distribution System Performances
- Electromagnetic Compatibility/ Interference (EMC/EMI)
- High Voltage Assessment and Modelling on Transformers, Motors, Generators and Electrical Assets
- Power Quality and Harmonics Measurement & Analysis
- Power System Protection Design & Performance Analysis
- Power Electronics Converter
- AI-based Power System Analysis
- Robust Controllers for Frequency Stability Analysis
- High Impedance Fault Detection
- Solar Photovoltaic System Monitoring & Analysis
- Polar PV system
- Agrivoltaic System
- Electrical Safety & Electrical Services Consulting Services - Design and Project Administration.
- Energy Efficiency Management
- Environmental Impact Assessment
- Biomaterial derivatives
- Bioenergy & Renewable Energy
- Rainwater Purification
- Precision Agriculture
- Drone in agriculture
- Geographical Information System (GIS)
- Cost, Benefit Analysis and Business Plan
- Project & Operation Management
- Online Business & Digital Marketing

Laboratories/Facilities

- High Voltage and high current generator
- Electromagnetic transient software – CST, ATP/EMTP, PSCAD/EMTDC, DigSilent
- RF EMF measurement systems
- High Speed Camera
- Thermal Imager
- Oil Tester (Transformer)
- Solar Power Plant, Wind Turbine
- AC Programmable, AC Power Supply
- Transformer and Load
- DC simulator, Solar simulator
- Machines
- PCB (Power Electronics)
- Measurement Tools – PQ analyser, high performance oscilloscopes, special probes

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University of Malaya rises to 59th place in 2021 QS World University Rankings

University of Malaya (UM) continues improving its position in the QS World University Rankings in 2021 and also remains in the top-100 rank.

In 2021, UM ranks 59th out of 1000 best universities in the world compared to 70th in 2020. There has been a continuous rise in the ranking from one year to another (151st in 2015, 146th in 2016, 133rd in 2017, 114th in 2018 and 87th in 2019). This is the seventh consecutive year in which UM's position has risen and the third consecutive year in which it has remained in top 100. In Asia, UM ranks 9th out of 550 best universities in Asia compared to 13th in 2020.

UM vice-chancellor, Datuk Ir. (Dr.) Abdul Rahim Hashim said UM has been benchmarking their goals against other top universities in the world in order to keep improving the

standard of the university and higher education quality in Malaysia.

The improvement in the 2021 ranking is also contributed by the Department of Electrical Engineering, UM mainly in the publication, research output and citations. It remains in top 50 in the QS World University Rankings in the Electrical and Electronic Engineering category.

One of the active research groups in the Department of Electrical Engineering, which has been contributing actively in terms of research output and publication, is the University of Malaya High Voltage Research Group (UMHVRG). It is an active research group into dielectrics, electrical insulation and artificial intelligence in high voltage engineering. The group is equipped with the state-of-the-art high voltage laboratory, which is utilized for research, teaching and consultation purposes.

To view the complete QS World University rankings, visit <https://www.topuniversities.com/>.



University of Malaya High Voltage Laboratory
Department of Electrical Engineering
Faculty of Engineering
University of Malaya
50603 Kuala Lumpur, Malaysia

PhD Opportunities: University of Malaya High Voltage Research Group

Greetings,

We are pleased to invite applications for PhD study at University of Malaya High Voltage Research Group (UMHVRG). The scopes of the projects include but are not limited to:

- Partial discharge measurement and simulation
- Dielectric material characterisations
- Artificial intelligence techniques in condition monitoring
- Optimisation techniques in high voltage equipment parameters' estimation
- Other high voltage engineering studies

STUDY MODE: Full-time research (Minimum 2 years, maximum 4 years)

REQUIREMENT:

- Academic qualification:
 - ♦ [Bachelor's Degree in Electrical Engineering with CGPA ≥ 3.7 or equivalent] OR;
 - ♦ [Bachelor's Degree in Electrical Engineering with CGPA ≥ 3.0 or equivalent] AND [Master by research in Engineering OR Master by Coursework in Engineering with CGPA ≥ 3.00]
- Self-funded or sponsored
- Proficient in English language (written and spoken)
- Pleasant personality, hardworking and self-motivated
- Ability to carry out research work independently, quickly and efficiently
- Willing to write review and research papers

Advantages of pursuing PhD in UMHVRG:

- Widely experienced supervisors
- Great high voltage laboratory facilities
- Excellent working environment
- Friendly and helpful colleagues
- Top-class facilities in University of Malaya

Interested candidate please send your resume with academic transcripts and research proposal to Associate Professor Ir. Dr. Hazlee Illias at h.illias@um.edu.my anytime throughout the year.

For more information on University of Malaya High Voltage Research Group, please visit <http://umhvl.um.edu.my>

For more information on application of PhD in University of Malaya, please visit <http://apply.um.edu.my/>

Thank you.

Introduction to First Aid and CPR Training

NIBONG TEBAL, 3 January 2020 – The School of Electrical and Electronics Engineering (SEEE), Universiti Sains Malaysia (USM), together with IEEE DEIS Malaysia Chapter and Malaysian High Voltage Network (MyHVnet), conducted the Introduction to First Aid and Cardiopulmonary Resuscitation (CPR) Training at USM Engineering Campus, Nibong Tebal Penang on Sunday, 2nd February 2020 from 8.30am to 6.30 pm. The training was conducted by Mr. Sunjay MS from Malaysian Red Crescent Penang Branch. A total of 24 participants registered and joined the training.

The aims of the training were for the participants to learn how to preserve life, prevent condition from becoming worse and promote recovery. During the session, the participants learned about the theory and practice of

First Aid and CPR. The syllabus included: i) scope of first aid, ii) trauma emergencies that covered wounds and bleeding, fractures and dislocation or sport injuries, burn and scalds, iii) cardiac and respiratory emergencies that cover the topic of asphyxia, shock, etc., iv) CPR and the use of automated external defibrillator (AED) and lifting and transportation of an injured person, and v) examination and certification of participants.

SEEE, IEEE DEIS Malaysia Chapter and MyHVnet thank Malaysian Red Crescent Penang Branch and the participants for making the training a successful event.

Ir. Dr. Nor Asiah Muhamad, Universiti Sains Malaysia.



Group photos.

2020 IEEE DEIS Malaysia Membership Drive

PERMATANG PAUH, 4 February 2020 – In conjunction with the 2020 Power Technology and Research (PTeC) and Malaysian High Voltage Network (MyHVnet) Colloquium held at Universiti Teknologi MARA, Penang, on 3 February 2020, a DEIS membership drive activity was carried out to promote the DEIS membership to the colloquium attendees and to bring awareness to them on the presence of the IEEE DEIS Malaysia Chapter.

The IEEE DEIS Malaysia Chapter was established in Malaysia in May 2015 with the aims to enhance networking and stimulate research and development in the field of dielectrics and electrical insulation in Malaysia. Its field of interest is in line with that of DEIS, i.e., the study and application of dielectric phenomena and behavior and the development, characterization and application of all gaseous, liquid and solid electrical insulating materials and systems utilized in electrical and electronic equipment.

The IEEE DEIS Malaysia Chapter hopes to promote the close cooperation and exchange of technical information among its members. The IEEE DEIS members will have the opportunity of networking with a large number of experts



DEIS Malaysia members exchanging ideas in preparation of the membership drive.

worldwide, sharing the results of their research activities and remain informed with the latest developments in their field. For more information, please visit:

<http://deis.ieeemy.org/> (IEEE DEIS Malaysia Chapter)

<http://www.ieeedeis.org/> (IEEE DEIS)

Ir. Dr. Lau Kwan Yiew, Universiti Teknologi Malaysia

Smart Hybrid Solar Energy Harvesting and Storage System Design Challenge

KUALA LUMPUR, 2 October 2020 – The IEEE Dielectrics and Electrical Insulation Society (DEIS), in collaboration with IEEE University of Malaya Student Branch (UM SB) and Power and Energy Society (PES) Malaysia Chapter, had successfully secured the 2020 IEEE Region 10 Educational Activity (R10 EA) New Innovative Challenge Fund. They were awarded USD \$500 as the winner in the University Category. The title of the proposal is “Smart Hybrid Solar Energy Harvesting and Storage System Design Challenge.”

Solar energy harvesting is increasingly gaining attention due to it is freely available and environmentally friendly. However, solar energy cannot be used at night, thus requiring an energy storage system. Individual solar energy harvesting and storage systems are less practical due to the cost and maintenance issue. Therefore, an alternative solution is to have a hybrid energy harvesting and storage system. They are more practical due to their potential in providing autonomous power sources, such as sensors, wearable electronics, and autonomous monitoring. The hybrid device architecture needs to be carefully selected according to the specific intended application to ensure



Solar Energy Harvesting and Storage System.

adequate durability.

The challenge is expected to be held in October and November 2020 at the University of Malaya. The participants will consist of first and second year undergraduate students from public and private universities in Malaysia.

Assoc. Prof. Ir. Dr. Hazlee Azil Illias, Universiti Malaya.

Pursue Your Postgraduate Studies at UTM IVAT

The Institute of High Voltage and High Current (IVAT), Universiti Teknologi Malaysia (UTM), welcomes applications for Doctor of Philosophy (PhD) and Master of Philosophy (MPhil) studies to undertake research projects at IVAT. The themes of the projects include:

- Lightning characterisation, monitoring and detection
- Electromagnetic compatibility and interference
- Partial discharge detection and measurements
- Plasma and ozone generation applications
- Supercapacitors in high voltage applications
- Dielectrics and electrical insulating materials

Admission Requirements:

- **PhD:**
Entry to the programme requires a Master degree in Electrical Engineering or equivalent from UTM or other Institution of Higher Learning recognised by UTM. First-class Bachelor graduates (CGPA $\geq 3.67/4.00$) may apply for a fast-track PhD (terms & conditions apply)
- **MPhil:**
Entry to the programme requires a Bachelor degree in Electrical Engineering or equivalent from a tertiary institution recognised by UTM, with a minimum CGPA of 3.00/4.00 for fresh graduates, or a minimum of 2.50/4.00 with four (4) years experience as an Electrical Engineering practitioner
- **English Requirement for International Students:**
All international students must have a valid two-year old TOEFL or IELTS certificate with a TOEFL score of 550 (or 79 IBT) or an IELTS Band 6

Why Study at IVAT?

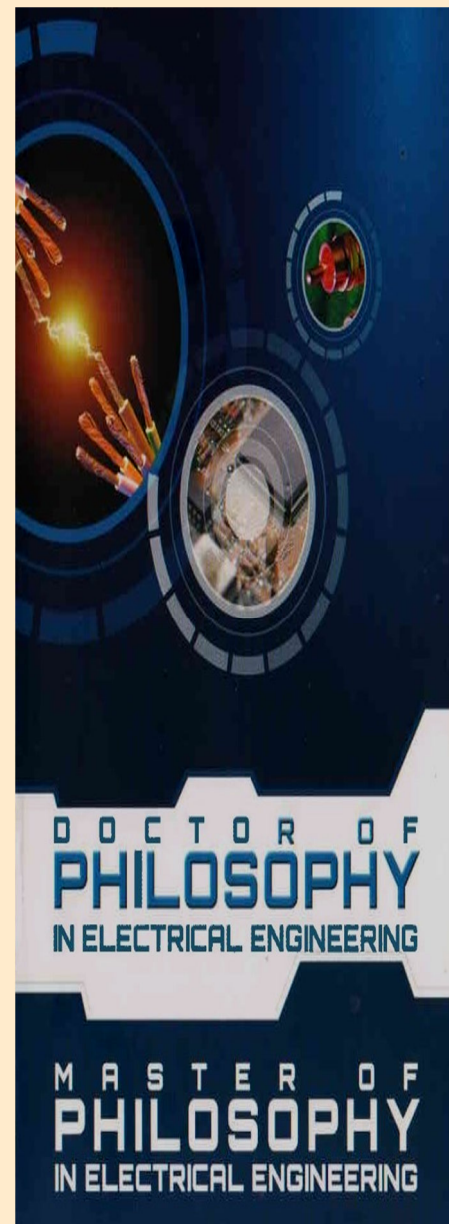
- Our field of electrical and electronic engineering is ranked Top 100 in the world (according to QS World University Rankings by Subject 2020)
- Our high voltage laboratory is the largest in Malaysia
- We have well-equipped high voltage facilities
- We have widely experienced supervisors working on a variety of high voltage related research and development
- We have dedicated student working areas for office and laboratory work

To Apply:

- Please send your resume with academic qualifications, transcripts and research proposal to the Director of IVAT, Prof. Dr. Zulkurnain Abdul Malek at zulkurnain@utm.my anytime throughout the year. You may also directly contact the respective project supervisors at IVAT.

For more information about IVAT, please visit: <http://ivat.utm.my/>

For more information about UTM's postgraduate programmes, please visit: <http://admission.utm.my/>



Welcome to UTM Institute of High Voltage and High Current

The Institute of High Voltage and High Current (IVAT), Universiti Teknologi Malaysia (UTM) is committed to entertain visits by delegates from not only its own university, but also as far as overseas. The main aim for IVAT organising visits is to share their research, services and consultancy experience to as many people as they could, especially in areas relevant to high voltage engineering.

For interested students from schools or higher learning institutions, the focus of visit would be on IVAT's role in building the nation through their technical support to electrical energy industries to achieve reliable and efficient operations. This is inculcated through their fascinating demonstration on high voltage air discharges (either impulsive or sus-

tainable low current arcs).

For representatives from private companies, IVAT showcases their services and consultancy capabilities, as well as their research achievements, in attempts to increase the return of investments to the university. As for executives of ministerial bodies and government parastatals, IVAT extends their knowledge and experience to open possible collaborations on research works.

A routine visit to IVAT would include a 5-minute video presentation on IVAT, followed by a 10-minute briefing by an IVAT's academican, then a question-and-answer session on any topic relevant to the visit. Interested parties are most welcome to visit IVAT.



Photos taken during visits to IVAT.

About MyHVnet

High voltage research and development activities continue to prosper in Malaysia due to rapid urbanisation across the country. Each year, an enormous amount of expenditure is allocated for the development of high voltage infrastructure and its relevant expertise to ensure its sustainability. This indirectly leads to an increasing number of players, both at the university and industry levels. While this certainly brings positive impact to the field of high voltage engineering, it can, sometimes, be difficult for interested parties to approach the right experts in a specific high voltage related area, e.g., lightning protection, condition monitoring and diagnosis, and insulation design. Consequently, more effective research and development activities related to high voltage engineering may have been hindered.

To address the above issue, the possibility of setting up an informal networking group relevant to high voltage engineering has been looked into. This leads to the idea of the estab-

lishment of Malaysian High Voltage Network (MyHVnet) in 2014. MyHVnet will hopefully serve as a “one-stop” platform for members from various organisations (universities and industries) across Malaysia for the effective communication of high voltage related research and development.

The main objectives of the establishment of MyHVnet are:

- i) To serve as a platform for the discussion of high voltage related research and development among member organisations.
- ii) To raise the awareness of the research and development capabilities of member organisations to high voltage related industries.
- iii) To lobby for high voltage related research funding.



Photo session during 2020 MyHVnet Colloquium.

Published by:

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MyHVnet Newsletter is an annual newsletter published by the Institute of High Voltage and High Current (IVAT), Universiti Teknologi Malaysia (UTM) and Malaysian High Voltage Network (MyHVnet), with ISSN no. 2462-1994. The newsletter is an initiative by IVAT and MyHVnet for the dissemination of high voltage related news, with particular emphasis on MyHVnet's activities. The newsletter aims to comprehend the objectives of MyHVnet, i.e., to serve as a platform for the discussion of high voltage related research and development among member organisations; to raise the awareness of the research and development capabilities of member organisations to high voltage related industries; and to lobby for high voltage related research funding.