

IVAT Newsletter

ISSN 2289-6988

ISSUE 7

JUNE 2020

IVAT

is the abbreviated name for the Institute of High Voltage and High Current, or in Malay, Institut Voltan dan Arus Tinggi – a Centre of Excellence of Universiti Teknologi Malaysia (UTM).



INSIDE THIS ISSUE

- Page 2
IVAT Director's Remarks
- Page 5
IVAT's Knowledge Transfer Programme
- Page 8
IVAT's Brochure
- Page 13
New Roles for IVAT's Staff
- Page 14
Best Postgraduate Student Award
- Page 16
IVAT Welcomes Visitors

Website for ICPADM 2021 Launched



A photo from the website of ICPADM 2021.

JOHOR BAHRU, 1 June 2020 – The local organizing committee of the 2021 International Conference on the Properties and Applications of Dielectric Materials (ICPADM) continued to work relentlessly in preparation for the ICPADM 2021 conference to be held in Johor Bahru from 11-15 July 2021.

ICPADM 2021 is the 13th meeting of this conference series. The IEEE Dielectrics and Electrical Insulation Society (DEIS) undertook sponsorship of the conference after the first meeting in June 24-28, 1985.

(continued on page 7...)

Seminar on Development of Antenna as Partial Discharge Sensor



Group photo of Dr. Umar (fourth from left) with Prof. Dr. Zulkurnain (fifth from left) and some of the participants.

JOHOR BAHRU, 14 November 2019 – The Institute of High Voltage and High Current (IVAT) successfully organised a seminar on the development of antenna as ultra high frequency (UHF) partial discharge sensor in power apparatus, delivered by Dr. Umar Khayam, an Associate Professor at the School of Elec-

trical Engineering and Informatics, Institut Teknologi Bandung, Indonesia.

During the seminar, Dr. Umar provided many useful insights about partial discharges and their detections to the participants. Of

(continued on page 10...)

IVAT Director's Remarks



Prof. Dr. Zulkurnain Abdul Malek, Director, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

It is nice to meet you again in this latest issue of newsletter. As with other organisations, IVAT as a service and research centre, has continued our operation post COVID-19 countrywide lockdown. Despite possible difficulties which may still exist, I hope these do not hinder our customers, our researchers as well as IVAT's staff from getting the accumulated jobs and tasks done. Everyone should treat this as a challenge and transform it into an opportunity to better equip ourselves with new knowledge. Who could have known that many of us were somehow digitally transformed within the short 3-month lockdown period, instead of the normal lapse of 2 years! Let us progress further by being more efficient and productive in whatever we are doing. I pray that you will achieve greater success and to our researchers, welcome back and I hope you find new discoveries in this challenging time!

Monthly Talk on Understanding the Fundamental Concept of Partial Discharge

JOHOR BAHRU, 12 September 2020 – As part of IVAT Service, Consultancy and Training division's activities, a monthly talk on partial discharge was successfully conducted on 28 August 2019 at IVAT's Seminar Room. This informative talk was given by Dr. Mohd Hafizi Ahmad (IVAT), an expert in partial discharge study. The 2-hour talk began at 10.00 a.m. with registration of participants and ended at 12 noon. Approximately 15 participants attended the talk, with the majority of them are IVAT's staff and postgraduate students, while some of the participants are from industry. It is hoped that the main objective of this talk, that is to encourage knowledge transfer among IVAT staff, public and student, is achieved throughout this activity. IVAT will continuously help the university in sharing its knowledge and expertise to ensure the university is always at the forefront of science and technology development.

Dr. Noor Azlinda Ahmad, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Group photo with the speaker, Dr. Mohd Hafizi (8th from left) during the monthly talk.

Editorial Board

Advisor:

Prof. Dr. Zulkurnain Abdul Malek

Editor-in-chief:

Prof. Dr. Zolkafle Buntat

Editor & Designer:

Ir. Dr. Lau Kwan Yiew

Contributors:

Assoc. Prof. Dr. M. Afendi M. Piah

Dr. Mohd Hafizi Ahmad

Dr. Mona Riza Mohd Esa

Dr. Noor Azlinda Ahmad

Dr. Zulkurnain Ahmad Noorden

Dr. Zuraimy Adzis

Mr. Abd. Mohsin Abd. Razak

Mr. Anuar Kamaruddin

Mr. Hairoisyam Abd Rani

Mr. Mohamad Syahrin Mohamad

Mr. Mohd Azrul Othman

Mr. Mohd Nazren Mohd Ghazali

Mr. Zamri Kassim

Ms. Norhidayu Bakrin

Ms. Nor Elliyana Mazlan

Webinar on Standards and Electrical Engineers

JOHOR BAHRU, 6 May 2020 – The School of Electrical Engineering (SKE), Universiti Teknologi Malaysia (UTM), in collaboration with the Institute of High Voltage and High Current, successfully organised a webinar on Standards and Electrical Engineers on 6 May 2020. About 60 undergraduate students undertaking the High Voltage Technology course attended the webinar delivered by Ir. Dr. Siow Chun Lim, the Secretary of National Working Group, ASEAN Engineering Inspectorate – Electrical Installation, who is also a Senior Lecturer at Multimedia University.

Standards and Electrical Engineers

May 2020
06

10.00 am to 11.00 am

Join via Cisco Webex
<https://utm.webex.com/utm/j.php?MTID=m061125d3974306072ad6aada094bf32e>

Ir. Dr. Siow Chun Lim
Secretary of National Working Group
ASEAN Engineering Inspectorate – Electrical Installation

Early exposure to industrial standards is crucial to prepare undergraduates for the workplace. The National Working Group of ASEAN Engineering Inspectorate – Electrical Installation (AEI-E) is currently embarking on an initiative to create and elevate awareness of electrotechnical standards amongst electrical engineering undergraduates in Malaysia. In the webinar, Ir. Dr. Siow will introduce about standards in general before zooming into those relevant to electrical installations such as IEC 60364, IEC 62305 as well as Malaysian Standards. Ir. Dr. Siow will also share the current standardisation initiatives at the ASEAN level. Students interested in electric power utilisation and installations are highly encouraged to join the webinar.

Brochure of the webinar.

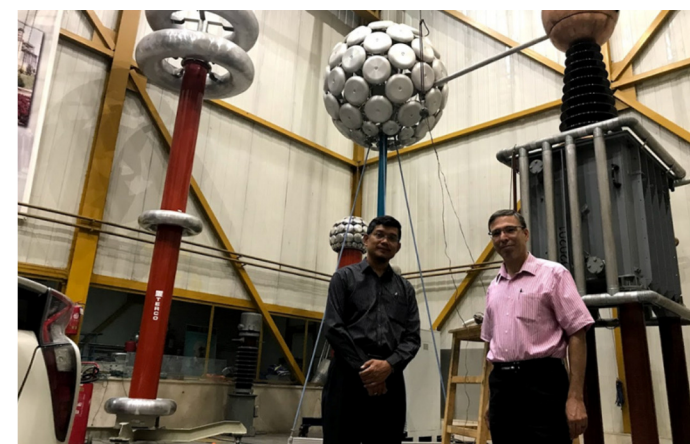
Various interesting insights on standards, especially those related to electrical installations and buildings, were delivered by Ir. Dr. Siow during the webinar. These include standards related to power transformers, electromagnetic compatibility, low voltage switchgears and lightning. Ir. Dr. Siow also emphasised on the importance of standards as a consensus among industries, governments, academics, consumers, and test laboratories. At the end of the seminar, a questions-and-answers session was held to provide further clarifications regarding the topic.

Through the seminar, it is hoped that the students are aware of electrotechnical standards, especially those relevant to high voltage engineering, in preparing them for the workplace. This would allow the students to enhance learning through research information, in line with UTM's effort to enrich the nexus between research, learning and teaching. Course Coordinator Dr. Noor Azlinda Ahmad and Webinar Coordinator Ir. Dr. Lau Kwan Yiew sincerely thank Ir. Dr. Siow for voluntarily delivering the webinar to the students.

Ir. Dr. Lau Kwan Yiew, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

IVAT Director's Presence at International Level

Visiting High Voltage Laboratory at University of Tehran (July 2019).



Invited speaker at International Conference on High Voltage Engineering and Power System (ICHVEPS) 2019 Bali (October 2019).



Keynote Speaker at Electrical Engineering and Information Technology Research Toward Eco-Friendly Technology and Humanity (ICITACEE) 2019 (September 2019).



Keynote Speaker at International Conference on Electrical, Electronic, Communication and Control Engineering (ICEECC) 2019 Melaka (November 2019).

Engineering-Industry Innovation Day 2019

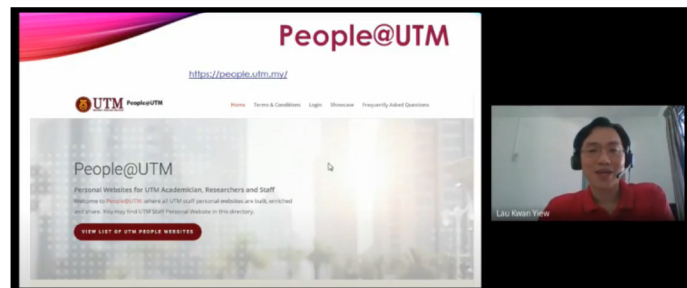
JOHOR BAHRU, 15 September 2019 – On 11 and 12 September 2019, the Faculty of Engineering, Universiti Teknologi Malaysia (UTM), organised the 2019 UTM Engineering-Industry Innovation Day. The event was held at Dewan Sultan Iskandar, UTM. The Innovation Day was a platform where academicians, researchers and engineers from academia, industry and government were brought together to meet and share on recent research results, new developments, and technology trends in engineering areas. It showcased programmes that include the latest research and product exhibitions, and the Institute of High Voltage and High Current (IVAT) joined the event with a Research Showcase. There were also research forums and industrial talks that served as platforms for the exchanging of ideas between academics and industry experts. The exciting interdisciplinary engineering event included competitions namely, Industrial Grand Challenge, innovative idea posters and products.

Mr. Hairoisyam Abd Rani, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



IVAT's staff at UTM Engineering-Industry Innovation Day.

Webinar on Website 101 Successfully Held

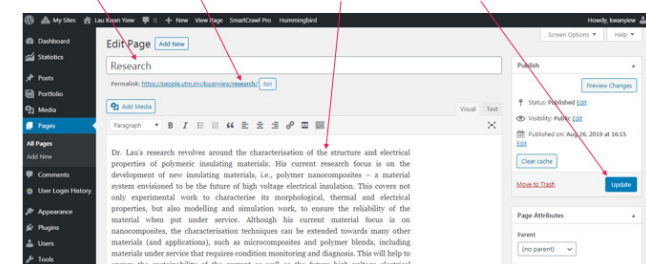


Snapshot during webinar.

JOHOR BAHRU, 2 June 2020 – The Institute of High Voltage and High Current (IVAT) successfully organised its monthly talk via webinar on 2 June 2020 amid the conditional movement control order period in Malaysia. The webinar, delivered by Ir. Dr. Lau Kwan Yiew focussed on the basic skills required in developing a personal website. An brief exposure to various personal website development platforms was provided to the participants, with a particular emphasis on WordPress – a platform used by Universiti Teknologi Malaysia for its staff to build personal websites.

During the webinar, the participants were brief on the importance of having a personal website. The participants were also provided with step-by-step guidelines in developing a personal website through people.utm.my – a platform for developing personal websites for academicians, researchers, and staff of Universiti Teknologi Malaysia. Matters such as

website formatting, page creation and editing, and text and figure formatting were discussed. In addition, all the basic skills needed to develop the website were briefed to the participants.



Presentation slide captured during webinar.

Towards the end of the webinar, the participants had the opportunity to develop their personal websites on-the-spot and were given further advice in developing their websites through screen sharing. It is grateful that, at the end of the webinar, a number of the participants managed to set up their personal websites through people.utm.my.

Ir. Dr. Lau Kwan Yiew, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

IVAT's Knowledge Transfer Programme at Kampung Orang Asli Woh Intake

TAPAH, 3 March 2020 – As a part of its social responsibility, the Institute of High Voltage and High Current (IVAT) is committed to support its staff to regularly involve in any community engagement activities. On 27-29 February 2020, two IVAT's researchers, Dr. Zulkarnain Ahmad Noorden and Dr. Mona Riza Mohd Esa, involved in a knowledge transfer programme at a rural village namely Kampung Orang Asli Woh Intake, Tapah. The programme, which was partially supported by IVAT, was held in conjunction with the officiating ceremony of a recently installed photovoltaic (PV) system at the village. The installed PV system is capable of supplying 24-hour electricity to a total of 14 houses, which previously did not have access to continuous electricity supply from the utility due to its remote area.

The main aim of the knowledge transfer programme was to share basic knowledge on the maintenance of the installed PV system to the local community, as well as to indirectly socialise with the community through some fun activities, such as communal works and local games. The programme also aimed to provide exposure to a total of six Universiti Teknologi Malaysia's first year students, who volunteered to join the programme, on the local's unique culture and way of living while encouraging them in enhancing their communication and teamworking skills.

Dr. Zulkarnain Ahmad Noorden, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



A group photo with UTM's and Bank Islam Berhad's special guests during the officiating ceremony of the installed PV system. Dr. Zulkarnain (standing, most right) and Dr. Mona Riza (standing, fifth from left).

2-Day Workshop on How to Improve Your Scientific Writing

JOHOR BAHRU, 10 July 2019 – A 2-day workshop on 'How to improve your scientific writing' was successfully organised by Institute of High Voltage and High Current (IVAT) from 8 to 9 July 2019. The workshop was conducted by Dr. Yasmin Shamsudin, a researcher and scientific writing coach from YS Consulting. The programme is useful to researchers, academic staff and also students since a good, clear and accurate scientific writing is important for communicating research results. In this course, participants were taught and guided on the structure, styles, and formatting regulations of the scientific writing. It also covers standard styling and structuring of common scientific journals, such as designing a good introduction to attract reader's attention. Further explanation on what to include in the method section, which results should

be included, how to ensure good flow of the manuscript and attracting reader's interest to keep on reading and sticking to our writing was also elaborated and highlighted. On the second day of the workshop, participants were given an assignment where they had to work on their own manuscript and try to improve it by practising what had been introduced to them during the workshop. All in all, the participants benefited from the workshop and it is hoped that they can practise whatever that has been delivered to them for a better scientific writing.

Dr. Noor Azlinda Ahmad, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

Lawatan IVAT ke PLN Jakarta dan ITB Bandung

JOHOR BAHRU, 1 Ogos 2018 – Pada 22 Julai 2018, seramai 6 staf akademik dari Institut Voltan dan Arus Tinggi (IVAT) telah berlepas ke Jakarta, Indonesia bagi lawatan kerja ke Perusahaan Listrik Negara (PLN) dan Institut Teknologi Bandung (ITB), Bandung. Lawatan selama 5 hari ini adalah bertujuan untuk menambahkan jaringan dan kerjasama dengan kedua-dua badan profesional ini. Lawatan ini juga sebenarnya adalah lawatan timbal balik selepas lawatan PLN dan ITB ke UTM pada Mac 2018. Seramai 6 orang staf IVAT yang menyertai lawatan ini iaitu Prof. Dr. Zulkurnain Abdul Malek, Prof. Dr. Zolkafle Buntat, Dr. Noor Azlinda Ahmad, Dr. Mona Riza Mohd Esa, Dr. Zulkarnain Ahmad Noorden dan Dr. Mohd Hafizi Ahmad.

Lawatan 5 hari dimulakan dengan lawatan ke Kantor Pusat PLN di Jakarta pada 23 Julai 2018. Staf IVAT dibawa ke bilik mesyuarat dan mendengar pembentangan dari PLN dan IVAT juga memberi sedikit penerangan akan tujuan lawatan sebagai menguatkan jaringan yang telah dijalinakan sebelum ini. Perusahaan Listrik Negara merupakan industri yang bertanggungjawab menyediakan dan menyalurkan tenaga elektrik ke seluruh Indonesia termasuk ke semua pulau-pulau utama Indonesia. Selepas selesai sesi perbincangan dan pembentangan di Kantor Pusat, kami kemudiannya dibawa ke salah satu makmal (Laboratorium Daya) milik PLN bertempat di Persero,

Puslitbang, Indonesia. Apa yang menarik adalah staf IVAT semua menerima sebuah buku yang ditulis oleh Dr. Zainal Arifin dari PLN.

Setelah selesai lawatan seharian di ibu pejabat PLN di Jakarta dan salah satu sub-stesyen dan makmal PLN di Persero Puslitbang, staf IVAT meneruskan perjalanan selama 5 jam ke Bandung bertujuan untuk melawat Institut Teknologi Bandung (ITB), Bandung. Staf IVAT bertemu dengan Dr. Umar Khayam yang bertindak sebagai Ketua Program Studi Sarjana untuk Program Teknik Tenaga Listrik (Kejuruteraan Tenaga Elektrik). Beberapa orang staf Sekolah Kejuruteraan Elektrik dan Informatik (SEEI) juga turut serta dalam pertemuan ini. Dalam mesyuarat serta pembentangan yang berlangsung hampir 2 jam di bilik mesyuarat SEEI, pelbagai informasi dan cadangan untuk menguatkan jaringan antara IVAT khususnya dan UTM amnya dengan SEEI khususnya dan ITB amnya telah dibincangkan. Staf IVAT juga dibawa ke Laboratorium Teknik Tegangan dan Arus Tinggi (Makmal Kejuruteraan Voltan dan Arus Tinggi).

IVAT mengucapkan terima kasih kepada ITB dan PLN kerana sudi menerima kunjungan staf IVAT. Semoga jaringan yang terbina terus kekal berpanjangan dan bermanfaat kepada semua.

Dr. Mona Riza Mohd Esa, Institute of High Voltage and High Current,



Staf IVAT bersama beberapa staf PLN di dalam Laboratorium Daya di Persero, Puslitbang.



Gambar selepas selesai bermesyuarat dan pembentangan cadangan penambahbaikan jaringan antara IVAT, UTM dan SEEI, ITB.

IVAT Prepares for ICPADM 2021

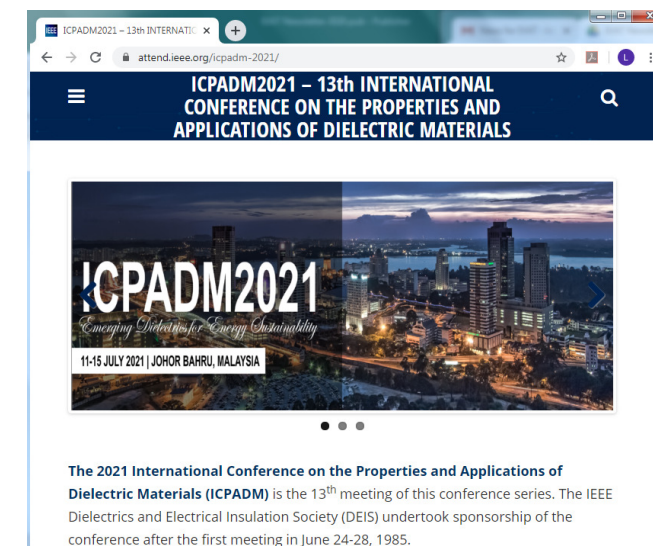
(... continued from page 1)

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).

ICPADM2021 will be held in Johor Bahru, Malaysia, organised by Universiti Teknologi Malaysia, Institute of High Voltage and High Current and sponsored by the IEEE DEIS. More details ICPADM 2021 can be found at:

<https://attend.ieee.org/icpadm-2021/>

Ir. Dr. Lau Kwan Yiew, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Official website of ICPADM 2021.

IVAT's Hari Raya Aidilfitri Celebration 2019

JOHOR BAHRU, 20 Jun 2019 – Malaysia is a nation of many races and religions since its independence day. The multi-ethnic Malaysia community celebrates various festivals such as Hari Raya Aidilfitri, Chinese New Year, Deepavali, Hari Gawai, Christmas.

Hari Raya Aidilfitri is one of the celebrations that staff of IVAT celebrate every year to gather staff, students and also customers that received a service from IVAT. Although Hari Raya Aidilfitri is celebrated by Muslims, many people with different races and

religions can also celebrate this festival together in Malaysia.

This is the uniqueness of a nation called "MALAYSIA". Although there are many religions, races or cultures throughout the country, all Malaysians respect each other's celebrations and also celebrate them together in harmoniously and peacefully.

Mr. Mohamad Syahrin Mohamad, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Group photo of IVAT's staff during the celebration of Hari Raya Aidilfitri at Universiti Teknologi Malaysia.

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 17025:2005 (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: 2005
- 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

Contact details :

Dr. Zulkurnain Abdul Malek
Professor / Director
E-mail: zulkurnain@utm.my

Dr. Zolkafle Buntat
Professor
E-mail: zolkafle@utm.my

Dr. Noor Azlinda Ahmad
Senior Lecturer / Deputy Director
(Service, Consultancy and Training)
E-mail: noorazlinda@utm.my

Dr. Mona Riza Mohd Esa
Senior Lecturer / Deputy Director
(Research, Networking and Commercialisation)
E-mail: monariza@utm.my

Dr. Zuraimy Adzis
Senior Lecturer / Laboratory Head
E-mail: zuraimy@utm.my

Dr. Mohamed Afendi Mohamed Piah
Associate Professor / Head of Department
(Electrical Power Engineering)
E-mail: fendi@utm.my

Ir. Dr. Lau Kwan Yiew
Senior Lecturer / Quality Manager
(Calibration)
E-mail: kwanyiew@utm.my

Dr. Zulkarnain Ahmad Noorden
Senior Lecturer / Quality Manager
(Testing)
E-mail: zulkarnain-an@utm.my

Dr. Mohd Hafizi Ahmad
Senior Lecturer
E-mail: mohdhafizi@utm.my

Office Phone:
+607 553 5615

Official Website:
ivat.utm.my

Address:
Institute of High Voltage and High Current, Block P06, Faculty of Electrical Engineering,
Universiti Teknologi Malaysia, 81310 Johor Bahru, Malaysia.

Development of Antenna as UHF Partial Discharge Sensor in Power Apparatus

(... continued from page 1)

note, partial discharges are localised discharges formed by transient gas ionisation in high voltage dielectric systems when the stress voltage exceeds the critical value that the insulation systems can withstand. They do not cause complete breakdown on the dielectrics, but result in deterioration in the quality of dielectrics over time. This will eventually lead to catastrophic failure of the dielectrics. Therefore, it is very important to detect and diagnose partial discharge phenomena at the early stage to avoid the ultimate failure of dielectrics. In view of the importance, Dr. Umar also shared his research group's experience in developing antennas as UHF sensors to detect partial discharges. A lot of useful tips in developing such antennas were also briefed by Dr. Umar in helping the participants in carrying out their research work. Towards the end of the seminar, intense discussion about partial discharges and their detections took place between Dr. Umar and the partici-



Dr. Umar delivering his seminar.



Dr. Umar (left) receiving a token of appreciation from Prof. Dr. Zulkurnain

pants, with the participants feeling grateful for the information received.

The Director of IVAT, Prof. Dr. Zulkurnain Abdul Malek, sincerely thanks Dr. Umar for sharing his expertise on partial discharges and in developing antennas for detecting partial discharges, and is looking forward to have close collaborations between Universiti Teknologi Malaysia and Institut Teknologi Bandung in the field of high voltage engineering in the future.

Ir. Dr. Lau Kwan Yiew, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

IVAT's Training Programme on Earthing, Bonding and Lightning Protection

JOHOR BAHRU, 15 December 2019 – On 9-13 December 2019, the Director of the Institute of High Voltage and High Current (IVAT), Prof. Dr. Zulkurnain Abdul Malek, and the Past Director of IVAT, Prof. Dr. Hussein Ahmad, jointly delivered a hands-on training programme on Earthing, Bonding and Lightning Protection to 18 Petronas Engineers in Kuala Lumpur. The course involved earthing design, fundamentals and design of lightning protection systems, as well as electromagnetic compatibility. Prof. Dr. Zulkurnain and Prof. Dr. Hussein thank Petronas for inviting them for the training and look forward to have further collaborations between Petronas and IVAT in the future.

Prof. Dr. Zulkurnain Abdul Malek, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Prof. Dr. Zulkurnain in action.



Prof. Dr. Hussein in action.



Group photo of the participants during the training programme.

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?

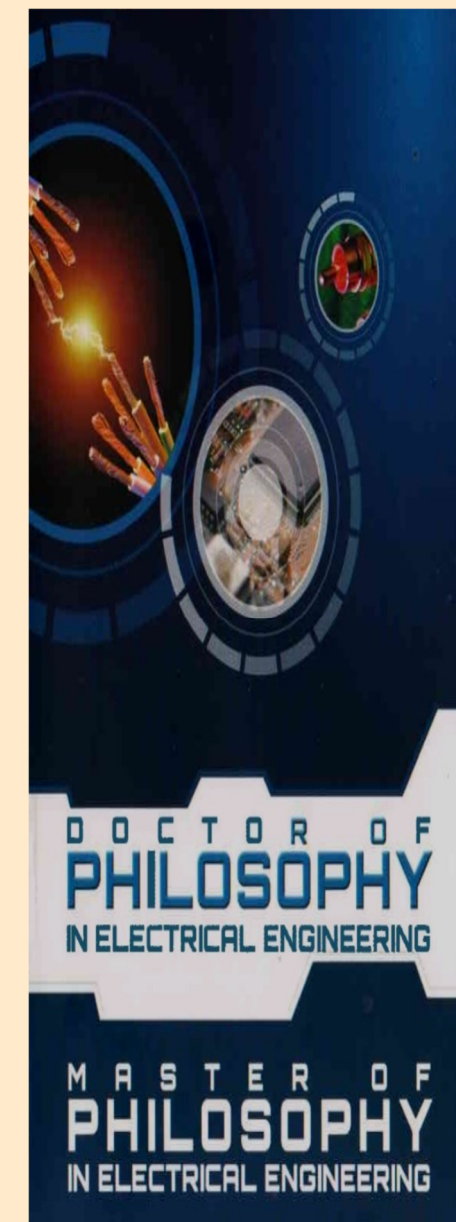
- Our field of electrical and electronic engineering is ranked Top 100 in the world (according to QS World University Rankings by Subject 2020)
- Our high voltage laboratory is the largest in Malaysia
- We have well-equipped high voltage facilities
- We have widely experienced supervisors working on 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/>



Majlis Anugerah Kecemerlangan dan Penghargaan IVAT 2019

JOHOR BAHRU, 3 Disember 2019 – Majlis Anugerah Kecemerlangan dan Penghargaan Staf IVAT merupakan acara tahunan yang akan diadakan pada hujung tahun bagi meraikan dan menghargai jasa dan pengorbanan yang telah diberikan sepanjang tahun kerana telah menaikkan nama IVAT serta mendapatkan sijil akreditasi ISO17025 bagi makmal IVAT.

Majlis ini merupakan anjuran Kelab Kebajikan Staf IVAT yang telah berlangsung di Amari Hotel, Johor Bahru dengan bertemakan “Tradisional”. Suasana makan malam tersebut meriah dengan pelbagai jenis pakaian yang menarik dan memukau.

Majlis juga dihiasi dengan penyampaian beberapa anugerah kepada staf seperti Anugerah Penerbitan, Anugerah

Khidmat Masyarakat, Anugerah Calibration Manager Terbaik, Anugerah Kecemerlangan Staf Sokongan dan Anugerah Khas.

Anugerah tersebut disampaikan oleh Prof. Dr. Zulkurnain Abdul Malek dimana para pemenang dipilih berdasarkan beberapa kriteria yang telah ditetapkan. Selain itu, ada juga sesi cabutan bertuah dan penyampaian hadiah “King and Queen of the Night”.

Diucapkan tahniah kepada para pemenang atas usaha yang dicapai pada tahun ini serta tahniah kepada ahli jawatankuasa yang telah berjaya mengendalikan Majlis Penghargaan ini dengan lancar dan jayanya.

Ms. Nor Eliyana Mazlan, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Gambar kenangan berkumpul ketika majlis anugerah tersebut.

More News on IVAT and MyHVnet

In case you missed the previous news on IVAT, Issue 5 of IVAT Newsletter, published in June 2019, can be downloaded from the following link:

<http://ivat.utm.my/newsletter/>

Meanwhile, the latest news on Malaysian High Voltage Network (MyHVnet), disseminated through 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/>



New Roles for IVAT’s Staff

JOHOR BAHRU, 13 February 2020 – The development of any organisation requires change due to many reasons, including the positions involved in the daily operations. To give the shared role, knowledge and experience to the same level of positions or executives will help in filling in the gaps created when personnel move or retire. Newly appointed staff can gain the experience to further enhance their role in that organisation in stepping up their career.

IVAT is also an organisation that acknowledges this requirement and does this practice for many reasons than described above. On 13 February 2020, a ceremony was held at the Bilik Mesyuarat IVAT to formally address the change of portfolio for the management staff. It was chaired by Dr. Noor Azlinda Ahmad, IVAT’s Deputy Director (Service, Consultancy and Training) and all the support staff were present.

Dr. Mona Riza Mohd Esa has been appointed as the Deputy Director (Research, Networking and Commercialisation) of IVAT, replacing Prof. Dr. Zolkafle Buntat who has retired. Dr. Mona’s previous post of Laboratory Head has been handed down to Dr. Zuraimy Adzis. In the ceremony, the duties file was handed to Dr. Mona by Dr. Noor Azlinda. Meanwhile, Dr. Mona personally handed down the duties file to Dr. Zuraimy. The ceremony ended with both the newly appointed staff giving a short speech on what to expect for their new portfolio. IVAT wishes both of the best of experiences and completion of responsibilities for the continuous development of the institute, locally and globally.

Dr. Zuraimy Adzis, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Dr. Noor Azlinda handed the duties file to Dr. Mona.



Dr. Mona Riza handed the duties file to Dr. Zuraimy.

SOLIDWORKS® CAD for Beginners

JOHOR BAHRU, 26 September 2019 – IVAT successfully organised a workshop on SOLIDWORKS® CAD for Beginners on 25 September 2019. The workshop was conducted and facilitated by Mr. Shah Ridwan Sahrom, IVAT’s marketing officer and had received an overwhelming response from the participants. Most of the participants were postgraduate students and IVAT’s staff. In the workshop, the participants were introduced to some fundamental components on the use of SOLIDWORKS® CAD in their research works, such as how to create parts with complex geometries, assemblies and associated drawing specifically for designing products for commercialisation. The software is a mechanical design auto-

mation application that lets designers quickly sketch out ideas, experiment with features and dimensions, and produce models and detailed drawings. The workshop was designed not only to teach the participants especially the new users on how to use SOLIDWORKS, but also to understand the thought process behind design intent. Indeed, this workshop was the best way for them to get where they wanted to be.

Dr. Noor Azlinda Ahmad, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

Best Postgraduate Student Award

JOHOR BAHRU, 1 November 2019 – One of IVAT's postgraduate students, Dr. Sharin Ab Ghani, who successfully completed his Doctor of Philosophy (PhD) programme with flying colours on 26 June 2019, was selected from amongst the most outstanding postgraduate students to receive an excellence award in a grand event known as Best Postgraduate Student Awards in Pulau Springs Resort, Johor Bahru, on 1 November 2019. Through a special meeting at the Faculty's secretariat level, the award was granted to a few selected students who excelled in their postgraduate studies especially in research. This event, organised by the School of Graduate Studies (SPS), was held in conjunction with the 63rd UTM Convocation, which was scheduled on 2-5 November 2019.

Dr. Sharin started his PhD study at IVAT since early 2016 on a transformer insulation related project entitled "Oxidation Stability and Dielectric Strength Enhancement of Natural Ester Insulating Oil by Optimisation of Antioxidants Mixtures" under Dr. Zulkarnain Ahmad Noorden's supervision, and co-supervised by Dr. Nor Asiah Muhamad (IVAT's former academic staff) from Universiti Sains Malaysia and Dr. Hidayat Zainuddin from Universiti Teknikal Melaka. He managed to published his research findings in 10 research articles in Scopus-indexed journals, with three of them in reputable journals, such as IEEE Transactions on Dielectrics and Electrical Insulation. Currently, Dr. Sharin serves as a senior lecturer at Universiti Teknikal Melaka, Malacca.

Dr. Zulkarnain Ahmad Noorden, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Dr. Sharin (left) and his supervisor, Dr. Zulkarnain, during the award ceremony.

Best Wishes to Shah Ridzwan Sahrom

JOHOR BAHRU, 16 December 2019 – 15 December 2019 was the last day for one of our staff, Shah Ridzwan Sahrom, at the Institute of High Voltage and High Current (IVAT). He has been at IVAT since 2 May 2018. He was appointed as an Assistant Engineer to be in charge of the design and commercialisation of IVAT's research products. He helped a lot especially to academicians in matters related to commercialisation.

His farewell party was organised on 3 December 2019 at Amari Hotel, Johor Bahru, in conjunction with IVAT's appreciation night. To appreciate his work, IVAT had given him a souvenir. It has been an honor working with a wonderful colleague like him over the years.

Mr. Mohd Nazren Mohd Ghazali Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Shah Ridzwan (left) receiving a souvenir from the Director of IVAT.

Bengkel Perancangan Strategik IVAT 2019

JOHOR BAHRU, 5 Disember 2019 – Pada 3 dan 4 Disember 2019, berlangsung di Amari Hotel Johor Bahru, bersempena dengan penganjuran Mesyuarat Kaji Semula Pengurusan (MKSP), Institute Voltan dan Arus Tinggi (IVAT) mengadakan satu bengkel Perancangan Strategik IVAT bagi membincangkan cadangan-cadangan yang akan dirancang bagi menambahbaik pencapaian IVAT untuk tahun 2020. Setiap staf diberikan tugas yang berbeza bagi

memastikan setiap perancangan dapat dilaksanakan dengan berkesan dan teratur. Semoga staf IVAT dapat melaksanakan tugas seperti yang telah diamanahkan dan terus cemerlang di masa akan datang.

Dr. Mona Riza Mohd Esa, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

Gambar berkumpulan staf IVAT yang hadir bengkel tersebut.



Laboratory Visit by Undergraduate Students at IVAT

JOHOR BAHRU, 11 November 2019 – On 11 November 2019, undergraduate students of Universiti Teknologi Malaysia (UTM) undertaking the course "Introduction to Electrical Engineering" had the chance to visit the high voltage laboratory of the Institute of High Voltage and High Current, UTM. During the visit, the students had a tour around the laboratory to know better about practical high voltage equipment, such as the impulse generator, AC/DC generator, transformer and switchgear. The importance of high voltage insulation was also conveyed to the students through a laboratory demonstration of glass insulation

flashover. In addition, the students were also briefed about safety concerning the use of high voltage laboratory.

The laboratory tour intended to enhance the students' in-class learning experience. This is in line with UTM's initiative to promote teaching-research nexus among the students to ensure that teaching and learning activities of the students are enhanced through research experience.

Ir. Dr. Lau Kwan Yiew, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Group photo during the laboratory visit.

Welcome to IVAT

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 academician, 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.



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Published by:

**Institute of High Voltage and High Current
(IVAT)**

Block P06

Universiti Teknologi Malaysia
81310 Johor Bahru, Johor
Malaysia

Phone: +60 7 553 5615

Fax: +60 7 557 8150

E-mail: ivat@utm.my

Website: ivat.utm.my

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. It was initially an educational laboratory which provides facilities for carrying out experiments, research and consultancy services in high voltage engineering, as early as the 1970s.

The establishment of IVAT stems out from the needs of the country for a centre which carries out research and development, test and calibration works in high voltage areas, so that efficient technologies and power system apparatus can be effectively employed for the transmission and distribution to the consumer of electrical energy.

In 1992, the institute became the first institution in the country to be accredited to handle high voltage test and calibration works according to ISO/IEC Guide 25. In 2004, IVAT was accredited with the ISO/IEC 17025 in the field of high voltage electrical calibration. In certification, IVAT has also successfully migrated to MS ISO/IEC 17025 since July 2007 till date. Recently in 2013, IVAT was accredited with the on-site calibration and the scope of calibration had been extended up to 180 kV AC (alternating current), 180 kV DC (direct current) and 140 kV impulse.