

IVAT Newsletter

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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).



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IVAT Engages in Community Service

MERSING, 29 March 2022 – Another community project named as “Solar Photovoltaic (PV) Installation in Indigenous Village of Tewowoh, Mersing, Johor”, partially funded by IVAT, Universiti Teknologi Malaysia (UTM), has been successfully officiated on 29 March 2022 by Ustaz Mohd Nazri Chik, Group Chief Financial Inclusion Officer of Bank Islam Malaysia Berhad (BIMB), with the present of the Director of UTM Centre of Community and Industry Network, Assoc. Prof. Dr. Johari Surif and the Director of IVAT, Prof. Dr. Zulkurnain



Project team members with one of the installed solar PV system at the indigenous village of Tewowoh.

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IVAT Successfully Held ICPADM 2021



ICPADM 2021's virtual conference platform.

JOHOR BAHRU, 17 August 2021 – The 13th International Conference on the Properties and Applications of Dielectric Materials (ICPADM) was successfully held on 12-14 July 2021. The 13th ICPADM 2021 was a virtual conference hosted by Universiti Teknologi Malaysia (UTM) via IVAT and sponsored by the IEEE DEIS and TNB Labs Malaysia. The theme of the conference was “Emerging Dielectrics for Energy Sustainability”.

The conference began with an opening ceremony on the first day, with the General Chair of ICPADM 2021, Prof. Dr. Zulkurnain Abdul Malek, the International Advisory Committee Chair of ICPADM, Dr. Harry Orton, and the Vice Chancellor of UTM, Prof. Datuk Ts. Dr. Ahmad Fauzi Ismail delivering their opening remarks, followed by a video presentation of “Malaysia Truly Asia” by Tourism Malaysia.

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IVAT Director's Remarks



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

We are grateful now that most of our usual day-to-day business is almost back to normal. I believe research and service activities will once again become vibrant. As IVAT's leadership is now under transition, this is my last remarks as the Director of IVAT. I would like to thank the management of Universiti Teknologi Malaysia (UTM) for giving me the opportunity and trust to lead UTM IVAT centre of excellence. I would also like to thank UTM School of Electrical Engineering and its top management for their unbroken support and encouragement throughout the years.

To all our customers and collaborators, thank you for your loyal support! My special thanks to all current and past IVAT's staff for their relentless cooperation for the past eleven years I held the directorship. During that period, IVAT went through many changes and transformations in terms of its staff, organisational structure, as well as global prominence and scholarly excellence, to name a few.

IVAT plays a big role in pioneering the research cooperation among high voltage players in Malaysian universities and industries with the birth of MyHVnet in 2014, and in the provision of high voltage accredited test and calibration services, as well as expert consultations and training to many of our customers in Malaysia. At the same time, the active research activities, especially in three niche areas, namely, lightning, nanodielectrics, and energy storage, have borne some fruits in terms of increased research grants, international collaborations, high impact publications and citations, chairmanships of notable conferences and professional societies and committees, national and international awards, intellectual properties, and postgraduate students from many parts of the world.

I would like to congratulate all IVAT's academic and support staff, post-doctoral fellows and research students, as well as our collaborators, for their efforts and contributions in making IVAT prominently visible locally as well as internationally. Without your unwavering support and efforts, IVAT will never be as it is today. To the new Director of IVAT, I wish you all the best! May IVAT propel to greater heights and finally achieve its vision of being a well-known centre of excellence in the aforementioned niche areas.

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IVAT's Hari Raya Celebration

JOHOR BAHRU, 31 May 2022 – The Hari Raya celebration for IVAT's staff members and students was successfully held on 30 May 2022. The celebration started around 11 am with the arrival of very important guests from various departments and schools at Universiti Teknologi Ma-



Photo taken during Hari Raya celebration.

aysia. Not to forget, the students of IVAT also received special invitation for this event. After the recitation of doa from Assistant Engineer Mr. Mohd Syahrin, the Director of IVAT, Prof. Dr. Zulkurnain Abdul Malek was invited to deliver his speech. Among all, Prof. Dr. Zulkurnain thanked the committee members of IVAT's Welfare Club (KKS) for arranging the ceremony and hoped that the event would be annually celebrated as part of IVAT KKS's activities. He also stressed on the achievement of IVAT's KPIs, where 20% of annual increment was expected this year. After the speech, all guests are invited for the meals. A variety of delicious dishes were available, including lemang, satay, cakes, desserts, fruits, ketupat, and many more.

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

UTM Board of Directors Chairman Visits IVAT

JOHOR BAHRU, 29 November 2021 – Universiti Teknologi Malaysia (UTM) Board of Directors' Chairman Tan Sri Azman Hj. Mokhtar visited IVAT on 23 November 2021. His visit, accompanied by the Dean of Faculty of Engineering Prof. Ts. Dr. Ruzairi Abdul Rahim, the Chairman of School of Electrical Engineering Prof. Ir. Dr. Mohd Wazir Mustafa, and several other university's staff, was warmly welcomed by the Director of IVAT Prof. Dr. Zulkurnain Abdul Malek and all IVAT's staff.

During the visit, Prof. Dr. Zulkurnain toured Tan Sri Azman around the high voltage laboratory to have an overview of the laboratory's high voltage facilities. The use of a Tesla coil in producing high voltage, low current, high frequency AC elec-

tricity was also demonstrated. The visit was truly engaging between Tan Sri Azman and the staff of IVAT, where they had the opportunity to engage with each other at different booths setup to showcase high voltage research and consultancy services offered by IVAT, including calibration, testing, and training activities.

IVAT sincerely thanks Tan Sri Azman for visiting the laboratory and providing invaluable insights in the operation of the laboratory. IVAT looks forward to having more similar events in the future.

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



Photo with Tan Sri Azman (third from right)



Showcase of IVAT's research and consultancy services



Prof. Dr. Zulkurnain explaining to Tan Sri Azman (white shirt) about the laboratory's high voltage facilities

Successful Officiation Ceremony of Another Community Project: Solar PV Installation for Raft Village Tanjung Surat, Johor



Group photo of Tuan Mohd Muazzam Mohamed (fourth from left) with Head of Village, En. Amin A Rahman (sixth from left), Prof. Ts. Dr. Mohd Hamdan Hj Ahmad (eighth from left) and representatives from the project collaborators.

JOHOR BAHRU, 02 January 2022 – A community service relation (CSR) project named as “Solar PV Installation for Raft Village Tanjung Surat, Johor”, led by an IVAT’s staff member, Ts. Dr. Zulkarnain Ahmad Noorden, has been successfully officiated on 28 December 2021 by Tuan Mohd Muazzam Mohamed, Group Chief Executive Officer, Bank Islam Malaysia Berhad (BIMB), with the present of the Deputy Vice Chancellor (Development) of Universiti Teknologi Malaysia (UTM), Prof. Ts. Dr. Mohd Hamdan Bin Hj Ahmad, Chair of UTM School of Electrical Engineering, Prof. Ir. Dr. Mohd Wazir Mustafa and Director of UTM Centre of Community and Industry Network, Assoc. Prof. Dr. Johari Surif. Representatives from the project collaborators – Director General of the Jabatan Tenaga Manusia, Directors of Institut Latihan Perin-

dustrian (ILP) Kepala Batas and ILP Pasir Gudang, Directors of Politeknik Ibrahim Sultan and Politeknik Port Dickson, and Head of Program of Kolej Komuniti Segamat 2 – also attended the ceremony.

The project, which is one of the CSR programmes of UTM- BIMB through a crowdfunding platform called Sadaqa House Bank Islam, started in March 2021, and was successfully completed in early December 2021. A total of RM 87,800 fund under the platform was utilised to supply off-grid solar PV system to a total of 13 raft houses at the village.

Previously, there was no continuous electricity supply in this village and some residents only made their own wiring of electricity supply from land that was far away and without a safe electrical protection system. With full sponsorship from Sadaqa House Bank Islam and installation initiatives by UTM and its collaborators, the installed solar PV system enables the residents to safely use continuous electricity supply for 2 or 3 LED lights and a fan in each of the 13 houses. In fact, the village has become the only raft house village that uses solar renewable electricity supply in Malaysia.

In line with one of its values “Sustainability” and tagline “Towards a sustainable excellence through integrity and synergy”, IVAT continues to support its staff members contributing towards any sustainability-related projects.

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



Photo taken at the Head of Village, En. Amin A Rahman’s raft house after the officiating ceremony. From the left: Dr. Zulkarnain, Prof. Ir. Dr. Mohd Wazir, Tuan Mohd Muazzam Mohamed, Prof. Ts. Dr. Mohd Hamdan Bin Hj Ahmad and Ustaz Mohd Nazri Chik.

IVAT Supports Community Service and Knowledge Transfer Programme

... (continued from page 1)

Abdul Malek. Representatives from the project’s partners – Jabatan Kemajuan Orang Asli (JAKOA) Mersing, Institut Latihan Perindustrian (ILP) Mersing, Politeknik Port Dickson and Kolej Komuniti Segamat 2 – also attended the ceremony. The project, which is one of the community programmes of UTM-BIMB through a crowdfunding platform called Sadaqa House BIMB, started in March 2021, and successfully ended in early March 2022. A total of RM 114,200 fund under the platform was utilised to supply off-grid solar PV system to a total of 19 houses at the village.

The village, which consists of 145 residents with a capacity of 19 houses, has never enjoyed a continuous supply of electricity since it was built due to the location of the village which is located far inland and challenging geographical factors. According to JAKOA, it is the last indigenous village in Johor that has never received any assistance for electricity.

Residents usually use a small capacity petrol generator for 4 hours at a cost of RM 10.00 per house or the equivalent of RM 300.00 per month. Out of concern for this problem, UTM through its project leader, Assoc. Prof. Ts. Dr. Jasrul Jamani

Jamian, and another 9 researchers from the School of Electrical Engineering (SKE), including 2 IVAT’s staff – Ts. Dr. Mona Riza Mohd Esa and Ts. Dr. Zulkarnain Ahmad Noorden – has proposed to BIMB to develop an off-grid solar PV system for each house in the village.

“Through the sponsorship of Sadaqa House BIMB, the UTM group in collaboration with 5 other partners, namely ILP Kepala Batas, ILP Mersing, Politeknik Port Dickson, Politeknik Muadzam Shah, and Kolej Komuniti Segamat 2 has successfully installed solar PV and new wiring for lights, fans, and mobile phone chargers for all the houses in the village. In addition, energy limiting technology is also used to ensure that the system can last at least 5 to 20 years. With the installed system, the residents say they no longer need to turn on the generator in the early morning and can avoid noise in the early morning. “In addition, the savings from the petrol’s cost help increase their monthly income slightly”, said Assoc. Prof. Ts. Dr. Jasrul Jamani.

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



Group photo among the project funders and partners. Front row from left: Assoc. Prof. Ts. Dr. Jasrul Jamani, Mr. Noran – the village’s head, Mr. Shukri from ILP Mersing, Ustaz Mohd Nazri of BIMB, Assoc. Prof. Dr. Johari of UTM CCIN, Prof. Zulkurnain of UTM IVAT, Mr. Nor Faizzi of JAKOA Mersing, and Mr. Abdul Rahim of Politeknik Port Dickson.



Group photo of Assoc. Prof. Dr. Johari, Prof. Dr. Zulkurnain, and project partners with UTM team, which consisted of lecturers and undergraduate and postgraduate students of SKE UTM.



Assoc. Prof. Dr. Johari (left) presenting a token of appreciation to Prof. Dr. Zulkurnain during the officiation ceremony.

IVAT's Research Students Win Gold Medal Awards at GREx-2021



Gold Medal Awards for IVAT's research students, Mr. Rai Naveed Arshad and Mr. Nur Faizal Kasri.

JOHOR BAHRU, 17 June 2021 – IVAT's staff members extend their heartiest congratulations to Mr. Rai Naveed Arshad and Mr. Nur Faizal Kasri for winning Gold Medal Awards at the Graduate Research Exhibition (GREx-2021). Both of them are IVAT's PhD students. Mr. Rai won the award with his project entitled "Electroporator for Fruit Juice Pasteurisation" while Mr. Nur Faizal won the award with his project entitled

"Development of Pulsed Electric Field Technology in Food Processing Applications".

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

IVAT's Director Delivers Invited Lecture



Invited lecture of Prof. Dr. Zulkurnain at UNIMAS.

JOHOR BAHRU, 21 June 2021 – IVAT's Director, Prof. Dr. Zulkurnain Abdul Malek, delivered his lecture to over 100 electrical and electronic engineering students and staff at Universiti Malaysia Sarawak (UNIMAS). Prof. Dr. Zulkurnain is currently an Adjunct professor of UNIMAS and will continue

to contribute his expertise in high voltage towards the growth of UNIMAS.

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

Welcoming New Members to IVAT



JOHOR BAHRU, 02 January 2022 – IVAT staff members welcome a new assistant engineer, Mr. Abdul Syafiq Bin Abdullah Shuhaimi, to join IVAT in January 2022. Mr. Abdul Syafiq gained several years of experience working in the private sector prior to joining IVAT. It is hoped that his working experience will contribute to IVAT's laboratory work.

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



JOHOR BAHRU, 27 June 2022 – IVAT staff members welcome a new postdoctoral fellow Dr. Salem Mgammal Awadh Nasser Al-Ameri, to join IVAT, under the supervision of Prof. Dr. Zulkurnain Abdul Malek. His appointment is for 2 years starting 01 July 2022. Dr. Salem's PhD specialises in Intelligent Frequency Response Analysis of Electric Power System Assets using Deep Learning Approach.

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



JOHOR BAHRU, 01 July 2021 – IVAT staff members welcome a new postdoctoral fellow Dr. Ali Ahmed Ali Salem, to join IVAT, under the supervision of Assoc. Prof. Ir. Ts. Dr. Lau Kwan Yiew. His appointment is for 2 years starting 01 July 2021. Dr. Ali received his B.Eng. in Electrical Engineering (Power) from Tishreen University, Syria in 2009. He received his M.Eng. degree in Electrical Engineering (Power) from Universiti Tun Hussien Onn Malaysia (UTHM), in 2016, and then his Ph.D. degree in High Voltage Engineering, also from UTHM, in 2020. His research interest includes the dynamic arc modeling of pollution flashover on high-voltage outdoor insulators.

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



JOHOR BAHRU, 01 July 2021 – IVAT staff members welcome a new Visiting Research Fellow, Prof. Dr. Behnam Mohammadi-Ivatloo, to join IVAT. Prof. Dr. Behnam is also a Senior Research Fellow at the Department of Energy Technology, Aalborg University, Denmark. He is expected to physically visit UTM in April 2022. Prof. Dr. Behnam received his B.Sc. in Electrical Engineering from University of Tabriz in 2006. He received his M.Sc. degree in Electrical and Computer Engineering from Sharif University of Technology, Tehran, in 2008, and then Ph.D. degree in Electrical and Computer Engineering, from the same university, in 2012. He was attached to the University of Tabriz as an Assistant Professor from 2012, then Associate Professor from 2016, and then Professor from October 2019. Since November 2019, he has been on leave to Aalborg University. His research interest includes Hybrid Renewable and Energy Systems, Renewable Energy Integrated Microgrids, Smart Home, Smart Grids, Electric Vehicles, Artificial Intelligence in Energy Systems, Application of Optimization Methods in Energy Systems, Energy Storage Systems, Demand Response. His Scopus H-index is 48.

Prof. Dr. Zulkurnain Abdul Malek, Institute of High Voltage and High Current, 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 17025:2017 (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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ICPADM 2021 Virtual Conference



From left: Opening remarks by Prof. Dr. Zulkurnain, Dr. Harry Orton and Prof. Dr. Ahmad Fauzi, and "Malaysia Truly Asia" video presentation.



From left: Plenary lectures by Prof. Dr. Gian Carlo Montanari, Prof. Emeritus Dr. Alun S. Vaughan, Prof. Dr. Shengtao Li, and Prof. Dr. Masayuki Hikita.

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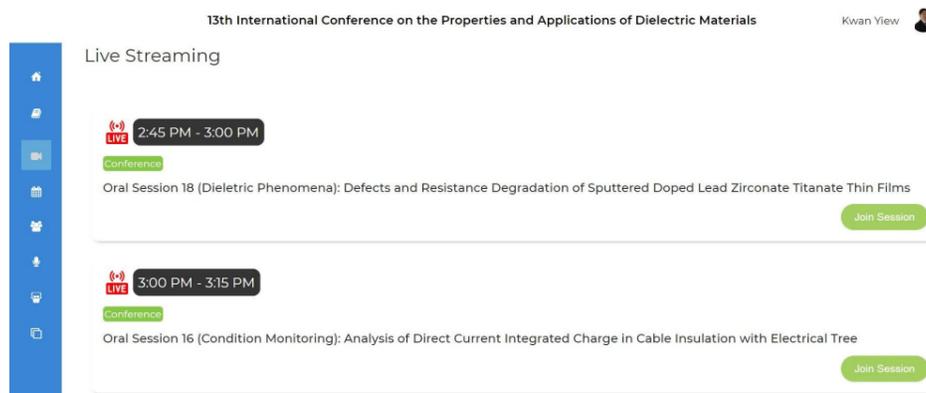
Four plenary lectures were delivered live over the 3-day conference. The first plenary lecture was delivered by Prof. Dr. Gian Carlo Montanari (Florida State University, USA) on "Reliability of HVDC and MVDC Electrical Asset: The Challenge of Insulation Design". The second plenary lecture was delivered by Prof. Emeritus Dr. Alun S. Vaughan (University of Southampton, UK) on "Nanocomposites: Pathways to Dielectric Success". The third plenary lecture was delivered by Prof. Dr. Shengtao Li (Xi'an Jiaotong University, China) on "High Dielectric and Energy Storage Polymer Dielectrics". The last plenary lecture was delivered by Professor Dr. Masayuki Hikita (Kyushu Institute of Technology, Japan) on "Electrical

Insulation Properties of Innovative Functionally Insulating Material toward Application to Electric Power Apparatus".

A total of 149 participants from 21 countries participated in the conference. 117 papers were presented over 18 oral sessions based on six main tracks, namely, condition monitoring, dielectric phenomena, electrical insulation, general dielectrics, nanomaterials, and others. A virtual tour was also carried out through 5 video presentations prepared by TNB Labs Malaysia, TNB Research Malaysia, and Universiti Teknologi Malaysia.

During the closing ceremony, 5 Best Paper Awards were announced. Prof. Dr. Zulkurnain and Dr. Orton delivered their closing remarks and thanked the committee members, the sponsors, the plenary speakers, the reviewers, and all the participants for making the 13th ICPADM 2021 a success. A video on the 14th ICPADM 2024 to be held in Phuket, Thailand, was also presented.

Prof. Dr. Zulkurnain Abdul Malek and Assoc. Prof. Ir. Ts. Dr. Lau Kwan Yiew, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



ICPADM 2021's virtual conference platform.

IVAT Won Sustainability Award

JOHOR BAHRU, 22 September 2021 – IVAT won the Sustainability Award (Research Institutes) based on its 2020 performance at the 2021 Citra Karisma event held at Universiti Teknologi Malaysia (UTM). The event, which was conducted virtually for the first time, started at 2.30pm, and was also attended by the UTM Board of Directors' Chairman, Tan Sri Dato' Azman Mokhtar. This was IVAT's first attempt for the award and IVAT successfully won the award after spending its relentless effort in promoting sustainability in line with the university's aspiration.



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

Technical Visit to High Voltage Laboratory

KUALA LUMPUR, 01 June 2022 – To cope with evolving high voltage technology, IVAT continues to seek improvements in its facilities for the purpose of research, consultancy, and teaching especially its decades-old facilities such as the 2 MV impulse voltage system. To explore more options, three IVAT staff members, Ts. Dr. Zulkarnain Ahmad Noorden, Mr. Zamri Kassim and Mr. Mohd Azrul Othman had a technical visit to High Voltage Laboratory, Universiti Pertahanan Malaysia (UPNM) with the main aim of learning its high voltage systems in term of their reliability, operation and customer service.



Group photo of (from left): Mr. Azrul, Ts. Dr. Zulkarnain, Prof. Mohd Taufiq, and Mr. Zamri during the technical visit.

At 11:30 am, the IVAT's delegates were welcomed by the head of the laboratory, Prof. Dr. Mohd Taufiq Ishak and they were brought to the laboratory. Discussion on the three main high voltage systems available at the laboratory, namely, high voltage alternating current (HVAC), high voltage direct current (HVDC), and multistage impulse systems were held considering the assemblies, operation, measurement capability-accuracy, and after-sale service. IVAT thanks Prof. Dr. Mohd Taufiq for his warm



Prof. Mohd Taufiq (second from left) explaining the multi-stage impulse generator system.



Photo of IVAT's delegates with one of the exhibition teams at "Majlis Sedekad TNB Labs dan Hari Bersama Pelanggan".

hospitality and fruitful discussion. The technical visit was arranged in conjunction with "Majlis Sedekad TNB Labs dan Hari Bersama Pelanggan", which was held at Bangi Avenue Convention Centre, Selangor, and was also attended by the IVAT's delegates after visiting the UPNM's high voltage laboratory.

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

Knowledge Transfer Programme Using PVedukit UTM at Raft Village of Tanjung Surat, Johor

TANJUNG SURAT, 23 October 2021 – The School of Electrical Engineering (SKE), Universiti Teknologi Malaysia (UTM), in collaboration with Bank Islam Malaysia Berhad as the main funder, will implement a community service project, namely, “Off-Grid Photovoltaic (PV) System for Raft Village Community of Tanjung Surat, Johor”, led by IVAT’s staff, Dr. Zulkarnain Ahmad Noorden. The raft village of Tanjung Surat is in an isolated area of Southeast Johor, Malaysia. Majority of the community live in so-called raft house without continuous electricity supply since its location is far from the nearest power utility source. Some of the community use a small diesel generator per house that can only supply up to six hours of electricity everyday. Under mutual collaboration between UTM and Bank Islam Malaysia Berhad, via a programme called “Sadaqa House”, an individual off-grid PV system will be developed and installed for each raft house at the village, which enables continuous electricity supply to a total of 13 houses. With the installation of the off-grid PV system and proper protection system, the community will be able to experience safe and continuous electricity supply for the lighting and fan system. The total sponsored amount obtained to set up the off-grid PV system is RM 87,800.00.

Therefore, to ensure the community preparedness towards the utilisation of off-grid PV system and its basic maintenance, a knowledge transfer programme was successfully organised by UTM SKE in collaboration with the Institute of Electrical and Electronics Engineers (IEEE) Power and Energy Society

(PES) Malaysia, Institut Latihan Perindustrian (ILP) Pasir Gudang, and IEEE UTM Student Branch at the village. The programme was supported by IEEE R10 Educational Activities Committee via the “Reaching Local Initiatives 2021” grant. A total of 3 lecturers from UTM SKE, namely, Ts. Dr. Zulkarnain Ahmad Noorden, Assoc. Prof. Ts. Dr. Jasrul Jamani Jamian, and Ir. Dr. Syed Norazizul Syed Nasir with 3 lecturers from ILP Pasir Gudang and 6 students of IEEE UTM Student Branch participated in the knowledge transfer programme. The programme was attended by a total of 11 house residents who are the heads of families for the 13 houses in the village. With the use of an educational kit known as PVedukit UTM, easy-to-understand experiments related to the system, such as the shadow effect on solar panel output, the need to ensure solar panels are always 100% exposed to sunlight, battery requirements in supplying continuous electricity, and the need of simple maintenance were carried out with the community of the village. Timeline description of the upcoming off-grid PV installation project and the necessary preparations were also disseminated to the community of the programme. An increase of knowledge and preparedness among the community with regard to off-grid PV can be seen after the completion of the knowledge transfer programme.

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



Top: Some of the raft houses at Raft Village, Tanjung Surat, Johor.

Left: Easy-to-understand experimental session of solar PV system using an educational kit “PVedukit UTM” with the raft village community of Tanjung Surat, Johor.

IVAT’s Strategic Planning Workshop Cum Management Review Meetings Successfully Held

PORT DICKSON, 11 December 2021 – IVAT recently held its strategic planning workshop cum management review meetings at the Avillion Hotel, Port Dickson, Negeri Sembilan. The 3-day event, held from 9-11 December 2021, was attended by almost all IVAT’s staff members.



Discussion during management review meeting.

On the first day, a strategic planning workshop was conducted to outline IVAT’s blueprint that is aligned to UTM envision 2025. Detailed discussion among IVAT’s staff members on the latest achievements of IVAT’s Key Amal Indicators was carried out. This was followed by a brainstorming session held among the staff members in 2 main areas, i.e., research and services, where all participating members exchanged their ideas on ways to improve IVAT’s achievements in positioning IVAT as a centre of excellence in high voltage.

On the second day, the management review meeting for IVAT’s calibration laboratory, accredited under the MS ISO/IEC 17025 standard, was carried out. Various matters regarding the calibration activities of the laboratory were discussed. These included the review of the objectives and policies relevant to the calibration laboratory, the analysis of risks and improvements associated with the calibration activities, and the implementation of corrective and preventive actions for the laboratory. On the third day, similar management review discussion was carried out, but for IVAT’s testing laboratory, also accredited under the MS ISO/IEC 17025 standard.

To appreciate the contributions of IVAT’s staff members throughout the year, an appreciation ceremony was also conducted at the hotel. Awards such as the Best Research Grant Award, Best Publication Award, Best Social Responsibility Award, and Best Service Award were presented to the respective staff members. Not forgotten, various team building activities were held at the Port Dickson Beach on the last day, where IVAT’s staff members had the opportunities to strengthen their tie through the activities. All IVAT’s staff members are thankful for participating in such a fruitful event and look forward to a successful year ahead.

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



Group photo.

Congratulations

to the
Institute of High Voltage and High Current

on the
**Successful renewal of MS ISO/IEC 17025: 2017 Accreditation
SAMM 285 (Calibration Laboratory)
SAMM 709 (Testing Laboratory)**

**ANUGERAH PENERBITAN
PENULIS DALAM JURNAL BERINDEKS (CoE)**

Tahniah!

**CITRA
KARISMA**

Prof. Dr. Zulkurnain B. Abd. Malek
Dr. Mona Riza Binti Mohd Esa
Prof. Madya Dr. Lau Kwan Yiew
Dr. Mohd Hafizi Bin Ahmad
Dr. Zulkurnain Bin Ahmad Noorden

Congratulations

to
TS. DR. MONA RIZA MOHD ESA

for being reappointed as
Deputy Director (Research, Networking and Commercialisation)

of
Institute of High Voltage and High Current

from 01 January 2022 until 31 December 2022

from all IVAT Staff

Congratulations

to
TS. DR. NOOR AZLINDA AHMAD

for being reappointed as
Deputy Director (Service, Consultancy and Training)

of
Institute of High Voltage and High Current

from 01 January 2022 until 31 December 2022

from all IVAT Staff

Congratulations

to
TS. DR. ZULKARNAIN BIN AHMAD NOORDEN

Quality Manager (Testing)

for being appointed as
**Signatory for the Testing Laboratory (SAMM 709)
of the Institute of High Voltage and High Current (IVAT)**

by
Standards Malaysia

from all IVAT Staff

**Setinggi-tinggi
Tahniah**

Ts. Dr. Zulkarnain Ahmad Noorden

atas perakuan pendaftaran sebagai
Pengurus Tenaga Elektrik (REEM)

oleh
Suruhanjaya Tenaga

daripada : Semua Staf IVAT

Congratulations

Assoc. Prof. EUR ING Ir. Ts. Dr. Lau Kwan Yiew

for being conferred the designation of
European Engineer (EUR ING)

by
**European Federation of National
Engineering Associations (FEANI)**

from: All IVAT Staff

Congratulations

to
ASSOC. PROF. IR. TS. DR. LAU KWAN YIEW

Quality Manager (Calibration)

for being appointed as
**Signatory for the Calibration Laboratory (SAMM 285)
of the Institute of High Voltage and High Current (IVAT)**

by
Standards Malaysia

from all IVAT Staff

Heartiest Congratulations to Prof. Dr. Zulkurnain

UTM Sekolah Kejuruteraan Elektrik

Tahniah
diucapkan kepada
PROF. DR. ZULKURNAIN BIN ABD. MALEK

Di atas perantikan sebagai
**PENGARAH
PUSAT PENGURUSAN PENYELIDIKAN
(RMC)**

Semoga dapat menjalankan
tugas dengan amanah dan cemerlang
Berkuatkuasa
2 Julai 2022 - 1 Julai 2025
Ucapan daripada warga
Sekolah Kejuruteraan Elektrik

5 Star QS Overall Rating, TOP 40 Best Universities in Asia, TOP 20 Universities under 50 years of establishment

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IVAT's staff members extend their heartiest congratulations to Prof. Dr. Zulkurnain Abdul Malek for being appointed as the Director of the Research Management Centre, Universiti Teknologi Malaysia, beginning 02 July 2022. IVAT also wishes to thank Prof. Dr. Zulkurnain for his excellent leadership at IVAT and hopes he will lead the Research Management Centre to reach new heights.



IVAT's staff members extend their heartiest congratulations to Prof. Dr. Zulkurnain Abdul Malek for being appointed as UTM Senate Member effective from 13 October 2021 until 15 January 2023. Prof. Dr. Zulkurnain is also appointed as Senate Representative in several permanent senate committees (Examination and Graduation, Research and Innovation, and University Policies and Entities). He is also appointed as member in the Technical Committee (University Policies and Entities).

More News on IVAT and MyHVnet

In case you missed the previous news on IVAT, Issue 8 of IVAT Newsletter, published in June 2021, 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/>



Heartiest congratulations from all IVAT's staff members!

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:

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(IVAT)**

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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. Since 2013, IVAT has been accredited with the on-site calibration and the scope of calibration has been extended up to 180 kV AC (alternating current), 180 kV DC (direct current) and 140 kV impulse. Beginning 2015, IVAT has been accredited with power cable AC voltage withstand test. Recently in 2020, IVAT has successfully migrated to the latest MS ISO/IEC 17025:2017 standard.