

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 welcomes visitors

Research and Training Collaboration between IVAT and BBC Malaysia



The completed PILC-XLPE transition cable joint.

JOHOR BAHRU, 23 February 2017 – IVAT has embarked in a joint-venture project, namely as “Research and Testing Collaborations on Power Cable Transition Joints”, with Behr Bircher Cellpack Malaysia Sdn. Bhd. (BBCMY). The project consisted of 5 modules; 1) Introduction to Cellpack products, 2) Paper insulation lead cable (PILC) and cross-linked polyethylene

(XLPE) cables construction, 3) Introduction to PILC-XLPE transition cable joint component, 4) Transition joint installation steps and 5) Laboratory testing. Modules 1 to 4 were conducted as a 1-day training and hands-on session at the BBCMY factory in Gelang Patah, while

(continued on page 2...)

Research Seminar on High Voltage Engineering Successfully Held



Dr. Zulkarnain delivering his research talk on supercapacitors

JOHOR BAHRU, 27 April 2017 – A research seminar on high voltage engineering was successfully organised by the Department of Electrical Power Engineering (POWER), Faculty of Electrical Engineering (FKE), Universiti Teknologi Malaysia (UTM) and co-organised by IEEE Dielectrics and Electrical Insulation Society (DEIS) Malaysia Chapter on 27 April 2017 at FKE, UTM Johor Bahru. Around 100 undergraduate students undertaking

(continued on page 5...)

IVAT Director's Remark



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

I am delighted that we are able to meet again in IVAT Newsletter. In this issue, news happening between June 2016 and May 2017 is highlighted.

For the past one year, IVAT had notably achieved the followings: (i) appointed as an MS ISO/IEC 17025 consultant for UTM-MPRC Institute for Oil and Gas, (ii) secured a three-year contract with Petronas Group Technical Solutions (GTS) through partnership with Universiti Teknologi Malaysia's spin-off company, E Life Solutions Plt. on an electromagnetic compatibility project; (iii) enhancement of infrastructure (new seminar room and postgraduate areas); (iv) signed Letter of Co-operation (LOC) with Tianu Sdn. Bhd.; secured grants worth over RM 100k from Universitas Sriwijaya (UNSRI); (v) two staff members appointed in UTM Shine programme; (vi) conducted various short courses (internal quality audit, measurement uncertainty, COMSOL, CDEGS,

SAMM accreditation awareness, etc.); (vii) secured the chairmanship (Dr. Lau Kwan Yiew) of the Institute of Electrical and Electronics Engineers Dielectrics and Electrical Insulation Society (IEEE DEIS) Malaysia Chapter; (viii) secured the visiting status at several overseas universities; and (ix) scored excellently in the Higher Institution Centre of Excellence (HICoE) benchmark for 2016. Meanwhile, IVAT had to bid farewell to five of its academic staff members – Dr. Nouruddeen Bashir Umar, Dr. Muhammad Abu Bakar Sidik, Dr. Yanuar Zulardiansyah Arief, Dr. Nor Asiah Muhamad (moved to other places) and Assoc. Prof. Dr. Mohd Muhridza Yaacob (retired).

I would like to take this opportunity to thank each and everyone of IVAT's staff for their full co-operation and relentless effort in heightening IVAT's reputation globally. IVAT is aiming high to achieve its HICoE status by 2017; IVAT's hard work within the next 6-12 months will be critical. God willing, the aim will be achieved.



Mr. Sapto (third from left) and Mr. Dody (sixth from left) explaining the theoretical lesson on cable joint transition during the training session at BBCMY Gelang Patah.

(... continued from page 1)

Module 5 was carried out as a 2-day laboratory testing work at IVAT. A team of 4 members of academic staff and 1 member of technical staff from IVAT participated the 1-day training. The training started at 9:00 am on 22 February 2017, welcomed by the BBCMY's Managing Director, Mr. Hanspeter Ritzmann and facilitated by two experienced engineers from the company, Mr. Sapto Endar Djuliarso (Technical Engineer) and Mr. Dody Ismoyo (Application Technology Engineer). During the 1-day training session, the participants were theoretically and practically exposed to the

construction, components selection, and installation steps of a PILC-XLPE transition cable joint. All these processes were demonstrated in detail step-by-step by both the facilitators. The training session of Modules 1 to 4 was concluded at 5:30 pm with a brief gratuity speech by both parties. The Module 5, which was the 2-day laboratory testing work on the constructed PILC-XLPE transition cable joint, was then carried out in IVAT on 13-14 March 2017. The testing work was led by Dr. Lau Kwan Yiew and Dr. Noor Azlinda and assisted by IVAT's technical staff. In accordance to Cenelec HD 629.2 S2:2006 standard, the cable joint was

Editorial Board

Advisor:

Prof. Dr. Zulkurnain Abdul Malek

Editor-in-chief:

Assoc. Prof. Dr. Zolkafle Buntat

Editor & Designer:

Dr. Lau Kwan Yiew

Contributors:

Assoc. Prof. Dr. M. Afendi M. Piah
Dr. Mohd Hafizi Ahmad
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Dr. Zulkarnain Ahmad Noorden
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tested under three tests; 1) AC power frequency voltage, 2) DC voltage and 3) lightning impulse voltage. The testing work was successfully completed at 5:00 pm on the second day.

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

Pursue Your Postgraduate Studies at 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?

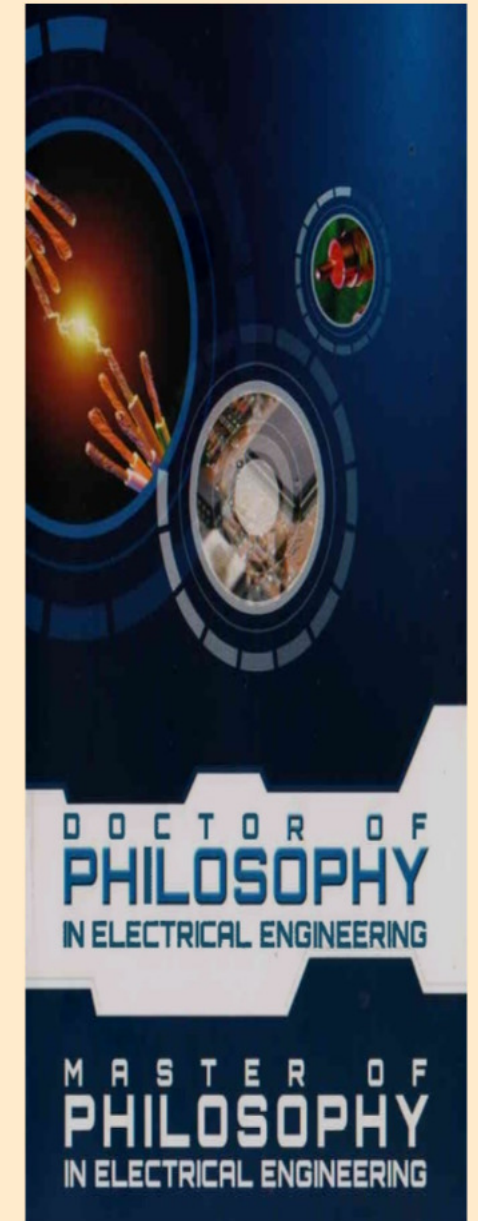
- Our field of electrical and electronic engineering is ranked Top 100 in the world (according to QS World Ranking by Faculty 2017)
- Our high voltage laboratory is the largest in Malaysia
- We have well-equipped high voltage facilities
- We have widely experienced supervisors working on a variety of 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/>



IVAT Staff's Appointment in IEEE DEIS Malaysia Chapter

JOHOR BAHRU, 19 January 2017 – IVAT wishes to extend its congratulations to Dr. Lau Kwan Yiew for being appointed as Chairman of IEEE Dielectrics and Electrical Insulation Society (DEIS) Malaysia Chapter. IVAT also wishes to congratulate its another two members of academic staff, i.e., Dr. Zulkarnain Ahmad Noorden and Dr. Mohd Hafizi Ahmad for being appointed as Executive Committee Members of DEIS Malaysia Chapter. IVAT would also like to thank the past Chairman of DEIS Malaysia, Dr. Yanuar Zulardiansyah Arief (now with Universiti Malaysia Sarawak), for his past contributions (now reappointed as Executive Committee Member),

and congratulate Dr. Nor Asiah Muhamad (now with Universiti Sains Malaysia) for being reappointed as Treasurer of DEIS Malaysia Chapter.

IVAT wishes the new DEIS committee all the best and is looking forward to have more collaborative work with DEIS Malaysia in 2017.

More information about IEEE DEIS Malaysia Chapter can be found at <http://deis.ieeemy.org/>

Staff, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

 Chair Dr. Lau Kwan Yiew Universiti Teknologi Malaysia (UTM)	 Executive Committee Dr. Zulkarnain Ahmad Noorden Universiti Teknologi Malaysia (UTM)	 Executive Committee Dr. Mohd Hafizi Ahmad Universiti Teknologi Malaysia (UTM)	 Treasurer Ir. Dr. Nor Asiah Muhamad Universiti Sains Malaysia (USM)	 Executive Committee Dr. Yanuar Zulardiansyah Arief Universiti Malaysia Sarawak (UNIMAS)
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IVAT present and past staff's appointment in IEEE DEIS Malaysia Chapter's 2017 Committee.

Equipment Rental at IVAT

The Institute of High Voltage and High Current (IVAT) offers the following equipment for rental. For other facilities/services or more details, please e-mail us: ivat@fke.utm.my

INSTITUTE OF HIGH VOLTAGE AND HIGH CURRENT (IVAT)

TENTATIVE PRICES FOR EQUIPMENT RENTAL*

FOR RESEARCH STUDENTS / INDUSTRIES / OTHER INSTITUTIONS

ITEM	PRICE
IMPULSE MEASURING SYSTEM	RM 250/DAY
HVAC MEASURING SYSTEM	RM 300/DAY
HVDC MEASURING SYSTEM	RM 300/DAY
CLIMATIC CHAMBER	RM 300/DAY
SOIL RESISTIVITY MEASUREMENT	RM 200/DAY
SOIL RESISTANCE MEASUREMENT	RM 100/DAY
PEARSON CURRENT MONITOR	RM 100/DAY
IMPULSE GENERATOR	RM 500/DAY
IR CAMERA SYSTEM	RM 200/DAY
HIGH VOLTAGE LABORATORY	
For development test only	RM 8000/DAY
For research student from other institutions	RM 1000/DAY
PICK-UP TRUCK (TOYOTA HILUX)	RM 300/DAY (NON UTM STAFF WITH IVAT'S DRIVER) RM 200/DAY (UTM STAFF WITH IVAT'S DRIVER)

*Terms and conditions apply. Subject to the approval from IVAT's Director. For other facilities/services or more details, please e-mail us: ivat@fke.utm.my

MyHVnet Newsletter Published

In case you missed the news, Issue 2 of MyHVnet Newsletter (an initiative by IVAT and MyHVnet for the dissemination of high voltage related news, with particular emphasis on MyHVnet's activities) was published in January 2017. The newsletter can be downloaded from <http://ivat.utm.my/myhvnet/news/>



IVAT's Visit to INTROP

JOHOR BAHRU, 16 February 2017 – A delegation from the Institute of High Voltage and High Current (IVAT) comprising three lecturers (Dr Mohd Hafizi Ahmad, Dr Noor Azlinda Ahmad, and Dr Zulkarnain Ahmad Noorden) and two research students visited the Institute of Tropical Forestry and Forest Products (INTROP), Universiti Putra Malaysia. The main purpose of the visit was to discuss about the utilisation of kenaf-based products in high voltage fields. The discussion that began at 12.00 pm was conducted by Assoc. Prof. Dr Hidayah Arifin and participated by Director of INTROP, Prof. Dr. Paridah Md Tahir, and research officers, Dr Ainun Zuriyati and Dr Harmaen, and lecturers from IVAT. The discussion began with a brief presentation from IVAT's lecturers about their interest in the utilisation of kenaf-based products, which later gained positive feedbacks from INTROP's staff. After the discussion session, Dr. Ainun and Dr. Harmaen brought the



Group photo at INTROP.

delegation to visit the biopolymer and derivatives laboratory on paper-making processes.

Dr. Mohd Hafizi Ahmad, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.



Dr. Mona delivering her research talk on lightning physics.

(... continued from page 1)

the course High Voltage Technology attended the talks delivered by Dr. Mona Riza Mohd Esa on lightning physics and Dr. Zulkarnain Ahmad Noorden on supercapacitors. Various interesting research topics and findings on high voltage engineering, particularly on lightning phenomena and supercapacitor materials, were discussed. The students also had an opportunity to have a glance at the high voltage research activities carried out by Dr. Mona and Dr. Zulkarnain at UTM.

During the seminar, the students were also introduced to the Institute of High Voltage and High Current (an institute at UTM that carries out research in addition to calibration, testing and training relevant to high voltage engineering) and Malaysian High Voltage Network (a networking group for high voltage engineering in Malaysia). The students were also introduced to IEEE DEIS (an international networking society that deals with all phenomena associated with dielectrics and with the insulation of electrical equipment), where the

students had an opportunity to watch the IEEE DEIS educational video at the end of the seminar.

Through the seminar, it is hoped that the undergraduate students are aware of the latest research and networking relevant to high voltage engineering apart from obtaining their knowledge through classroom lectures and textbooks. This would allow the students to enhance learning through research information. This is in line with UTM's effort to enrich the nexus between research, learning and teaching. On behalf of POWER and DEIS, Dr. Lau Kwan Yiew, the seminar coordinator, sincerely thanks Dr. Mona and Dr. Zulkarnain for voluntarily conducting the research seminar for the undergraduate students. The kind assistance from Assoc. Prof. Dr. Zolkafle Buntat and Dr. Noor Azlinda Ahmad for planning the seminar is also acknowledged.

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



Congratulations to Universiti Teknologi Malaysia (UTM)! UTM has continued to improve in the 2017 QS World Ranking by Faculty when five of its engineering and technology fields were listed in the top 100 in the world. This includes Electrical & Electronic Engineering. For more information about UTM, please visit UTM's webpage: <http://www.utm.my/> [Picture courtesy of the Office of Corporate Affair, Universiti Teknologi Malaysia]

Electrical@UTM
"The excellent pathway to secure a bright future"

Quality Education
Accredited by national & international professional bodies

World Ranking
Top 100 in Engineering – Electrical & Electronics by QS Ranking

Research
Awarded the highest number of Higher Institution Research Centres of Excellence

Campus Life & Hostel
Green eco-tourism campus & guaranteed on-campus accommodation

Overseas Experience
Mobility Programs - Join academic programs in other universities or institutions all over the world

Programmes
SKEE
MKEP

The Bachelor of Engineering (Electrical) programme, codenamed SKEE, is one of the undergraduate programmes offered by the Department of Electrical Power Engineering (POWER), Faculty of Electrical Engineering, Universiti Teknologi Malaysia, to prepare graduates for positions as electrical engineers. The SKEE 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 department 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 <http://www.fke.utm.my/power/> [Picture courtesy of the Department of Electrical Power Engineering, Universiti Teknologi Malaysia]

Community Engagement: Renewable Electricity for Kampung Orang Asli Pucur

JOHOR BAHRU, 25 May 2017 – The residents of Kampung Orang Asli Pucur, Kahang are now able to use free 24-hour electricity from an isolated electrical solar system developed by researchers from the Department of Electrical Power Engineering, UTM (Universiti Teknologi Malaysia) Johor Bahru; Dr. Jasrul Jamani Jamian, Dr. Zulkarnain Ahmad Noorden (also staff from the Institute of High Voltage and High Current) and Ms. Norfatimah Mohd Zaid. The electrical solar project was a continuation initiative from a project supported by Institusi Inovasi Strategik Johor (IISJ), UTM namely "Development of Simple Guidelines for the Maintenance of an Off-grid Solar Electrical System", started from July 2016 for a period of 12 months and lead by Dr. Zulkarnain. The IISJ-UTM project is generally a technical education about isolated solar electrical systems for rural communities. At the beginning of the project, the researchers have been informed by Mdm. Azlinda Jamian, Development Officer of the Department of Orang Asli Development (JAKOA), Kluang regarding electricity supply problems of the residents in several villages in Kahang such

– is the only promising and economical solution for the village.

With such a motivation, the researchers decided to implement a pilot project in the village – led by Dr. Jasrul – called "Development of Eco-Treatment Center (100% electricity from solar source)" with the approval of JAKOA Kluang. In addition to supplying the treatment centre with 24-hour electricity solely by electrical solar system, the pilot project is expected to be the starting



The launching ceremony of "Garis Panduan Mudah Penyelenggaraan Sistem Tenaga Elektrik Solar Terasing" by the Dean of the Faculty of Electrical Engineering UTM, Prof. Dr. Johari Halim Shah (left) with Dr. Zulkarnain Ahmad Noorden.



Group photo during the launch of the Eco-Treatment Center at Kampung Orang Asli Pucur, Kahang on 25 May 2017.

as Kampung Sungai Peroh and Kampung Pucur. Through several site visits and discussions with the officer, it was found that residents in Kg. Pucur relied solely on a diesel generator for the electricity supply with the total diesel cost of approximately RM 2000. This led to the limitation of electricity consumption in the village for only 11 hours daily, starting from 7:00 pm to 6:00 am. From the utility company perspective, supplying the village from the grid is nearly impossible since it involves a very high cost because of its remote location, about 30 km off-terrain from Kahang and with limited population of about 20 families. Hence, electricity from solar source – renewable and free

point for the residents as their early preparation towards continuous electricity supply for the whole village in the future. With proposal presentation and site visit, Bank Islam Berhad has agreed to become a major sponsor for the pilot project, Eco-Treatment Center. On May 14, 2017, the installation of 4 kWp solar systems and infrastructures upgrade at the treatment center was successfully completed. Electrical appliances such as refrigerators, ceiling fans, lights with 5-star energy efficiency rating were also installed in the Eco-Treatment Center with the sponsorship of the Bank Islam Berhad and Tenaga Nasional Berhad. Other contribution was also obtained from Politeknik Mersing, Johor where they have contributed their expertise in electrical wiring in the treatment center. Hopefully, with the development of the simple guidelines and Eco-Treatment Center developed by the researchers, electricity supply problems could be resolved to ensure the living quality of the villagers.

Dr. Zulkarnain Ahmad Noorden, 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 17025:2005 (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 divisions covering comprehensive research on high voltage engineering:

Lightning Research and Safety Division:

- 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 Division:

- 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 / Head of Division
(Lightning Research and Safety Division)
E-mail: zulkurnain@utm.my

Dr. Zolkafle Buntat
Associate Professor / Head of Division
(Services, Consultancy and Training Division)
E-mail: zolkafle@utm.my

Dr. Mohamed Afendi Mohamed Piah
Associate Professor
E-mail: fendi@utm.my

Dr. Noor Azlinda Ahmad
Senior Lecturer / Quality Manager (Calibration)
E-mail: noorazlinda@utm.my

Dr. Zuraimy Adzis
Senior Lecturer / Quality Manager (Testing)
E-mail: zuraimy@utm.my

Dr. Mona Riza Mohd Esa
Senior Lecturer
E-mail: monariza@utm.my

Dr. Lau Kwan Yiew
Senior Lecturer / Laboratory Head
E-mail: kwanyiew@utm.my

Dr. Zulkarnain Ahmad Noorden
Senior Lecturer
E-mail: zulkarnain-an@utm.my

Dr. Mohd Hafizi Ahmad
Senior Lecturer / Head of Division
(Dielectrics, Diagnostics and Discharges Division)
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.

Half-day Seminar for High Voltage Technology

JOHOR BAHRU, 14 May 2017 – A half-day seminar for the third year students of SKEE4463 High Voltage Technology (Section I) was held at the Institute of High Voltage and High Current's (IVAT) new seminar room in building P06, Faculty of Electrical Engineering, Universiti Teknologi

Malaysia. The seminar was arranged for the students to present the outcome of their research-based assignment which covered several topics learned in the subject of High Voltage Technology, such as insulation coordination, lightning, breakdown theory and generation of high current and high voltage impulse. It was also done to fulfil the requirement of the Teaching-Research Nexus element as stated in the course outline of SKEE4463. A total of 42 students were divided into 9 groups and each group was given 7 minutes for the poster presentation and they were evaluated by three academic panels from IVAT – Dr. Lau Kwan Yiew, Dr. Mohd Hafizi Ahmad and Dr. Noor Azlinda Ahmad. Overall, the “mini seminar” was successfully executed and it is hoped that the students gained useful experience from their assignment and the seminar.



The students presenting their project findings to the panels.

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



Group photo.

IVAT-Petronas Collaboration

JOHOR BAHRU, 26 January 2017 – IVAT has collaborated with Petronas Group Technical Solutions (GTS) through Universiti Teknologi Malaysia's spin-off company, E Life Solutions Plt., for a project called Provision of Technical Services Agreement for Electromagnetic Compatibility Solution (Tender No.: DTC-KL/PTSSB/2016/22). The project, which lasts for 3 years, will see both IVAT and Petronas GTS to gain mutual benefits in terms of equipment usage and staff training. More details to follow soon.



Discussion with Petronas Group Technical Solutions .

Staff, Institute of High Voltage and High Current, Universiti Teknologi Malaysia.

UNSRI's Short Visit to IVAT

JOHOR BAHRU, 9 January 2017 – A group of 60 final year students from Universitas Sriwijaya (UNSRI), Palembang, Indonesia spent their 45 minutes to visit at the high voltage laboratory (HV Lab) at the Institute of High Voltage and High Current (IVAT) in conjunction with their official visit to the Faculty Electrical Engineering (FKE), Universiti Teknologi Malaysia (UTM), Johor Bahru, Malaysia.

Before arriving at IVAT's HV Lab, they were separated into 2 groups of 30 students to visit 2 main laboratories in FKE, i.e., the Robotic Laboratory and Wireless Communication Centre (WCC). Their main intention from the visit were not just to gain knowledge on what was the latest technology that UTM have been using, but also to gain some external exposure to new environment that might useful to get some ideas for their final year projects and their future research.

The students were welcomed to the HV Lab by the staff and viewed IVAT's 4-minute corporate video. The activity continued by visiting around the main area of HV Lab. Dr.

Mona Riza was an in-charge person to show the students around the lab and gave some explanation about the equipment and types of test that was done in HV Lab. At the end of the visiting session, they had the opportunity to witness a standard cable test using the HV Lab's 2MV impulse generator. The test was conducted by Mr. Anuar Kamarudin, one the senior assistant engineers in IVAT. The students were amazed with the test since they were able to see a bright flashover in front of their naked eyes. The cable used in the test was the cable donated by Tenaga Nasional Berhad for research purposes. The test is one of the standard test that IVAT usually performs for cable companies. Aside of cable tests, IVAT also performed many other accredited impulse tests on other equipment depending on their customers' request. These include switchgears, transformers and cable joints.

All the students gave active feedbacks and they were so excited to ask the personnel in-charge many questions regarding their research interest and equipment availability as well the expertise in IVAT. They hoped that they could



Dr. Mona explaining on the equipment and types of test.

visit UTM, especially IVAT again, to learn more about high voltage technology. Finally, UTM hopes that all the students from UNSRI will be benefitted from their visit to the HV Lab. Thank you very much from UTM.

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



Mr Anuar demonstrating the use of equipment.

Short Courses Held by IVAT

JOHOR BAHRU, 29 May 2017 – IVAT continues to organise various short courses relevant to high voltage engineering and laboratory accreditation based on MS ISO/IEC 17025: 2005 (general requirements for the competence of testing and calibration laboratories). For interested parties, please contact the Director of IVAT, Professor Dr. Zulkurnain Abdul Malek. The organised short courses between June 2016 and May 2017 are shown in the following photos:



Prof. Dr. Zulkurnain Abdul Malek (right) receiving a token of appreciation from Institution of Engineers Malaysia (IEM) Southern Branch for his talk on Lightning Protection and Condition Monitoring of Power System Insulation in January 2017.



Short course on MS ISO/IEC 17025 auditing process, conducted in May 2017.




Participants carrying out internal audit during short course on MS ISO/IEC 17025 auditing process, conducted in May 2017.



Participants of short course on Measurement Uncertainty, conducted in November 2016.



Participants of short course on MS ISO/IEC 17025 auditing process, conducted in May 2017.



IVAT
INSTITUT VOLTAN & ARUS TINGGI
Institute of High Voltage & High Current

**TWO-DAY HANDS ON COURSE
ON
COMSOL MULTIPHYSICS**

14-15 NOVEMBER 2016

at

**IVAT
(P06, FKE)
UNIVERSITI TEKNOLOGI MALAYSIA
JOHOR BAHRU**

Organized by

**INSTITUTE OF HIGH VOLTAGE AND HIGH
CURRENT (IVAT)
Universiti Teknologi Malaysia
Skudai, Johor**

Brochure for the Two-day hands-on Course on COMSOL Multiphysics conducted in November 2016.

Short Courses to be Offered by IVAT in 2017

Laboratory Accreditation based on ISO/IEC 17025: 2005



- Your organisation will be professionally coached and trained from scratch, for a period of 6-24 months towards the accreditation status.
- Trainings include 2-day Intensive Hands-on Course on Internal Quality Auditing, 2-day Intensive Hands-on Course on Measurement Uncertainty, Half-day Awareness Program for whole organisation, and coaching for organisation key personnels.
- At the end of the consultancy period and after successful assessments, your organisation obtains the much desired ISO/IEC 17025 Accredited Laboratory status, such as those offered by SAMM (SAMM is for laboratories in Malaysia).
- Please email zulkurnain@utm.my for an immediate quotation.

COURSE TITLES	2017 STARTING DATE		ENDING DATE	
	MONTH	DATE	MONTH	DATE
2-Day Hands-On Substation Grounding Design	July	25	JULY	26
3-Day Short Course on High Voltage Testing Techniques	August	7	August	9
Cable Jointing & Termination	September	18	September	19
3-Day Short Course on Lightning Protection and Grounding System	October	23	October	25
Surge & Lightning Protection for ILP Mersing staffs	November	12	November	16
2-Day TIANU SB Short Course on Partial Discharge Phenomena and Impulse Testing Plus Invited Instructor From	December	11	December	12

COURSE TITLES	2017 STARTING DATE		ENDING DATE	
	MONTH	DATE	MONTH	DATE
Cable Jointing & Termination – Invited Speaker from Industry	March	12	March	13
Two-Day Short Course on Electrical Safety	July	16	July	17
Cable Jointing & Termination – Invited Speaker from Industry	September	10	September	11
Two-Day Short Course on Lightning Protection for High and Low Voltage System	November	12	November	13
Cable Jointing & Termination – Invited Speaker from Industry	December	10	December	11

The dates of the courses are dependent upon demands. Group discounts are available. Please contact us for further details.

Email: ivat@fke.utm.my

Tel: +60-7-5535615

IVAT's Bowling Competition

JOHOR BAHRU, 20 August 2016 – A bowling competition was held among the staff (and their families) of the Institute of High Voltage and High Current (IVAT) at the Sport and Leisure Centre, Le Grandeur Palm Resort, Senai, Johor, as a short getaway break from their hectic work schedules. The competition was officiated by IVAT's Director, Prof. Dr. Zulkurnain Abdul Malek, with his first throw of a bowling ball. Two categories were competed, i.e., Male and Female, and Mr. Anuar Kamaruddin and Mdm. Nor Elliyana Mazlan became the Champions for the respective categories. With such a competition, IVAT hopes not only to foster stronger social relationships, but also to achieve a better work-life balance and inculcate the spirit of sportsmanship among IVAT's staff (and families). A picture is worth a thousand words:



Mr. Anuar (left) – the Champion for Male category.



Prof. Dr. Zulkurnain – first throw of bowling ball.



Mdm. Nor Elliyana (left) – the Champion for Female category.



Group photo during bowling competition.

Written in Malay by Mr. Hairoisyam Abd Rani, translated into English by Dr. Lau Kwan Yiew, Institute of High Voltage and High Current, Universiti Teknologi Malaysia

Original Malay Version:

Satu pertandingan boling anjuran kelab kebajikan staf IVAT (KKSJ) telah diadakan pada hari Sabtu, 20 Ogos 2016 bertempat di Sport and Leisure Centre, Le Grandeur Palm Resort, Senai, Johor. Pertandingan boling ini telah dirasmikan oleh Pengarah IVAT iaitu Prof. Dr. Zulkurnain Bin Abdul Malek dengan memulakan balingan yang pertama. Dua kategori dipertandingkan iaitu individu lelaki dan individu wanita. Johan bagi kategori individu lelaki dimenangi oleh En. Anuar Bin Kamaruddin dan johan bagi kategori individu wanita pula dimenangi oleh Pn. Nor Elliyana Binti Mazlan. Tujuan pertandingan boling ini adalah untuk mengeratkan lagi hubungan silaturahim disamping memupuk semangat kesukanan antara staf dan juga keluarga staf.

Notes of Appreciation

JOHOR BAHRU, 22 August 2016 – A ceremony was held on 22nd August 2016 by the Institute of High Voltage and High Current (IVAT) to bid farewell to one of its academic staff, Dr. Nor Asiah Muhamad, who will be leaving for Universiti Sains Malaysia (USM), Penang, at the end of the month. Dr. Nor Asiah officially joined IVAT in 2011 upon completing her PhD degree in Australia. Within the last five years of her tenure in IVAT, she had given her utmost commitment, hard work and dedication in every aspect of teaching, research, calibration and testing works that resulted in a significant contribution to the success of IVAT. Her friendly personality will definitely be deeply missed by many of IVAT's staff, especially ladies. Thank you Dr. Nor Asiah for your outstanding contributions to IVAT. IVAT sincerely wishes you all the best for your future undertakings at USM.



IVAT's Director, Professor Dr. Zulkurnain Abdul Malek, handed in some token of appreciation to Dr. Nor Asiah Muhamad (right).



Group photo with Assoc. Prof. Dr. Mohd Muhridza Yaacob (middle) during appreciation ceremony.

Meanwhile, an appreciation ceremony was held on 14 November 2016 by the IVAT to bid farewell to one of its academic staff, Assoc. Prof. Dr. Mohd Muhridza Yaacob, who would be retiring in 2017. Assoc. Prof. Dr. Mohd Muhridza has been with IVAT for many years. Within his tenure at IVAT, he has given his utmost commitment, hard work and dedication in every aspect of teaching, research, calibration and testing works. IVAT wishes to thank Assoc. Prof. Dr. Mohd Muhridza for his excellent contributions to IVAT.

IVAT sincerely wishes Assoc. Prof. Dr. Mohd Muhridza all the best in his retiring years.

On another occasion, a ceremony was held on 9 January 2017 by the Institute of High Voltage and High Current (IVAT) to bid farewell to one of its academic staff, Dr. Yanuar Zuldiansyah Arief, who would be leaving for Universiti Malaysia Sarawak (UNIMAS), Sarawak, in January 2017. Dr. Yanuar has been with IVAT for nearly a decade. Within his tenure at IVAT, he has given his utmost commitment, hard work and dedication in every aspect of teaching, research, calibration and testing works. IVAT wishes to thank Dr. Yanuar for his outstanding contributions to IVAT. IVAT sincerely wishes Dr. Yanuar all the best for his future undertakings at UNIMAS.

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



IVAT's Director, Professor Dr. Zulkurnain Abdul Malek, handed in some token of appreciation to Dr. Yanuar (left).

Welcome to IVAT

IVAT is committed to entertain delegates from not only its own university, but also as far as overseas. The main aim for IVAT organising the visits is to share its research, services and consultancy experience to as many people as it 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 sustainable low current arcs).

For representatives from private companies, IVAT showcases its services and consultancy capabilities, as well as its research achievements,

in attempts to increase the return of investments to the university. As for executives of ministerial bodies and government parastatals, IVAT extends its 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 various visits to IVAT.



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**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: zulkurnain@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.