



ICESEST 2026

2026 INTERNATIONAL CONFERENCE ON

PROGRAMME BOOK

EMERGING SUSTAINABLE ELECTRICAL SYSTEMS AND TECHNOLOGY

14 - 15 September 2026

Universiti Teknikal Malaysia Melaka (UTeM)
Melaka, Malaysia

*“Innovating Electrical
Systems for a Sustainable Future”*

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Program Schedule

ICESEST 2026

2026 INTERNATIONAL CONFERENCE ON
**EMERGING SUSTAINABLE
ELECTRICAL SYSTEMS AND TECHNOLOGY**

CONFERENCE PROGRAMME



TUESDAY
15 SEPTEMBER 2026



MEETING ROOM, LEVEL 3
FACULTY OF ELECTRICAL TECHNOLOGY & ENGINEERING (FTKE),
UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTeM)

08:00 – 09:00



REGISTRATION OF PARTICIPANTS

09:00 – 09:15



OPENING CEREMONY
• Welcoming Remarks

09:15 – 09:45



KEYNOTE ADDRESS I
Assoc. Prof. Ts. Dr. Mohamad Fani bin Sulaima
"Energy Efficiency Technology and Future Energy Management"

09:45 – 10:15



KEYNOTE ADDRESS II
Professor Ir. Ts. Dr. Kamarul Hawari Ghazali
"Driving the Future of Electrical Engineering with Data and AI"

10:15 – 10:30



REFRESHMENTS
GROUP PHOTOGRAPHY SESSION
PRESENTATION OF CERTIFICATES OF APPRECIATION
AND TOKENS OF APPRECIATION

10:30 – 12:30



TECHNICAL WORKSHOPS

WORKSHOP 1
Ts. Dr. Norharyati Binti Harum
*"Machine Learning in
Renewable Energy"*

WORKSHOP 2
Dr. Nurul Izrin Binti Md Saleh
*"What If? Smarter Intelligent Systems
with Counterfactual AI"*

12:30 – 14:00



LUNCH BREAK

14:00 – 16:00



PARALLEL SESSION 1 – 6
(6 Parallel Technical Sessions)

16:00 – 16:15



AFTERNOON REFRESHMENTS

16:15 – 16:30



CLOSING CEREMONY
CERTIFICATE PRESENTATION

16:30 – 17:30



TECHNICAL VISIT
TEACHING FACTORY AND RESEARCH FACILITIES

Background ICESEST 2026

The ICESEST 2026 aims to bring together researchers, academicians, engineers, and industry professionals to exchange knowledge and innovations in sustainable electrical systems. The conference focuses on renewable energy integration, efficient electrical systems, and sustainable technological advancement, serving as a platform to promote research aligned with UTeM's niche area in sustainable electrical engineering and technology.

Track A: Sustainable Power Systems and Renewable Integration – Smart grid, microgrid, energy efficiency, and power system stability.

Track B: High Voltage Engineering and Condition Monitoring – High voltage systems, insulation technologies, and predictive maintenance.

Track C: Power Electronics, Drives, and Electrified Transportation – Power converter design, electric machine optimization, and EV integration into the smart grid.

Track D: Automation, Robotics, and Intelligent Systems – Industrial automation, AI and machine learning applications, control and mechatronics.

Track E: Emerging Technologies and Sustainable Innovations – IoT, digital transformation, green technologies, and socio-economic implications of sustainable energy.

ICESEST 2026

Organizing Committee

Patron

Prof. Datuk Ts. Dr. Massila binti Kamalrudin

Advisor

Prof. Dr. Zahriladha bin Zakaria

AP. Ts. Dr. Mohamad Fani bin Sulaima

Chairman

Ts. Dr. Mohd Hafiz bin Jali

Technical Program Chair

Ir. Ts. Dr. Mohd Shahril bin Ahmad Khier (Head)

AP. Ts. Dr. Muhammad Fahmi bin Miskon

AP. Ir. Dr. Ahmad Zaki bin Shukor

AP. Ir. Dr. Mariam binti Md Ghazaly

AP. Ir. Dr. Md Hairul Nizam bin Talib

AP. Ir. Ts. Dr. Rozaimi bin Ghazali

Ir. Dr. Maaspaliza binti Azri

Ir. Dr. Intan Azmira binti Wan Abdul Razak

Ts. Dr. Hazriq Izzuan bin Jaafar

Ts. Dr. Nor Hidayah binti Rahim

Dr. Nurul Ashikin binti Mohd Rais

Dr. Fara Ashikin binti Ali

Dr. Aine Izzati binti Tarmizi

Dr. Nursabillilah binti Mohd Ali

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Dr. Nur Azura binti Noor Azhuan

Mdm. Nurul Syuhada' binti Haron

Treasurer

Mdm. Suhaili binti Sallehuddin

Mdm. Nur Hasriha binti Mohamad

Program & Registration Committee

Mr. Muhammad Farhan Mohammad Asri (Head)

Mdm. Suhadawati binti Ahmad

Mdm. Siti Aisya binti Daud

Mr. Muhamad Syahmi bin Ayob

Logistics & Technical Committee

Ts. Dr. Mohamad Faizal bin Baharom (Head)

Ir. Dr. Zamani bin Md. Sani

Mr. Mohd Wahyudi Bin Md Hussain

Mr. Mohd Fauzi bin Roslan

Mr. Mohamad Azzem bin Zainal Aabidin

Mr. Mohd Arif bin Mohd Nor

Mr. Musa bin Yusup Lada

Promotion, ICT & International Relations Committee

Dr. Mohd Rusdy bin Yaacob (Head)

Dr. Mohd Ruzaini bin Hashim

Dr. Loh Ser Lee

Mdm. Adawiyah binti Md Jani

ICESEST 2026

Organizing Committee

Sponsorship & Exhibition Committee

AP. Ir. Dr. Mohd Farriz bin Hj Md Basar (Head)
Ir. Ts. Dr. Anuar bin Mohamed Kassim
Mdm. Noor Hafiza binti Othman

Protocol, Souvenirs & Certificates, Refreshments Committee

Mdm. Atikah binti Razi (Head)
Mdm. Norhazilina binti Bahari
Mdm. Rashidah binti Azhar
Mdm. Normalisza binti Mustapa
Mdm. Siti Aishah binti Mat Zain
Mdm. Munirah binti Zainal

Research Networking & Interactive Program Committee

Ir. Dr. Norafizah binti Abas (Head)
Ir. Dr. Nurdiana Nordin
Ir. Dr. Sharin Ab Ghani
Dr. Mohd Saifuzam Jamri
Mdm. Anis Niza Ramani



Message from Chairman

Ts. Dr. Mohd Hafiz Jali

Deputy Dean Research, FTKE UTeM

It is my great pleasure, on behalf of the Faculty of Electrical Technology and Engineering (FTKE), Universiti Teknikal Malaysia Melaka (UTeM), to warmly welcome all distinguished participants, keynote speakers, researchers, academicians, industry professionals, and delegates to the 2026 International Conference on Emerging Sustainable Electrical Systems and Technology (ICESEST 2026).

With the motto “Innovating Electrical Systems for a Sustainable Future,” ICESEST 2026 provides an international platform for sharing knowledge, research findings, innovative ideas, and emerging technologies in sustainable electrical systems and technology. The conference brings together experts from academia, industry, and related sectors to exchange insights, explore new opportunities, and strengthen collaboration towards addressing current and future challenges in sustainable electrical engineering.

We hope that the presentations, discussions, and networking sessions will inspire new ideas, promote meaningful partnerships, and contribute to impactful research and technological advancement. I would like to express my sincere appreciation to all keynote and invited speakers, authors, reviewers, organising committee members, partners, sponsors and participants for their invaluable contributions and support in making ICESEST 2026 possible.

Once again, welcome to ICESEST 2026. We wish you a fruitful, inspiring, and memorable conference experience at UTeM.

Thank you and welcome to ICESEST 2026.

Keynote Speaker 1

Associate Professor Ts. Dr. Mohamad Fani Sulaima

Dean, FTKE UTeM

Biography

Associate Professor Ts. Dr. Mohamad Fani Sulaima is the Dean of the Faculty of Electrical Technology and Engineering at Universiti Teknikal Malaysia Melaka (UTeM), Malaysia. He is an academic leader, researcher, and professional consultant with extensive expertise in energy management, energy efficiency, power systems, and sustainable energy technologies. Prior to his current appointment, he served as Deputy Director of the Centre for Smart Environment (CENSEi) and previously led UTeM's Energy Management Division, where he was appointed as the university's first internal Energy Manager in 2015.



He also serves as Principal Consultant for the Energy Service Company (ESCO) Division of UTeM Holdings Sdn. Bhd. and leads the Demand-Side Management (DSM) research group under the Energy and Power System Research Laboratory. He is a Registered Energy Manager (REM Type 2), Registered Energy Auditor (REA), Professional Technologist (Green Technology), and Lead Assessor for the ASEAN Energy Management Scheme (AEMAS). His contributions have helped UTeM secure multiple National and ASEAN Energy Awards, and he has assessed more than 40 organisations under the ASEAN Energy Management Gold Standard programme. He also serves as a Lead Judge for Malaysia's National Energy Awards.

He obtained his Bachelor's degree from Tokai University, Japan, his Master's degree from the University of Malaya, and his Ph.D. in Electrical Engineering from Universiti Teknologi MARA (UiTM), specialising in Energy Demand-Side Management. His research interests include energy efficiency, smart energy systems, artificial intelligence, power systems, and instrumentation and control. He has participated in over 26 research projects, completed more than 20 industrial consultancy projects, delivered over 20 professional training programmes, and published more than 135 scholarly articles. He actively promotes regional collaboration in sustainable energy education, research, and innovation to support the global energy transition.

Keynote 1 Topic

Associate Professor Ts. Dr. Mohamad Fani Sulaima

Dean, FTKE UTeM

TITLE: ENERGY EFFICIENCY TECHNOLOGY AND FUTURE ENERGY MANAGEMENT

The global energy sector is undergoing a profound transformation driven by climate change, rapid technological advancements, increasing energy demand, and the commitment to achieve net-zero carbon emissions. In this keynote, "Energy Efficiency Technology and Future Energy Management," keynote will explore the critical role of energy efficiency as the foundation of a sustainable energy transition. The presentation highlights current global and ASEAN energy trends, emerging climate challenges, and regional initiatives supporting decarbonization and energy security. It also examines innovative energy efficiency technologies, including waste heat recovery, high-efficiency motors, smart energy management systems, and digital solutions that enhance industrial and commercial energy performance. Emphasis will be placed on the integration of artificial intelligence, digitalization, and data-driven energy management to improve operational efficiency and reduce carbon emissions. The keynote concludes by discussing future opportunities and strategies for academia, industry, and policymakers to accelerate the adoption of sustainable energy technologies and develop resilient, intelligent, and low-carbon energy systems for future generations.

Keynote Speaker 2

Professor Ir. Ts. Dr. Kamarul Hawari Ghazali

Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA)



Biography

Professor Ir. Dr. Kamarul Hawari Ghazali is a Professor at the Faculty of Electrical and Electronic Engineering Technology, Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA), Malaysia. He is also a Principal Research Fellow at the Center for Advanced Industrial Technology (CAIT) and a registered Professional Engineer (Ir.) with the Board of Engineers Malaysia (BEM).

His research focuses on Intelligent Systems, AI, Intelligent Sensing, Machine Vision, and Data Analytics, with an emphasis on transforming engineering data into intelligent decision-making solutions for real-world applications. His work bridges academic research with industrial implementation through AI-driven engineering systems.

He has successfully secured and led numerous competitive research and industrial projects. He is the Principal Investigator of a RM1.03 million Strategic Research Fund (SRF) awarded by the Ministry of Science, Technology and Innovation (MOSTI), in addition to several applied and translational research grants funded by the Ministry of Higher Education (MOHE) and industrial partners. He actively collaborates with industry through strategic projects with East Automation & Engineering Sdn. Bhd. and DSME Engineering Sdn. Bhd., focusing on intelligent monitoring systems, digital transformation, smart manufacturing, and AI-enabled engineering solutions.

In addition to his academic role, he serves as Director of Digital Transformation and Innovation (Non-Executive) at DSME Engineering Sdn. Bhd., where he provides strategic direction in digital technologies, Artificial Intelligence, Industrial IR4.0, and intelligent engineering solutions for industrial applications.

His research has been successfully applied across diverse engineering domains, including intelligent environmental monitoring, industrial emission monitoring, geohazard and infrastructure monitoring, smart waste management, precision agriculture, and aquaculture. Through his research, Professor Kamarul continues to promote the integration of Data and AI into Electrical Engineering, enabling the development of intelligent systems that support innovation, operational excellence, and sustainable engineering practices.

Keynote 2 Topic

Professor Ir. Ts. Dr. Kamarul Hawari Ghazali

Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA)

TITLE:

DRIVING THE FUTURE OF ELECTRICAL ENGINEERING WITH DATA AND AI - *TRANSFORMING DATA INTO ENGINEERING INTELLIGENCE*

Electrical Engineering is entering a new era where data has become one of the most valuable engineering assets. As Artificial Intelligence (AI) continues to reshape industries, electrical engineers have unprecedented opportunities to transform conventional electrical systems into intelligent systems capable of autonomous monitoring, predictive analytics, and informed decision-making.

This keynote presents a practical perspective on integrating data and AI into electrical engineering through real-world research and industry collaborations. Through real-world case studies spanning intelligent monitoring, environmental sensing, infrastructure monitoring, smart agriculture, and industrial automation, the session will demonstrate a practical framework for transforming engineering data into actionable intelligence. By illustrating how a common data-driven AI framework can be applied across diverse engineering domains, the keynote highlights the potential of intelligent electrical systems to address real-world engineering challenges.

Ultimately, the keynote aims to inspire researchers, engineers, and industry professionals to embrace data and AI as key enablers in driving the next generation of intelligent electrical systems.

Parallel Session 1

Venue: Bilik Mesyuarat FTKE, Blok C Level 3

Session Chair : Ts. Dr. Hazriq Izzuan Jaafar

Time	Title	Presenter	Track
2.00 pm	Data-Driven Dynamic Modeling of an Electro-Hydraulic Actuator Using ARX System Identification	Sazuan Nazrah Mohd Azam	Automations, Robotics, and Intelligent Systems
2.30 pm	Enhancement of the Moth-Flame Optimization (MFO) Algorithm for EV Charging Stations Load Balancing	Aziah Khamis	Automations, Robotics, and Intelligent Systems
3.00 pm	Image Processing Framework for Crop Lane Width Measurement in Small-Scale Farming Environment	Nur Maisarah Mohd Sobran	Automations, Robotics, and Intelligent Systems
3.30 pm	A Comparative Study of Optimization Frameworks for Nonlinear Black-Box Identification of an Industrial Electro-Hydraulic Actuator System	Rozaimi Ghazali	Automations, Robotics, and Intelligent Systems

Parallel Session 2

Venue: Bilik Seminar Pelajar, Blok A, Level 3

Session Chair : Assoc. Prof. Ir. Dr. Md Hairul Nizam Bin Talib

Time	Title	Presenter	Track
2.00 pm	Harmonic Performance Evaluation of Multicarrier PWM in a Three-Level Three-Switch PV Microinverter	Atikah Razi	Power Electronics, Drives, and Electrified Transportation
2.30 pm	Chaotic Dual ABC and ABC-GWO Hybrid Algorithms for Electric Vehicle Charging Station Applications	Mohd Ruzaini Hashim	Power Electronics, Drives, and Electrified Transportation
3.00 pm	Torque Transfer Characteristics in a Concentric Magnetic Gear with Varying Inner and Outer Air Gaps	Mohd Firdaus Mohd Ab Halim	Power Electronics, Drives, and Electrified Transportation
3.30 pm	Battery State-of-Health Estimation for Electric Vehicles Using Hybrid CEEMDAN-IndRNN Deep Learning	Fatima Haque	Automations, Robotics, and Intelligent Systems

Parallel Session 3

Venue: Bilik Seminar Staf, Blok A, Level 2

Session Chair : Dr. Aine Izzati Binti Tarmizi

Time	Title	Presenter	Track
2.00 pm	Precision Motion Control of a Sustainable Magnet-Free Tubular Linear Switched Reluctance Actuator Using a Modified PID Controller with Anti-Windup Compensation	Mariam Md Ghazaly	Automations, Robotics, and Intelligent Systems
2.30 pm	Computational Modelling of Earthing Resistance Based on the Fall-off-Potential Method	Najiyah Saleh	High Voltage Engineering & Condition Monitoring
3.00 pm	Performance Evaluation of SVM-Based Appliance Classification for NILM Using the COOLL Dataset	Aida Fazliana Abdul Kadir	Sustainable Power Systems and Renewable Integration
3.30 pm	Finite Element Analysis and Parametric Design of Fiber Reinforced Soft Composite Pneumatic Structures	Mariam Md Ghazaly	Automations, Robotics, and Intelligent Systems

Parallel Session 4

Venue: Online Session

Session Chair : Ts. Dr. Nor Hidayah Binti Rahim (Bilik CLEAR, FTKE)

Time	Title	Presenter	Track
2.00 pm	Performance Assessment of Ester-Based Transformer Insulation Oils Under Thermal Ageing	Mohd Shahril Ahmad Khair	High Voltage Engineering & Condition Monitoring
2.30 pm	Machine Learning Evaluation of Leakage Current Indicators for Polymer-Based Insulating Material Degradation Assessment	Asri Din	High Voltage Engineering & Condition Monitoring
3.00 pm	CycleGAN-Augmented YOLOv8 for Robust Real-Time Thermal Condition Monitoring of 11 kV/415 V, 50Hz Distribution Transformers	Mardzulliana Binti Zulkifli	High Voltage Engineering & Condition Monitoring
3.30 pm	Thermal Ageing Assessment of Synthetic Ester and Mineral Oil for Transformer Applications	Imran Sutan Chairul	High Voltage Engineering & Condition Monitoring
4.00 pm	Lightning Overvoltage Analysis and SPD Recommendation for EV Charging Stations in Integrated Buildings	Ariff Adli	High Voltage Engineering & Condition Monitoring
4.30 pm	A Study On Electric Field Distribution On The Distribution Transformer Winding With Presence of Foreign Particle	Noor Azri Aiman	High Voltage Engineering & Condition Monitoring

Parallel Session 5

Venue: Online Session

Session Chair : Ir. Dr. Intan Azmira Binti Wan Abdul Razak (Bilik Bincang 1)

Time	Title	Presenter	Track
2.00 pm	Predicting Turbine Vibration Severity in Run-of-River Small Hydropower Plants: A Regression-Based Modelling Approach	Ahmad Zubir Jamil	Sustainable Power Systems and Renewable Integration
2.30 pm	Improving Short-Term Electricity Load Forecasts in Peninsular Malaysia Using a Hybrid Neural Network-Genetic Algorithm Approach	Intan Azmira	Sustainable Power Systems and Renewable Integration
3.00 pm	Investigation of Neutral to Earth Voltage (NTEV) for the Distribution System in a Government Building	Zikri Abadi Baharudin	Sustainable Power Systems and Renewable Integration
3.30 pm	The Effect of Cell Thicknesses and Permittivity upon Perovskite Solar Cell Performance	Rahifa Ranom	Sustainable Power Systems and Renewable Integration
4.00 pm	Adaptive Fuzzy Logic Control for Optimal Capacitor Bank Sizing and Power Factor Improvement in Campus Distribution Networks	Elia Erwani	Sustainable Power Systems and Renewable Integration
4.30 pm	Transient Overvoltage Analysis of a Grid-Connected Rooftop Solar PV System Under Lightning-Induced Surges	Nur Sabihah Hishamudin	Sustainable Power Systems and Renewable Integration

Parallel Session 6

Venue: Online Session

Session Chair : Assoc. Prof. Ts. Dr.Muhammad Fahmi Bin Miskon (Bilik VIVA)

Time	Title	Presenter	Track
2.00 pm	AI-Based Electrical Condition Assessment and Predictive Maintenance System for Malaysian Toll Plazas	Nurul Syuhaidah Mohd Azahari	Automations, Robotics, and Intelligent Systems
2.30 pm	Hybrid SmacPlanner2D and DDPG-Based Navigation for Mobile Robots: A Comparative Study in Dynamic ROS2 Simulation	Sulaiman Sabikan	Automations, Robotics, and Intelligent Systems
3.00 pm	Energy Efficiency Analysis of Timer-Controlled Smart Lighting Systems in Institutional Buildings	Nur Zawani	Sustainable Power Systems and Renewable Integration
3.30 pm	Performance Evaluation of Fuzzy Logic and PI Control Strategies in Three-Phase Shunt Active Power Filters for Harmonic Mitigation	Syahr Azalia	Power Electronics, Drives, and Electrified Transportation
4.00 pm	Inverter Fault Prediction in Grid-Connected Solar PV Systems Using ANN and LSTM Models	Nurul Ain Amanina Dzulkifli	Power Electronics, Drives, and Electrified Transportation
4.30 pm	Improved Failure-Risk Assessments of Insulated Piercing Connectors Through Comparative Anomaly Detection and Clustering Analysis	Abdul Mujiib bin Mohd Azzahari	High Voltage Engineering & Condition Monitoring

Sponsor





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