



Joint Conference of

2024 IEEE Industrial Electronics and Applications Conference

&

2024 IEEE International Conference on Power and Energy

PROGRAMME BOOK

KUALA LUMPUR MALAYSIA

4 to 5 November 2024

Organizer:



**IEEE POWER
ELECTRONICS SOCIETY
MALAYSIA CHAPTER**



**Power & Energy Society®
MALAYSIA CHAPTER**

Technical Co-Sponsor:



IEACon 2024

2024 IEEE Industrial Electronics and Applications Conference

**LE MÉRIDIEN KUALA LUMPUR MALAYSIA
4 to 5 November 2024**

CONTENT

WELCOME MESSAGE.....iii

ORGANISING COMMITTEE.....iv

REVIEWERS.....v

TECHNICAL PROGRAM.....viii

 Monday, November 4.....ix

 Tuesday, November 5.....xi

AUTHORS INDEX.....xiv

WELCOME MESSAGE

It is our pleasure to welcome you to the 5th edition of the IEEE Industrial Electronics and Applications Conference (IEACon 2024), taking place in Kuala Lumpur, Malaysia, from 4th to 5th November 2024. Organized by the IEEE Malaysia Industrial Electronics (IE) and Industrial Applications (IA) Joint Chapter and technically co-sponsored by the IEEE Industry Applications Society, IEACon has established itself as a significant event in the field.

The primary objective of IEACon 2024 is to foster high-quality research, professional interactions, and collaboration, advancing science, technology, and fellowship within the industrial electronics and applications community. This year's conference will feature an exciting program, including keynote speeches from distinguished experts, technical paper presentations, and exhibitions showcasing cutting-edge innovations.

IEACon continues to grow as a premier platform for exchanging innovative ideas and the latest research in industrial electronics and applications. This year, we anticipate robust participation from international and local researchers, engineers, and industry professionals. IEACon 2024 offers a dynamic environment for intellectual exchange and collaboration, reinforcing its reputation as a high-quality program fostering impactful discussions and meaningful professional connections.

We are honoured to announce two esteemed keynote speakers for IEACon 2024:

- **Prof. Sri Niwas Singh**, Director, Atal Bihari Vajpayee-Indian Institute of Information Technology and Management (ABV-IIITM), Gwalior, India, will deliver a keynote titled "**Role of Digital Technology in Green Energy Transition.**" Prof. Singh will explore how digital technology is driving the transition to sustainable energy systems.
- **Ir. Salmey Abdul Halim**, Project Director / Custodian Electrical at the Pengerang Cogeneration Plant (PCP) and Pengerang Transmission Line Projects (PTL), PD&T Division, PETRONAS, will present on "**Advancing Sustainable Energy Solutions: The Electrifications.**" Ir. Salmey will provide insights into the role of electrification in shaping the future of sustainable energy solutions.

We are delighted to host IEACon 2024 in the vibrant city of Kuala Lumpur, Malaysia's capital and cultural hub. Kuala Lumpur offers a unique blend of tradition and modernity, with rich experiences reflecting Malaysia's diverse cultural heritage. From iconic skyscrapers to historical landmarks, KL promises to be a captivating backdrop for this year's conference.

We extend our heartfelt thanks to all researchers, program committee members, and external reviewers whose invaluable contributions have made IEACon 2024 a success. We hope the conference will provide you with enriching experiences, networking opportunities, and valuable insights.

We look forward to welcoming you to Kuala Lumpur and trust that you will enjoy the conference and the city's many attractions.

Thank you

Mohd Amran Mohd Radzi
General Chair

2024 IEEE Industrial Electronics and Applications Conference (IEACon 2024)

ORGANIZING COMMITTEE

General Chair

Mohd Amran Mohd Radzi
IEEE PELS, IE/IA, Universiti Putra Malaysia

Technical Program Chair

Rahimi Baharom
IEEE PELS, IE/IA, Universiti Teknologi MARA

Publication Chair

Syed Farid Syed Adnan
IEEE PELS, IE/IA, Universiti Teknologi MARA

Finance Chair

Khairul Safuan Muhammad
IEEE PELS, IE/IA, Universiti Teknologi MARA

Publicity Chair

Ramani Kannan
IEEE PELS, Universiti Teknologi PETRONAS

Local Arrangement and Exhibition Chair

Muhammad Ammirul Atiqi Mohd Zainuri
IEEE PELS/Universiti Kebangsaan Malaysia

Local Arrangement and Exhibition Co-Chair

Shamsul Aizam Zulkifli
IEEE PELS, IE/IA, Universiti Tun Hussein Onn Malaysia
Nadia Tan Mei Lin
IEEE PELS, University of Nottingham Ningbo China

REVIEWERS

Given name Surname (Affiliation Country)

A Amalin Prince (Birla Institute of Technology and Science, Pilani, Goa Campus India)
Ahmed Zaidan (Universiti Putra Malaysia Malaysia)
Alessandro Testa (Ministry of Economy and Finance Italy)
Ali Rafiei (General Motors Canada)
Alireza Ghasempour (University of Applied Science and Technology USA)
Aliyu Sabo (Universiti Putra Malaysia Malaysia)
Anirudh Viswanathan (Amazon Web Services, Inc. India)
Aws Yonis (Ninevah University Iraq)
Boon Chong Ang (Intel Malaysia)
Boon Yaik Ooi (UTAR Malaysia)
Chutisant Kerdvibulvech (National Institute of Development Administration Thailand)
Denis Wong (Universiti Tunku Abdul Rahman Malaysia)
Diogo Gomes (Universidade de Aveiro Portugal)
Divya Bv (REVA University India)
Duy Huynh (Ho Chi Minh City University of Technology (HUTECH) Vietnam)
Emmanuel Pukkunnen (Mar Athanasius College of Engineering India)
Fayruz Rahma (Institut Teknologi Sepuluh Nopember Indonesia)
George Dekoulis (Aerospace Engineering Institute (AEI) Cyprus)
Greeshma Nimmagada (Amrita Vishwa Vidyapeetham India)
Harikumar Rajaguru (Bannari Amman Institute of Technology India)
Hazry Desa (Universiti Malaysia Perlis Malaysia)
Hisham Hussein (Universities of Canada Egypt)
Houari Aoued (University of Sciences and Technologies of Oran Mohammed Boudhief Algeria)
Iwan Setyawan (Satya Wacana Christian University Indonesia)
Jaekwang Kim (Sungkyunkwan University Korea (South))
Janmejay Umeshbhai Buch (Institute for Plasma Research India)
Javier Gozalvez (Universidad Miguel Hernandez de Elche Spain)
Jayanta Debnath (Saginaw Valley State University USA)
Jiachyi Wu (National Taiwan Ocean University Taiwan)
Khairul Safuan Muhammad (Universiti Teknologi MARA Malaysia)
Koteswararao Kondepu (Indian Institute of Technology Dharwad India)
Kunvar Chokshi (Tesla USA)
Lawrence Sii Ying Ting (Swinburne University of Technology Sarawak Campus Malaysia)
Madan Singh (none India)
Mahdi Karami (Universiti Putra Malaysia Malaysia)
Masayoshi Toda (Tokyo University of Marine Science and Technology Japan)
Md. Mahmudul Hasan (Universiti Teknologi PETRONAS Malaysia)
Mehtab Fatima (Amity India)
Ming-Fong Tsai (National United University Taiwan)
Mohamad Zaid Mohamad Ali (Tenaga Nasional Berhad Malaysia)
Mohammad Yazdani-Asrami (University of Strathclyde United Kingdom (Great Britain))
Mohd Amran Mohd Radzi (Universiti Putra Malaysia Malaysia)

Mohd Haniff Mohd Tahir (Universiti Pendidikan Sultan Idris Malaysia)
Montree Kumngern (King Mongkut's Institute of Technology Ladkrabang Thailand)
Muhamad Syazmie Sepeeh (MAHSA University Malaysia)
Muhammad Ammirul Atiqi Mohd Zainuri (Universiti Kebangsaan Malaysia Malaysia)
N Nasimuddin (Institute for Infocomm Research Singapore)
Nadia Tan (University of Nottingham Ningbo China China)
Nikhil Marriwala (Kurukshetra University India)
Norazlan Hashim (Universiti Teknologi MARA Malaysia)
Norbert Seliger (Technische Hochschule Rosenheim Germany)
Norhidayu Rameli (Universiti Sains Islam Malaysia Malaysia)
Norhisam Mison (Universiti Putra Malaysia Malaysia)
Noriko Etani (Kyoto University Japan)
Omar Abdalla (Helwan University Egypt)
Otavio Teixeira (Universidade Federal Do Pará (UFPA) Brazil)
Pablo Corral (Universidad Miguel Hernandez de Elche Spain)
Panagiotis Varzakas (University of Thessaly Greece)
Paolo Crippa (Marche Polytechnic University Italy)
Patrick Sebastian (Universiti Teknologi PETRONAS Malaysia)
Phan Hong Thang (Ho Chi Minh City University of Technology Vietnam)
Prabhakar C j (Kuvempu University India)
Pratik Thantharate (SUNY Binghamton USA)
Priya Ranjan (University of Petroleum and Energy Studies (UPES) India)
Rahimi Baharom (Universiti Teknologi MARA Malaysia)
Ramani Kannan (Universiti Teknologi Petronas Malaysia)
Reza Fuad Rachmadi (Institut Teknologi Sepuluh Nopember Indonesia)
Roberto Carlos Herrera Lara (Universitat Politècnica de València Ecuador)
Rosaura Palma-Orozco (Instituto Politécnico Nacional Mexico)
Rostyslav Sklyar (Independent Professional Ukraine)
Saeed Alsamhi (Electronics Engineering India)
Sajan Kaduvetty (Dubai Electricity and Water Authority United Arab Emirates)
Samir Ladaci (Ecole Nationale Polytechnique Algeria)
Satyendra Vishwakarma (Babasaheb Bhimrao Ambedkar University India)
Sergey Biryuchinskiy (Vigitek, Inc. USA)
Shamsul Zulkfli (UTHM Malaysia)
Shashikant Patil (Atlas SkillTech University Kurla West India)
Shazia Khaliq (Kakatiya University India)
Shen Khang Teoh (Universiti Tunku Abdul Rahman Malaysia)
Shivaram R (Tata Consultancy Services India)
Siamack Ghadimi (Lund University LTH Sweden)
Siti Rohani Sheikh Raihan (Universiti Malaya Malaysia)
Smita Nirkhi (Nagpur University India)
Sumukh Surya (Bosch India)
Swapna P S (APJ Abdul Kalam Kerala Technical University India)
Syamsuri Yaakob (Universiti Putra Malaysia Malaysia)
Syed Farid Syed Adnan (Universiti Teknologi MARA Malaysia)

Tomonobu Senjyu (Faculty of Engineering, University of the Ryukyus Japan)

UC Jha (Sethu Institute of Technology India)

Vivek Sharma (Graphic Era University Dehradun India)

Yassine Salih-Alj (Al Akhawayn University Morocco)

Yit Hong Choo (Institute for Intelligent Systems Research and Innovation, Deakin University Australia)

Yogesh Pundlik (Kamala Institute of Technology and Science, Singapur- India)

Yusnani Mohd Yussoff (Universiti Teknologi MARA Malaysia)

Zaid Al Otaibi (King Abdulaziz City for Science and Technology (KACST), Riyadh Saudi Arabia)

Zeeshan Arfeen (Universiti Teknologi Malaysia Malaysia)

TECHNICAL PROGRAM

Time (Kuala Lumpur)	Room: Clarke I, Level 6	Room: Clarke II, Level 6
Monday, November 4		
08:30 - 16:00	Registration	
09:00 - 09:30	Welcoming Remarks	
09:30 - 10:30	KEYNOTE 1: Role of Digital Technology in Green Energy Transition <i>Speaker: Prof. Sri Niwas Singh</i>	
10:30 - 10:45	Break	
10:45 - 11:45	KEYNOTE 2: Advancing Sustainable Energy Solutions: The Electrifications <i>Speaker: Ir. Salmey Abdul Halim</i>	
11:45 - 12:30	Announcement of the Best Paper Award & Group Photo Session	
12:30 - 14:00	Lunch & Networking Session (Venue: Latest Recipe, Level 5)	
14:00 - 15:30	A11: Power Systems and Smart Grids	
15:30 - 15:45	Break	
15:45 - 17:45	A12: Power Electronics 1	
19:30 - 21:00	Conference Dinner (Pool Bar & Grill@8, Level 8 – Beside the swimming pool)	
Tuesday, November 5		
08:30 - 12:30	Registration	
08:30 - 10:30		A21: Control Systems, Robotics and Mechatronics / Electrical Machines and Drives
10:30 - 10:45		Break
10:45 - 12:30		A22: Renewable Energy / Industrial Electronics and Education
12:30 - 14:00		Lunch & Networking session (Venue: Latest Recipe, Level 5)
14:00 - 15:30		A23: Power Electronics 2
15:30 - 15:45		Break
15:45 - 17:30		A24: Signal and Image Processing and Computational Intelligence / Cloud Computing, Big Data and Software Engineering / Electronic Systems on Chip and Embedded Control / Industrial Automation, Communication, Networking and Informatics

Monday, November 4, 2024

Session	: Keynote 1
Title	: Role of Digital Technology in Green Energy Transition
Speaker	: Prof. Sri Niwas Singh (Director, Atal Bihari Vajpayee- Indian Institute of Information Technology and Management (ABV-IIITM), Gwalior, India)
Time	: 9:30 - 10:30
Room	: Clarke I, Level 6
Chair	: Ts. Dr. Wan Noraishah Wan Abdul Munim (IEEE PELS Malaysia Chapter)

10:30 - 10:45 : Break

Session	: Keynote 2
Title	: Advancing Sustainable Energy Solutions: The Electrifications
Speaker	: Ir. Salmey Abdul Halim (Project Director / Custodian Electrical Pengerang Cogeneration Plant (PCP) and Pengerang Transmission Line Projects (PTL), PD&T Division, PETRONAS)
Time	: 10:45 - 11:45
Room	: Clarke I, Level 6
Chair	: Ts. Dr. Wan Noraishah Wan Abdul Munim (IEEE PELS Malaysia Chapter)

11:45 - 12:30 : Announcement of the Best Paper Award and Group Photo Session

12:30 - 14:00: Lunch & Networking Session (*Venue: Latest Recipe, Level 5*)

Monday, November 4, 2024

Date : Monday, November 4, 2024
Time : 14:00 - 15:30
Session : A11: Power Systems and Smart Grids
Room : Clarke I, Level 6
Chair : Muhammad Ammirul Atiqi Mohd Zainuri

- 14:00** *Adaptive Droop-Based Differential Current Protection Scheme for Inverter-Based Islanded Microgrids*
 Ahmed M Abdelmnam, Hatem H Zeineldin, Ahmed Al Durra and Ehab El-Saadany
- 14:15** *A Coordinated Operation Control of Grid-Forming and Grid-Following to Improve Microgrid Large Signal Stability*
Muntathir Al Talaq, Muhammad Abdelghany, Ahmed Al Durra, Hatem H Zeineldin and Tarek EL-Fouly
- 14:30** *A Multi-Functional Virtual Impedance for Droop-Controlled Inverter-Based Microgrids*
Nour M Shabar, Hatem H Zeineldin, Ehab El-Saadany and Khaled Aljaafari
- 14:45** *Vulnerability of Demand Response Programs Under Price Anticipating and Cooperative Agent Behavior*
Pratyush Chakraborty, Harshit Agarwal and Meghana Bellamkonda
- 15:00** *Enhancing System Resilience: MILP Application for Efficient Load Reduction in Islanded Multi-Area Distribution Networks*
Sohail Sarwar, Michael M. C. Merlin and Aristides Kiprakis
- 15:15** *Impact Assessment of Distributed Secondary Control Schemes for Autonomous AC Microgrids Under Multipoint FDI Attacks on Q-V Droop*
 Yifeng Huang, Hanfei Xu, Runhan Xie, Chee Shen Lim, Fei Xue and Lin Jiang

15:30 – 15:45: Break

Date : Monday, November 4, 2024
Time : 15:45 - 17:45
Session : A12: Power Electronics 1
Room : Clarke I, Level 6
Chair : Mohd Amran Mohd Radzi

- 15:45** *A New Single-Phase High Gain Microinverter for Photovoltaic Applications*
 S. V. K. Naresh, Hussain Shareef, Arup Ratan Paul and Balram Kumar
- 16:00** *Mission-Profile Based Reliability Assessment of Grid Integrated Photovoltaic System Installed in the United Arab Emirates*
 S. V. K. Naresh, Hussain Shareef, Ibrahim Nizam, Sankar Peddapati, Hamdan Mohamed Abuseem Al-Ali, Rashed Al Ketbi, Abdulla Ali Abdulla Almansoor and Abdulrahman Hameed
- 16:15** *Nonlinear Large Signal Stability Analysis of Dispatchable Virtual Oscillator Control*
 Muhammad Abdelghany, Muntathir Al Talaq, Ahmed Al Durra and Hatem H Zeineldin
- 16:30** *Three-Phase Switched-Capacitor Common-Grounded Multilevel Inverter for EV Application*
Sumant Kumar Dalai, Kaibalya Prasad Panda and Gayadhar Panda
- 16:45** *A Single-Stage Single-Phase Boost Inverter With Common Ground and Continuous Input Current*
Andy Chua, Sze Sing Lee, Anurag Sharma, Mohamed Dahidah and Kuan Tak Tan

- 17:00** *Performance Enhancement of Flyback Converter's Primary Current at High Switching Frequency Utilizing Novel Input Impedance Match Technique*
Muhamad Faizal Yaakub, Mohd Amran Mohd Radzi, Maaspaliza Azri, Faridah Hanim Mohd Noh, Suhaidi Shafie and Norhafiz Azis
- 17:15** *Research on a Negative Non-Isolated Multi-Port DC-DC Converter Based on LC Resonant*
Yufei Guo, Yiliang Li, Xihong Hu and Dianguo Xu
- 17:30** *Dual-Port Output Non-Isolated DC/DC Converter With Adaptive Inductor*
Yufei Guo, Xihong Hu, Yijie Wang and Dianguo Xu

19:00 - 21:00: Conference Dinner

Tuesday, November 5, 2024

Date : Tuesday, November 5, 2024
Time : 8:30 - 10:30
Session : A21: Control Systems, Robotics and Mechatronics / Electrical Machines and Drives
Room : Clarke II, Level 6
Chair : Khairul Safuan Muhammad

- 8:30** *Discrete-Time Suboptimal Pole Placement Control for a System With Measurement Noise*
Wataru Kase
- 8:45** *AI-Based Surrogate Models of Digital Twins for Industrial Processes*
Emmanuel Lwele and Alex Shenfield
- 9:00** *Model Predictive Online Trajectory Planning for Adaptive Battery Discharging in Fuel Cell Vehicle*
Katsuya Shigematsu, Hikaru Hoshino and Eiko Furutani
- 9:15** *Feedback Control of Printing Nozzle by Force Sensing Device With High-Accuracy Load Cell*
Shinichi Ishikawa and Ryosuke Tasaki
- 9:30** *CBF-DOB-Based Current-Constrained Control for PMSM Systems Subject to Unmatched Disturbances*
Cong Li, Zhongding Zhang, Jun Yang and Zuo Wang
- 9:45** *Cogging Torque Reduction Using Magnet Phase Inverted Shape in Dual Axial Gap Motor*
Akito Mizuno, Wataru Kitagawa and Takaharu Takeshita
- 10:00** *Analyzing Fault Tolerance in a 1.3 Kw Six-Phase Fully Coreless Axial-Flux Permanent-Magnet Generator*
Asiful Habib, Muhammad Ammirul Atiqi Mohd Zainuri, Ahmad Asrul Ibrahim, Nasrudin Abdul Rahim and Mohd Amran Mohd Radzi
- 10:15** *Machine Parameters Estimation Using Closed-Loop Control Signal Curve Fitting*
Wan Noraishah Wan Abdul Munim, Hang Seng Che, Mahdi Tousizadeh, Rahimi Baharom, Khairul Safuan Muhammad and Nor Farahaida Abdul Rahman

10:30 - 10:45: Break

Date : Tuesday, November 5, 2024
Time : 10:45 - 12:30
Session : A22: Renewable Energy / Industrial Electronics and Education
Room : Clarke II, Level 6
Chair : Ramani Kannan

- 10:45** *Application of Artificial Intelligence Techniques to Enhance the Solar Power Generation: Case Study in Sri Lanka*
Abishaa Rubanathan and Chathura Rajapakse
- 11:00** *Optimal Energy Management System for Green Hydrogen Production and Seawater Desalination Plants With Demand Response Integration*
Rawan A Abdelsalam, Ehab El-Saadany, Hany Farag and Hatem H Zeineldin
- 11:15** *Evaluation of the Electrical Performance of Single-Electrode Mode Triboelectric Nanogenerators Based on Different Conductor Materials*
 Ili Farhana Mohamad Ali Nasri, Zulhakim ZaAba, Nuraliza Noorawzi, Wan Nursheila Wan Jusoh, Ridwan Yahaya and Shaiful Bahri Zainal Abidin
- 11:30** *Optimising Solar PV System Performance Using Feedforward Neural Network Control Algorithm*
 Ramani Kannan
- 11:45** *Energy Generating From Footsteps on Piezoelectric Module*
 Syed Farid Syed Adnan
- 12:00** *Design and Analysis of an Optimized Proportional-Integral-Derivative (PID) Controller for Photovoltaic (PV) Based Microgrid in Power System*
Naeem M. S. Honnoon and Rahimi Baharom
- 12:15** *Enhancing Teager Energy in Time Frequency Transforms With a Concentrated Discrete Window*
K Krishnendu and Pyari Mohan Pradhan

12:30 - 14:00: Lunch and Networking session (Venue: Latest Recipe, Level 5)

Date : Tuesday, November 5, 2024
Time : 14:00 - 15:30
Session : A23: Power Electronics 2
Room : Clarke II, Level 6
Chair : Wan Noraishah Wan Abdul Munim

- 14:00** *Efficient Vehicle-To-Vehicle Wireless Power Transfer Using SPMC With Integrated APF for Enhanced Power Quality*
Rahimi Baharom, Muhammad Shawwal Mohamad Rawi and Muhammad Zikri Abd Aziz
- 14:15** *The Study of Overlaid Noise and Modeling for Two Onboard DC/DC Converters With Relative Positions*
Hyuga Yanagisawa, Wataru Kitagawa, Takaharu Takeshita and Katsuma Kubo
- 14:30** *Multilevel Converter-Based Charging Station for A Fleet of Electric Transit Buses*
Nikilesh Vinayak Wanjari, Sumit Kumar Chattopadhyay and Neha Tak
- 14:45** *A Comprehensive Review on Advancements in Battery Charger Technologies for Electric Vehicles*
Rahimi Baharom and Muhammad Hakiem Hayroman

- 15:00** *Advancement in High-Power Fast Charging Technologies for Electric Vehicles: Converter Topologies, Control Methods, and Infrastructure Integration*
Rahimi Baharom and Muhammad Zaim Azizi Bin Zahari
- 15:15** *Fault Identification Technique to Identify Open Circuit Fault Switch Location Based on SPMC Boost Rectifier Circuit Using MATLAB Simulink*
Khairul Safuan Muhammad, Amir Hakim Hassan, Rahimi Baharom and Wan Noraishah Wan Abdul Munim

15:30 - 15:45: Break

Date	: Tuesday, November 5, 2024
Time	: 15:45 - 17:30
Session	: A24: Signal and Image Processing and Computational Intelligence / Cloud Computing, Big Data and Software Engineering / Electronic Systems on Chip and Embedded Control / Industrial Automation, Communication, Networking and Informatics
Room	: Clarke II, Level 6
Chair	: Syed Farid Syed Adnan

- 15:45** *Implementation of a Camera Sensor for Helmet Detection in Two-Wheelers and Its Integration With the Electronic Control Unit (ECU)*
Akul P., Abhijna MB and Dhruvi T Avlani
- 16:00** *EEG-Based Brain Source Localization of Mental Stress*
Nada Zahour, Malik Nasir Afzal Khan, Hasan Mir and Hasan Al-Nashash
- 16:15** *R-TAP: A Cloud-Based Multi-Region Road Traffic Accident Severity Prediction Model*
Albe Bing Zhe Chai, Bee Theng Lau, Mark Tee Kit Tsun and Chris McCarthy
- 16:30** *Stress Pattern Recognition Using Spatio Temporal Features Based on EEG Sport Simulation*
Diah Risqiwati, Hideyuki Ooshima, Hiroki Sato, Adhi Dharma Wibawa, Evi Septiana Pane and Mauridhi Hery Purnomo
- 16:45** *Validating IP Reputation in Cloud Firewall Systems Using Machine Learning Driven Signature Generation and Detection Techniques*
NW Chanka Lasantha, Valmik Tilwari, MWP Maduranga, Ruvan Abeysekara, Nilotpal Chakraborty and Debashree Sharma
- 17:00** *A 12.11 mW, 99 pJ/Conv.-Step SAR ADC With Optimal Power Efficiency for IoT*
Buddhi Prakash Sharma, Ishaan Sarma, Anu Gupta and Chandra Shekhar
- 17:15** *Design of an Extended State Cubature Kalman Filter*
Chen Tang, Zheng Tian, Zuo Wang and Dongqing Liu

AUTHORS INDEX

Name (affiliation country)

Abdulla Ali Abdulla Almansoor (United Arab Emirates University United Arab Emirates)
Abdulrahman Hameed (United Arab Emirates University United Arab Emirates)
Abhijna MB (Global Academy of Technology India)
Abishaa Rubanathan (University of Kelaniya Sri Lanka)
Adhi Dharma Wibawa (Institut Teknologi Sepuluh Nopember Indonesia)
Ahmad Asrul Ibrahim (Universiti Kebangsaan Malaysia Malaysia)
Ahmed Al Durra (Khalifa University United Arab Emirates)
Ahmed M Abdelmam (Khalifa University United Arab Emirates)
Akito Mizuno (Nagoya Institute of Technology Japan)
Akul P (VTU India)
Albe Bing Zhe Chai (Swinburne University of Technology Sarawak Campus Malaysia)
Alex Shenfield (Sheffield Hallam University United Kingdom (Great Britain))
Amir Hakim Hassan (Universiti Teknologi MARA Malaysia)
Andy Chua (Newcastle University Singapore)
Anu Gupta (Head of the Department India)
Anurag Sharma (Newcastle University Singapore)
Aristides Kiprakis (University of Edinburgh United Kingdom (Great Britain))
Arup Ratan Paul (IIT Bombay India)
Asiful Habib (UMPEDAC Malaysia)
Balram Kumar (National Institute of Technology Andhra Pradesh India)
Bee Theng Lau (University of Technology Swinburne Sarawak Campus Malaysia)
Buddhi Prakash Sharma (BITS Pilani India)
Chandra Shekhar (Birla Institute of Technology and Science India)
Chathura Rajapakse (University Of Kelaniya Sri Lanka)
Chee Shen Lim (Xi'an Jiaotong-Liverpool University China)
Chen Tang (Southeast University China)
Chris McCarthy (Swinburne University of Technology Australia)
Cong Li (Southeast University China)
Debashree Sharma (Institute of Information Technology, Guwahati India)
Dhruvi T Avlani (Global Academy of Technology India)
Diah Risqiwati (Institut Teknologi Sepuluh Nopember Surabaya Indonesia)
Dianguo Xu (Harbin Institute of Technology China)
Dongqing Liu (Southeast University China)
Ehab El-Saadany (Khalifa University of Science and Technology United Arab Emirates)
Eiko Furutani (University of Hyogo Japan)
Emmanuel Lwele (Sheffield Hallam University United Kingdom (Great Britain))
Evi Septiana Pane (Industrial Training Centre of Surabaya Indonesia)
Faridah Hanim Mohd Noh (Universiti Tun Hussien Onn Malaysia Malaysia)
Fei Xue (Xi'an Jiaotong-Liverpool University China)
Gayadhar Panda (NIT Meghalaya India)
Hamdan Mohamed Abuseem Al-Ali (United Arab Emirates University United Arab Emirates)
Hanfei Xu (Xi'an Jiaotong-Liverpool University China)

Hang Seng Che (UMPEDAC Malaysia)
Hany Farag (York University Canada)
Harshit Agarwal (Birla Institute of Technology Pilani, Hyderabad Campus India)
Hasan Al-Nashash (American University of Sharjah United Arab Emirates)
Hasan Mir (American University of Sharjah United Arab Emirates)
Hatem H Zeineldin (Khalifa University United Arab Emirates)
Hideyuki Ooshima (Shibaura Institute of Technology Japan)
Hikaru Hoshino (University of Hyogo Japan)
Hiroki Sato (Shibaura Institute of Technology Japan)
Hussain Shareef (United Arab Emirates University United Arab Emirates)
Hyuga Yanagisawa (Nagoya Institute of Technology Japan)
Ibrahim Nizam (State Electric Company Limited Maldives)
Ili Farhana Mohamad Ali Nasri (Universiti Kuala Lumpur Malaysian Institute of Aviation Technology Malaysia)
Ishaan Sarma (BITS Pilani India)
Jun Yang (Loughborough University United Kingdom (Great Britain))
K Krishnendu (Indian Institute of Technology, Roorkee India)
Kaibalya Prasad Panda (Pandit Deendayal Energy University India)
Katsuma Kubo (Nagoya Institute of Technology Japan)
Katsuya Shigematsu (University of Hyogo Japan)
Khairul Safuan Muhammad (Universiti Teknologi MARA Malaysia)
Khaled Aljaafari (Khalifa University United Arab Emirates)
Kuan Tak Tan (Singapore Institute of Technology Singapore)
Lin Jiang (Liverpool University United Kingdom (Great Britain))
Maaspaliza Azri (Faculty of Engineering Malaysia)
Mahdi Tousizadeh (University of Warwick United Kingdom (Great Britain))
Malik Nasir Afzal Khan (American University of Sharjah United Arab Emirates)
Mark Tee Kit Tsun (Swinburne University of Technology Malaysia)
Mauridhi Hery Purnomo (Institut of Technology Sepuluh Nopember Indonesia)
Meghana Bellamkonda (Birla Institute of Technology and Science Pilani, Hyderabad Campus India)
Michael M. C. Merlin (University of Edinburgh United Kingdom (Great Britain))
Mohamed Dahidah (The University of Newcastle United Kingdom (Great Britain))
Mohd Amran Mohd Radzi (Universiti Putra Malaysia Malaysia)
Muhamad Faizal Yaakub (Universiti Teknikal Malaysia Melaka Malaysia)
Muhammad Abdelghany (Khalifa University United Arab Emirates)
Muhammad Ammirul Atiqi Mohd Zainuri (Universiti Kebangsaan Malaysia Malaysia)
Muhammad Hakiem Hayroman (Universiti Teknologi MARA Malaysia)
Muhammad Shawwal Mohamad Rawi (Faculty of Electrical Engineering Malaysia)
Muhammad Zaim Azizi Bin Zahari (Universiti Teknologi MARA (UiTM) Malaysia)
Muhammad Zikri Abd Aziz (Universiti Teknologi MARA Malaysia)
Muntathir Al Talaq (Khalifa University United Arab Emirates)
MWP Maduranga (Sri Lanka Technology Campus Padukka Sri Lanka)
Nada Zahour (American University of Sharjah United Arab Emirates)
Naeem M. S. Honnoon (Universiti Teknologi MARA Shah Alam, Selangor Malaysia)
Nasrudin Abdul Rahim (University Malaya Malaysia)
Neha Tak (Indian Institute of Technology Delhi India)

Nikilesh Vinayak Wanjari (Indian Institute of Technology Delhi India)
Nilotpal Chakraborty (Indian Institute of Information Technology, Guwahati India)
Nor Farahaida Abdul Rahman (Universiti Teknologi MARA Malaysia)
Norhafiz Azis (Universiti Putra Malaysia Malaysia)
Nour M Shabar (Khalifa University United Arab Emirates)
Nuraliza Noorawzi (Universiti Kuala Lumpur Malaysian Institute of Aviation Technology Malaysia)
NW Chanka Lasantha (IIC University of Technology, Phnom Penh Cambodia)
Pratyush Chakraborty (BITS Pilani, Hyderabad Campus, Jawaharnagar India)
Pyari Mohan Pradhan (IIT Roorkee India)
Rahimi Baharom (Universiti Teknologi MARA Malaysia)
Ramani Kannan (Universiti Teknologi Petronas Malaysia)
Rashed Al Ketbi (United Arab Emirates University United Arab Emirates)
Rawan A Abdelsalam (Khalifa University United Arab Emirates)
Ridwan Yahaya (Science and Technology Research Institute for Defence Malaysia)
Runhan Xie (Xi'an Jiaotong-Liverpool University China)
Ruvan Abeysekara (IIC University of Technology Phnom Penh Cambodia)
Ryosuke Tasaki (Aoyama Gakuin University Japan)
S. V. K. Naresh (United Arab Emirates University United Arab Emirates)
Sankar Peddapati (National Institute of Technology, Andhra Pradesh India)
Shaiful Bahri Zainal Abidin (Science and Technology Research Institute for Defence Malaysia)
Shinichi Ishikawa (Aoyama Gakuin University Japan)
Sohail Sarwar (University of Edinburgh United Kingdom (Great Britain))
Suhaidi Shafie (UPM Malaysia)
Sumant Kumar Dalai (National Institute of Technology Meghalaya India)
Sumit Kumar Chattopadhyay (Indian Institute of Technology Delhi India)
Syed Farid Syed Adnan (Universiti Teknologi MARA Malaysia)
Sze Sing Lee (Newcastle University in Singapore Singapore)
Takaharu Takeshita (Nagoya Institute of Technology Japan)
Tarek EL-Fouly (Khalifa University of Science and Technology United Arab Emirates)
Valmik Tilwari (Indian Institute of Information Technology, Guwahati India)
Wan Noraishah Wan Abdul Munim (Universiti Teknologi MARA Malaysia)
Wan Nursheila Wan Jusoh (Malaysian Institute of Aviation Technology Malaysia)
Wataru Kase (Osaka Institute of Technology Japan)
Wataru Kitagawa (Nagoya Institute of Technology Japan)
Xihong Hu (China Aerospace Science and Industry Corporation Limited China)
Yifeng Huang (Xi'an Jiaotong-Liverpool University China)
Yijie Wang (Harbin Institute of Technology China)
Yiliang Li (Harbin Institute of Technology China)
Yufei Guo (Harbin Institute of Technology China)
Zheng Tian (Southeast University China)
Zhongding Zhang (Southeast University China)
Zulhakim ZaAba (Universiti Kuala Lumpur Malaysian Institute of Aviation Technology Malaysia)
Zuo Wang (Southeast University China)

Copyright and Reprint Permission: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. For reprint or republication permission, email to IEEE Copyrights Manager at pubs-permissions@ieee.org. All rights reserved. Copyright ©2024 by IEEE.

PECon 2024

2024 IEEE International Conference on Power and Energy

**LE MÉRIDIEN KUALA LUMPUR MALAYSIA
4 to 5 November 2024**

CONTENT

WELCOME MESSAGE.....iii

ORGANISING COMMITTEE.....iv

REVIEWERS.....v

TECHNICAL PROGRAM.....vii

 Monday, November 4.....viii

 Tuesday, November 5.....x

AUTHORS INDEX.....xiii

WELCOME MESSAGE

Dear Colleagues, Participants, and Distinguished Guests,

It is my great pleasure and honour to welcome you to the **2024 IEEE International Conference on Power and Energy (PECon 2024)**, which will be held on 4th and 5th November 2024 at the beautiful Le Meridien Hotel in Kuala Lumpur, Malaysia. This marks the 10th edition of PECon, a biennial event that has grown to become a premier platform for exchanging the latest developments and cutting-edge research in the fields of electrical power, power electronics, electrical drives, renewable energy, and control systems.

PECon 2024 is jointly organized by the IEEE Power Electronics Society (IEEE PELS) Malaysia Chapter and the IEEE Power & Energy Society (IEEE PES) Malaysia Chapter. This collaboration reflects the increasing importance of power electronics and energy systems in addressing global energy challenges, particularly as we transition to more sustainable solutions.

We are excited to feature an impressive lineup of keynote speakers, including:

- **Prof. Sri Niwas Singh**, Director of Atal Bihari Vajpayee-Indian Institute of Information Technology and Management (ABV-IIITM), Gwalior, India, who will deliver a keynote titled "**Role of Digital Technology in Green Energy Transition**." Prof. Singh will explore the pivotal role digital technologies play in accelerating the transition toward sustainable energy systems.
- **Ir. Salmey Abdul Halim**, Project Director / Custodian Electrical at Pengerang Cogeneration Plant (PCP) and Pengerang Transmission Line Projects (PTL), PD&T Division, PETRONAS, will present on "**Advancing Sustainable Energy Solutions: The Electrifications**." Ir. Salmey will share her insights on how electrification is reshaping sustainable energy practices in large-scale industrial projects.

In addition to these keynote addresses, PECon 2024 will feature a comprehensive technical program that includes paper presentations, panel discussions, and technical exhibitions showcasing innovative technologies and solutions. The conference will provide a unique opportunity to engage with global experts, exchange ideas, and foster collaborations that will drive future advancements in power and energy.

Kuala Lumpur, the vibrant host city, offers a fascinating mix of tradition and modernity, making it the perfect backdrop for our conference. We hope you will take some time to explore the city's rich cultural heritage while enjoying Malaysia's renowned hospitality.

I would like to extend my heartfelt thanks to the organizing committee, technical program committee, sponsors, and participants for their dedication and contributions in making PECon 2024 possible. Your support ensures that this conference continues to serve as a platform for innovation, collaboration, and knowledge-sharing in the power and energy sectors.

Thank you for joining us at PECon 2024. We look forward to a dynamic and productive conference and hope that you will find it both professionally rewarding and personally enjoyable.

Warm regards,

Rahimi Baharom
General Chair
2024 IEEE International Conference on Power and Energy (PECon)

ORGANIZING COMMITTEE

Patron

Ramani Kannan
IEEE PELS, Universiti Teknologi PETRONAS

General Chair

Rahimi Baharom
IEEE PELS, IE/IA, Universiti Teknologi MARA

General Co-Chair

Nur Ashida Salim
IEEE PES, Universiti Teknologi MARA

Technical Program Chair

Mohd Amran Mohd Radzi
IEEE PELS, IE/IA, Universiti Putra Malaysia

Secretary

Wan Noraishah Wan Abdul Munim
IEEE PELS, Universiti Teknologi MARA

Publication Chair

Syed Farid Syed Adnan
IEEE PELS, IE/IA, Universiti Teknologi MARA

Finance Chair

Khairul Safuan Muhammad
IEEE PELS, IE/IA, Universiti Teknologi MARA

Local Arrangement and Exhibition Chair

Muhammad Ammirul Atiqi Mohd Zainuri
IEEE PELS, Universiti Kebangsaan Malaysia

Publicity Chair

Shamsul Aizam Zulkifli
IEEE PELS, IE/IA, Universiti Tun Hussein Onn Malaysia

Sponsorship Chair

Nor Zaihar Yahaya
IEEE PELS, Universiti Teknologi PETRONAS

Co-Chairs

Tan Chee Wei, *Universiti Teknologi Malaysia*
Norjulia Mohamad Nordin, *Universiti Teknologi Malaysia*
Shahrin Md Ayob, *Universiti Teknologi Malaysia*
Miszaina Osman, *Universiti Tenaga Nasional Malaysia*
Hasmat Malik, *Universiti Teknologi Malaysia*

REVIEWERS

Name (affiliation country)

Afarulrazi Abu Bakar (University Tun Hussein Onn Malaysia Malaysia)
Ahmad Farid Abidin (Faculty of Electrical Engineering, Universiti Teknologi Mara Malaysia)
Ahmed Zubair (Bangladesh University of Engineering and Technology Bangladesh)
Alessandro Carrega (UNIGE Italy)
Alessandro Testa (Ministry of Economy and Finance Italy)
Alireza Ghasempour (University of Applied Science and Technology USA)
Baljit Singh (Universiti Teknologi MARA Malaysia)
Chee Wei Tan (Universiti Teknologi Malaysia Malaysia)
Chutisant Kerdvibulvech (National Institute of Development Administration Thailand)
Davis Montenegro Martinez (EPRI USA)
Hao Wang (Monash University Australia)
Harikumar Rajaguru (Bannari Amman Institute of Technology India)
Hasmat Malik (Universiti Teknologi Malaysia Indonesia)
Jiachyi Wu (National Taiwan Ocean University Taiwan)
Junainah Sardi (Universiti Teknikal Malaysia Melaka Malaysia)
Kwan Yiew Lau (Universiti Teknologi Malaysia Malaysia)
Kyairul Azmi Baharin (Universiti Teknikal Malaysia Melaka Malaysia)
Lim Eng Aik (Universiti Malaysia Perlis Malaysia)
M Manikandan (Anna University India)
Madan Singh (none India)
Mahdi Karami (Universiti Putra Malaysia Malaysia)
Majid Aryanezhad (Tesla Energy Company Iran)
Mehtab Fatima (Amity India)
Mihai Gavrilas (Technical University of Iasi Romania)
Miszaina Osman (Universiti Tenaga Nasional Malaysia)
Mohd Amran Mohd Radzi (Universiti Putra Malaysia Malaysia)
Mohd Ashraf Ahmad (Universiti Malaysia Pahang Malaysia)
Montree Kumngern (King Mongkut's Institute of Technology Ladkrabang Thailand)
Muhammad Ammirul Atiqi Mohd Zainuri (Universiti Kebangsaan Malaysia Malaysia)
Nishant Doshi (PDPU India)
Nor Rul Hasma Abdullah (Universiti Malaysia Pahang Malaysia)
Nor Zaihar Yahaya (Universiti Teknologi PETRONAS Malaysia)
Norazlan Hashim (Universiti Teknologi MARA Malaysia)
Noriko Etani (Kyoto University Japan)
Nur Ashida Salim (Universiti Teknologi MARA Malaysia)
Omar H. Abdalla (Helwan University Egypt)
Paolo Crippa (Marche Polytechnic University Italy)
Payam Teimourzadeh Baboli (Hamburg University of Technology Germany)
Pooya Ghani (MAPNA Electric & Control, Engineering & Manufacturing Co. (MECO) Iran)
Raaed Faleh Hassan (Middle Technical University Iraq)

Radu-Emil Precup (Politehnica University of Timisoara Romania)
Rahimi Baharom (Universiti Teknologi MARA Malaysia)
Ramani Kannan (Universiti Teknologi Petronas Malaysia)
Rijalul Fahmi Mustapa (Universiti Teknologi MARA Malaysia)
Rosaura Palma-Orozco (Instituto Politécnico Nacional Mexico)
Samir Ladaci (Ecole Nationale Polytechnique Algeria)
Sergey B. Biryuchinskiy (Vigitek, Inc. USA)
Shahrin Md. Ayob (Universiti Teknologi Malaysia Malaysia)
Shajith Ali (SRM Institute of Science and Technology India)
Shamsul Aizam Zulkfli (UTMH Malaysia)
Shiva Mishra (Jharkhand State Electricity Board India)
Sorin Ioan Deaconu (Politehnica University Timisoara Romania)
Tae-Eung Sung (Yonsei University Korea (South))
TC Manjunath (Dayananda Sagar College of Engineering India)
Toktam Sharifian Attar (Khorasan Regional Electricity Company Iran)
Vijay Pande (Essel Adi Smart Grid Solutions Limited India)
Vinayak Narayan Shet (Goa College of Engineering India)
Wan Noraishah Wan Abdul Munim (Universiti Teknologi MARA Malaysia)
Zaid Al Otaibi (King Abdulaziz City for Science and Technology (KACST), Riyadh Saudi Arabia)
Zeashan Hameed Khan (KFUPM Saudi Arabia)

TECHNICAL PROGRAM

Time (Kuala Lumpur)	Room: Clark I, Level 6	Room: Parry, Level 6
Monday, November 4, 2024		
08:30 - 16:00	Registration	
09:00 - 09:30	Welcoming Remarks	
09:30 - 10:30	Keynote 1: Role of Digital Technology in Green Energy Transition Speaker: Prof. Sri Niwas Singh	
10:30 - 10:45	Break	
10:45 - 11:45	Keynote 2: Advancing Sustainable Energy Solutions: The Electrifications Speaker: Ir. Salmey Abdul Halim	
11:45 - 12:30	Announcement of the Best Paper Award & Group Photo Session	
12:30 - 14:00	Lunch & Networking session (Venue: Latest Recipe, Level 5)	
14:00 - 15:30		C11: Power Electronics and Applications
15:30 - 15:45		Break
15:45 - 17:45		C12: Renewable Energy Technologies and Issues / Blockchain in Power
19:30 - 21:00	Conference Dinner (Venue: Pool Bar & Grill@8, Level 8 – Beside the swimming pool)	
Tuesday, November 5, 2024		
08:30 - 12:30	Registration	
08:30 - 10:30		C21: Smart Grid Technologies and Issues
10:30 - 10:45		Break
10:45 - 12:30		C22: Power System Planning and Operation / Electrical Machines and Drives
12:30 - 14:00		Lunch & Networking session (Venue: Latest Recipe, Level 5)
14:00 - 15:30		C23: Power System Economics and Energy Markets / Information and Communication Technologies
15:30 - 15:45		Break
15:45 - 17:00		C24: Power Quality and Power Security / High Voltage Engineering & Technology

Monday, November 4, 2024

Session	: Keynote 1
Title	: Role of Digital Technology in Green Energy Transition
Speaker	: Prof. Sri Niwas Singh (Director, Atal Bihari Vajpayee- Indian Institute of Information Technology and Management (ABV-IIITM), Gwalior, India)
Time	: 9:30 - 10:30
Room	: Clarke I, Level 6
Chair	: Ts. Dr. Wan Noraishah Wan Abdul Munim (IEEE PELS Malaysia Chapter)

10:30 - 10:45 : Break

Session	: Keynote 2
Title	: Advancing Sustainable Energy Solutions: The Electrifications
Speaker	: Ir. Salmey Abdul Halim (Project Director / Custodian Electrical Pengerang Cogeneration Plant (PCP) and Pengerang Transmission Line Projects (PTL), PD&T Division, PETRONAS)
Time	: 10:45 - 11:45
Room	: Clarke I, Level 6
Chair	: Ts. Dr. Wan Noraishah Wan Abdul Munim (IEEE PELS Malaysia Chapter)

11:45 - 12:30 : Announcement of the Best Paper Award and Group Photo Session

12:30 - 14:00 : Lunch & Networking Session (*Venue: Latest Recipe, Level 5*)

Monday, November 4, 2024

Date : Monday, November 4, 2024
Time : 14:00 - 15:30
Session : C11: Power Electronics and Applications
Room : Parry, Level 6
Chair : Nor Zaihar Yahaya

- 14:00** *Dual-Mode Operated Multilevel Inverter: Design and Hardware Implementation*
 Md. Ahsanul Alam, Md Siddikur Rahman, Fayzur Rahman, Nor Zaihar Yahaya and Md Tariqul Islam
- 14:15** *GaN FET Gate Driver for Crosstalk Suppression*
 Jia Yi Low, Freddy Kheng Suan Tan, Mumtaj Begam Kasim Rawthar and Zhi Lam Ting
- 14:30** *Optimizing Grid-To-Vehicle Wireless Power Transfer With a Single-Phase Matrix Converter*
 Rahimi Baharom, Wan Muhamad Hakimi Wan Bunyamin and Muhammad Akhil Kamarudin
- 14:45** *Efficiency Improvement of Parallel Source Inverters in Islanded AC Microgrid*
Md Akib Hasan, Md Showkot Hossain, Mohd Azrik Roslan, Azrilmukmin Azmi, Jenn Hwai Leong and Ahmad Afif Nazib
- 15:00** *Developing a Small Footprint and Low-Cost Solar Charge Controller*
Aimi Dalila Azhar, Fazrena Hamid, Azrul Ghazali and Ahmad Wafi Mahmood Zuhdi
- 15:15** *Capacitorless Switched Inductor Single DC Source Multilevel Inverter*
Mohamad Hasif Mohamad Ishak, Norjulia Mohamad Nordin, Mohd Rodhi Sahid and Razman Ayop

15:30 - 15:45: Break

Date : Monday, November 4
Time : 15:45 - 17:45
Session : C12: Renewable Energy Technologies and Issues / Blockchain in Power
Room : Parry, Level 6
Chair : Ramani Kannan

- 15:45** *Artificial Neural Network (ANN) Prediction of Guide Vane for Effective Utilization of Pump as Turbine (PAT)*
 Salisu Lawan
- 16:00** *Experimental Investigation on the Performance of Single Glazed Nano-Coated Absorber in Solar Air Heaters Integrated With Rectangular Baffles*
Shek Rahman, Salah Issa, Zafar Said, Z. Said and Ahmed Amine Hachicha
- 16:15** *Technoeconomic Analysis on the Development of Solar-Wind Hybrid Power Plant in Komodo Island*
Roby Ikhsan, Alfian Muhammad Reza, Zainal Arifin and Joko Muslim
- 16:30** *Mitigating High EV Charging Demand on Residential Distribution Systems Using Community Energy Storage (CES)*
Nuraina Wahida Abd. Rahman
- 16:45** *The Impact of Different PV Model Parameters on the Characteristics and Behavior of the PV Arrays*
 Khaled Baradie and Muhammad Ammirul Atiqi Mohd Zainuri

- 17:00** *Particle Swarm Optimization for Comprehensive Fault Management in Microgrid System*
Venkata Silpa Borra and K Debnath
- 17:15** *On the Potential of Solar Energy for Hospitals in Malaysia*
Chun Lim Siow, Leao Hen Yew and Anandan Panneerselvam
- 17:30** *Design and Implementation of Blockchain-Based Smart Contracts for Enhancing Ancillary Services Management in Electricity Markets*
Nazreen Junaidi, Md Pauzi Abdullah, Mohamed Shaaban, Johari Abdullah and Nurul Izzati Hashim

19:30 - 21:00: Conference Dinner (Venue: Pool Bar & Grill@8, Level 8 – Beside the swimming pool)

Tuesday, November 5, 2024

Date : Tuesday, November 5, 2024
Time : 8:30 - 10:30
Session : C21: Smart Grid Technologies and Issues
Room : Parry, Level 6
Chair : Shamsul Aizam Zulkfili

- 8:30** *Enhancing the Security of IEC-61850 GOOSE Messages During Transmission*
V Gawthamnathan and Ravi Yadav
- 8:45** *Towards Leveraging Digital Twin Technology in Renewable Energy Microgrids: Applications and Challenges*
Shasha Li, Chee Wei Tan, Kwan Yiew Lau, Chuen Ling Toh, Shahrin Md. Ayob and Miao Yang
- 9:00** *Investigation of the Impact of Control Parameter Optimization on Virtual Synchronous Generator-Based Grid-Forming Inverters for Enhanced Power System Stability*
Aminu Jibrin Aliyu, Ramani Kannan and Eric Tatt Wei Ho
- 9:15** *Impact Assessment of Topology Attack on Power System Using Graph Theory*
Akanksha Malhotra, Bhavya Manish Sharma, Preeti Preeti and Ravi Yadav
- 9:30** *A Review of Smart Microgrid Architecture and Topologies*
Sarmid Shakir Abdulsattar, Chee Wei Tan, Ahmed Tijjani Dahiru, Kwan Yiew Lau, Shahrin Md Ayob and Chuen Ling Toh
- 9:45** *Hybrid Energy Storage Management in a Renewable Energy Based Residential Nanogrid*
Ahmed Tijjani Dahiru, Chee Wei Tan, Kwan Yiew Lau, Chuen Ling Toh, Razman Ayop and Oladimeji Ibrahim
- 10:00** *Digital Twin Simulation and Comparative Study to Understand the Microgrid Operation and Control*
Krishna Kumar Saini, Chinmay Yadav, Hitesh Datt Mathur and Aditya R. Gautam
- 10:15** *Single-FCS Based VSM With SOC Voltage Feedback Controller for Future E-Mobility Network*
Shamsul Aizam Zulkfili

10:30 - 10:45: Break

Date : Tuesday, November 5, 2024
Time : 10:45 - 12:30
Session : C22: Power System Planning and Operation / Electrical Machines and Drives
Room : Parry, Level 6
Chair : Nor Zaihar Yahaya

- 10:45** *Application of Full Stack Web Development Technology in Load Flow Analysis for Real Time Electrical Power System Management*
Nnaemeka Genesis Ajah, Kesandu Chukwubueze Emmanuel Uchenyi, Onyenwe Ifeude Kesandu-Uchenyi and Emenike Ejiogu
- 11:00** *Improving the FMEA Method to Failure Risk Assessment of Transformers, A Case Study in Tehran Electric Power Distribution Transformers*
Atefeh Pour Shafei, Alireza Rezaei, J. Fernando Silva and Joaquim Monteiro
- 11:15** *Enhancing Resilience: Analysis and Prevention of Trip Caused by Bush Fire on Transmission Lines in North Eastern Regional Grid of India*
Bimal Swargiary, Amaresh Mallick, Biswajit Sahu, Chitra Bahadur Thapa and Dinesh Rai
- 11:30** *Impact of Hydro Generation Outage Due to High Silt in Northern Region of India*
Deepak Kumar, Sugata Bhattacharya, Mahavir Prasad Singh, Alok Kumar, Somara Lakra and Nabarun Roy
- 11:45** *Power Loss Reduction by Utilizing Capacitor Bank at Strategic Location With Optimum Sizing Using PSO*
MT Hidayah Ahmad Zawawi, Syed Norazizul Syed Nasir, Rasyidah Binti Mohamad Idris, Madihah Md Rasid, Razman Ayop and Norazliani Binti Md sapari
- 12:00** *BOT Based Real Time Power Management*
Trusha Ajay Biswas
- 12:15** *Multi-Phase Induction Machine Analysis: A Simulation-Based Comparison of Three-Phase and Six-Phase Configurations*
Wan Noraishah Wan Abdul Munim, Wan Muhamad Hakimi Wan Bunyamin, Rahimi Baharom and Khairul Safuan Muhammad

12:30 - 14:00 : Lunch & Networking Session (Venue: Latest Recipe, Level 5)

Date : Tuesday, November 5, 2024
Time : 14:00 - 15:30
Session : C23: Power System Economics and Energy Markets / Information and Communication Technologies
Room : Parry, Level 6
Chair : Muhammad Ammirul Atiqi Mohd Zainuri

- 14:00** *Spot Market Clearing Method Including Unit Commitment*
Keita Kato and Hiroumi Saitoh
- 14:15** *Streamlining Economic Load Dispatch Operations Through Cloud Solutions*
Gaurav Kaushikkumar Rawal, Abhishek Kumar and Ravi Yadav
- 14:30** *Class Topper Optimization Approach to Solve Non-Convex Combined Heat and Power Economic Dispatch Problems in Power Systems*
Pradeep Kumar Gupta, Kaur Tuttelberg and Jako Kilter

- 14:45** *Methodology for Forecasting the Cost of Substation Asset Management in Upcoming Future*
Guido Andreesen, Madis Leinakse, Jako Kilter and Mart Landsberg
- 15:00** *Low DG Fuel Consumption Solution for Communications Base Stations in Areas With Poor Mains Power Availability*
Jiliang Liu
- 15:15** *Design & Fabrication of Mxene-Coated Fabric for EMI Shielding*
Arivarasi A, Harini M, Thaarini A, Shashwath NS and Ramani Kannan

15:30 - 15:45 : Break

Date : Tuesday, November 5, 2024
Time : 15:45 - 17:00
Session : C24: Power Quality and Power Security / High Voltage Engineering & Technology
Room : Parry, Level 6
Chair : Khairul Safuan Muhammad

- 15:45** *An Optimal Tuning of PI Controller for Shunt Active Power Filter Based on PI-PSO Approach*
Syahar Azalia Ab Shukor, Mohd Amran Mohd Radzi, Nashiren Farzilah Mailah, Ts. Ir. Mohammad Lutfi Othman, Wahidah Abd. Halim and Atikah Razi
- 16:00** *Deep Learning Method With Application to Neutral-To-Ground Voltage (NTGV) Classification*
Mohd Ezwan Mahadan, Ahmad Farid Abidin, Mohd Abdul Talib Mat Yusoh, Muhammad Muzamil Mustam, Siti Aliyah Mohd Saleh and Muhammad Asraf Hairuddin
- 16:15** *Hyperparameter Analysis-Based Long-Short Term Memory (LSTM) for Power Quality Disturbances Classification*
Shahrani Shahbudin
- 16:30** *Effect the Numbers of Lightning Impulse Shot on Electrical Tree Growth in Silicone Rubber*
Mohd Hafiz Ismail, Mohamad Kamarol Mohd Jamil, Sarizan Bin Saiidon and Mariatti Jaafar Mustapha
- 16:45** *Denoising and Extraction of Partial Discharge Pulse Characteristics Using Wavelet Denoising and Local Maxima Method*
Maninder Choudhary

AUTHORS INDEX

Name (affiliation country)

Abhishek Kumar (Indian Institute of Technology Jodhpur India)
Aditya R. Gautam (BITS Pilani India)
Ahmad Afif Nazib (Universiti Malaysia Perlis Malaysia)
Ahmad Farid Abidin (Faculty of Electrical Engineering, Universiti Teknologi Mara Malaysia)
Ahmad Wafi Mahmood Zuhdi (Universiti Tenaga Nasional Malaysia)
Ahmed Amine Hachicha (University of Sharjah United Arab Emirates)
Ahmed Tijjani Dahiru (Universiti Teknologi Malaysia Malaysia)
Aimi Dalila Azhar (Universiti Tenaga Nasional Malaysia)
Akanksha Malhotra (Indian Institute of Technology Jodhpur India)
Alfian Muhammad Reza (PT PLN Enjiniring Indonesia)
Alireza Rezaei (Islamic Azad University South Tehran Branch Iran)
Alok Kumar (Grid Controller of India Limited India)
Amaresh Mallick (Grid Controller of India Limited India)
Aminu Jibrin Aliyu (Universiti Teknologi PETRONAS Malaysia)
Anandan Panneerselvam (Saveetha School of Engineering India)
Arivarasi A (Vellore Institute of Technology India)
Atefeh Pour Shafei (Tehran Electric Power Distribution Company Iran)
Atikah Razi (Universiti Teknikal Malaysia Melaka Malaysia)
Azrilmukmin Azmi (Universiti Malaysia Perlis Malaysia)
Azrul Ghazali (Universiti Tenaga Nasional Malaysia)
Bhavya Manish Sharma (Indian Institute of Technology Jodhpur India)
Bimal Swargiary (North Eastern Regional Load Despatch Centre POSOCO India)
Biswajit Sahu (POSOCO India)
Chee Wei Tan (Universiti Teknologi Malaysia Malaysia)
Chinmay Yadav (Birla Institute of Technology and Science Pilani India)
Chitra Bahadur Thapa (North Eastern Regional Load Despatch Centre POSOCO India)
Chuen Ling Toh (Universiti Tenaga Nasional Malaysia)
Chun Lim Siow (Multimedia University Malaysia)
Deepak Kumar (Grid Controller of India Limited India)
Dinesh Rai (Grid Controller of India Limited India)
Emenike Ejiogu (University of Nigeria Nigeria)
Eric Tatt Wei Ho (Universiti Teknologi PETRONAS Malaysia)
Fayzur Rahman (Green University of Bangladesh Bangladesh)
Fazrena Hamid (Universiti Tenaga Nasional Malaysia)
Freddy Kheng Suan Tan (University of Nottingham Malaysia Malaysia)
Gaurav Kaushikkumar Rawal (Indian Institute of Technology Jodhpur India)
Guido Andreesen (Tallinn University of Technology Estonia)
Hiroumi Saitoh (Tohoku University Japan)
Hitesh Datt Mathur (BITS Pilani India)
J. Fernando Silva (INESC-ID, Instituto Superior Tecnico, Universidade de Lisboa Portugal)
Jako Kilter (Tallinn University of Technology Estonia)
Jenn Hwai Leong (Universiti Malaysia Perlis Malaysia)

Jia Yi Low (University of Nottingham Malaysia Malaysia)
Jiliang Liu (CMDI China)
Joaquim Monteiro (Instituto Politécnico de Lisboa Portugal)
Johari Abdullah (University Malaysia Sarawak Malaysia)
Joko Muslim (Institut Teknologi PLN Indonesia)
K Debnath (Charles Darwin University Australia)
Kaur Tuttelberg (Tallinn University of Technology Estonia)
Keita Kato (Tohoku University Japan)
Kesandu Chukwubueze Emmanuel Uchenyi (University of Nigeria Nsukka Nigeria)
Khairul Safuan Muhammad (Universiti Teknologi MARA Malaysia)
Khaled Baradieh (American College of the Middle East (ACM) Kuwait)
Krishna Kumar Saini (Birla Institute of Technology and Science Pilani Campus India)
Kwan Yiew Lau (Universiti Teknologi Malaysia Malaysia)
Leao Hen Yew (Multimedia University Malaysia)
Madihah Md Rasid (UTM Malaysia)
Madis Leinakse (Tallinn University of Technology Estonia)
Mahavir Prasad Singh (Grid Controller of India Limited India)
Maninder Choudhary (Tallinn University of Technology Estonia)
Mariatti Jaafar Mustapha (Universiti Sains Malaysia Malaysia)
Mart Landsberg (Taltech Estonia)
Md Akib Hasan (Universiti Malaysia Perlis Malaysia)
Md Pauzi Abdullah (Universiti Teknologi Malaysia Malaysia)
Md Showkot Hossain (Universiti Teknikal Malaysia Melaka Malaysia)
Md Siddikur Rahman (Universiti Teknologi PETRONAS Malaysia)
Md Tariqul Islam (Green University of Bangladesh Bangladesh)
Md. Ahsanul Alam (Green University of Bangladesh Bangladesh)
Miao Yang (Chongqing University China)
Mohamad Hasif Mohamad Ishak (Universiti Teknologi Malaysia Malaysia)
Mohamad Kamarol Mohd Jamil (Universiti Sains Malaysia Malaysia)
Mohamed Shaaban (National Chung Cheng University Taiwan)
Mohd Abdul Talib Mat Yusoh (Universiti Teknologi MARA (UiTM) Malaysia)
Mohd Amran Mohd Radzi (Universiti Putra Malaysia Malaysia)
Mohd Azrik Roslan (Universiti Malaysia Perlis Malaysia)
Mohd Ezwan Mahadan (Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus Malaysia)
Mohd Hafiz Ismail (Universiti Sains Malaysia Engineering Campus, Nibong Tebal, Pulau Pinang Malaysia)
Mohd Rodhi Sahid (Universiti Teknologi Malaysia Malaysia)
MT Hidayah Ahmad Zawawi (MT Hidayah Zawawi Malaysia)
Muhammad Akhil Kamarudin (Universiti Teknologi MARA Malaysia)
Muhammad Ammirul Atiqi Mohd Zainuri (Universiti Kebangsaan Malaysia Malaysia)
Muhammad Asraf Hairuddin (Universiti Teknologi MARA Malaysia)
Muhammad Muzamil Mustam (Universiti Teknologi Mara Malaysia)
Mumtaj Begam Kasim Rawthar (University of Nottingham Malaysia Campus Malaysia)
Nabarun Roy (Grid Controller of India Limited India)
Nashiren Farzilah Mailah (Universiti Putra Malaysia Malaysia)
Nazreen Junaidi (Universiti Malaysia Sarawak Malaysia)

Nnaemeka Genesis Ajah (University of Nigeria, Nsukka Nigeria)
Nor Zaihar Yahaya (Universiti Teknologi PETRONAS Malaysia)
Norazliani Binti Md sapari (Universiti Malaysia)
Norjulia Mohamad Nordin (Universiti Teknologi Malaysia Malaysia)
Nuraina Wahida Abd. Rahman (Universiti Teknologi Malaysia Malaysia)
Nurul Izzati Hashim (Universiti Malaysia Sarawak Malaysia)
Oladimeji Ibrahim (University of Ilorin Nigeria)
Onyenwe Ifeude Kesandu-Uchenyi (Projects Development Institute PRODA Nigeria)
Pradeep Kumar Gupta (Tallinn University of Technology Estonia)
Preeti Preeti (Indian Institute of Technology Jodhpur India)
Rahimi Baharom (Universiti Teknologi MARA Malaysia)
Ramani Kannan (Universiti Teknologi Petronas Malaysia)
Rasyidah Binti Mohamad Idris (Universiti Teknologi Malaysia Malaysia)
Ravi Yadav (IIT Jodhpur India)
Razman Ayop (Universiti Teknologi Malaysia Malaysia)
Roby Ikhsan (Institut Teknologi PLN Indonesia)
Salah Issa (University of Sharjah United Arab Emirates)
Salisu Lawan (Kano University of Science and Technology (KUST) Nigeria)
Sarizan Bin Saiidon (Centre for Instructor and Advance Skill Training Malaysia)
Sarmid Shakir Abdulsattar (University Technology Malaysia Malaysia)
Shahrani Shahbudin (Universiti Teknologi MARA Malaysia)
Shahrin Md Ayob (University Teknologi Malaysia Malaysia)
Shamsul Aizam Zulkfli (UTHM Malaysia)
Shasha Li (Universiti Teknologi Malaysia Malaysia)
Shashwath NS (Vellore Institute of Technology India)
Shek Rahman (University of Sharjah United Arab Emirates)
Siti Aliyah Mohd Saleh (UITM Malaysia)
Somara Lakra (Grid Controller of India Limited India)
Sugata Bhattacharya (Grid Controller of India Limited India)
Syahar Azalia Ab Shukor (Universiti Teknikal Malaysia Melaka Malaysia)
Syed Norazizul Syed Nasir (Universiti Teknologi Malaysia Malaysia)
Trusha Ajay Biswas (TATA Power Company Limited India)
Ts. Ir. Mohammad Lutfi Othman (Universiti Putra Malaysia Malaysia)
V Gawthamnathan (M. Tech India)
Venkata Silpa Borra (Charles Darwin University Australia)
Wahidah Abd. Halim (Universiti Teknikal Malaysia Melaka Malaysia)
Wan Muhamad Hakimi Wan Bunyamin (Universiti Teknologi MARA Malaysia)
Wan Noraishah Wan Abdul Munim (Universiti Teknologi MARA Malaysia)
Zafar Said (University of Sharjah United Arab Emirates)
Zainal Arifin (Institut Teknologi PLN, PLN Indonesia Indonesia)
Zhi Lam Ting (University of Nottingham Malaysia)

Copyright and Reprint Permission: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. For reprint or republication permission, email to IEEE Copyrights Manager at pubs-permissions@ieee.org. All rights reserved. Copyright ©2024 by IEEE.