



PROGRAMME BOOK

**2023 IEEE 3rd International Conference
in Power Engineering Applications
(ICPEA2023)**

*"Shaping Sustainability
Through Power Engineering
Innovation"*

**6 - 7th March 2023
Putrajaya, Malaysia**

ORGANIZER:



CO-SPONSOR :



TECHNICAL CO-SPONSOR :



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Foreword

On behalf of the Organizing Committee, we would like to welcome all participants to the 2023 IEEE 3rd International Conference in Power Engineering Applications (ICPEA 2023) held from 6th to 7th March 2023 via a hybrid mode (both face-to-face and virtual) at The Everly Hotel, Putrajaya, Malaysia. This conference is organized by the College of Engineering, Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia and co-sponsored by the IEEE Power and Energy Society (PES), Malaysia Chapter.

ICPEA 2023 aims to foster interactive exchanges and collaborations among attendees through technical paper presentations. The conference features two distinguished keynote speakers, Professor Dr. Hussain Shareef from United Arab Emirates University and Mr. Sansubari Che Mud from Tenaga Nasional Berhad (TNB), Malaysia. They will present their speech that focus on the latest trends and challenges in the field of Electrical Power Engineering from their perspectives, and their expertise is highly appreciated by the conference organizers.

This conference will not be a successful conference without the submission of technical papers from researchers who have invested their time and energy, in writing on a variety of topics. Thus, we would like to thank all authors for supporting ICPEA 2023 and wish you a fruitful discussion throughout the event. The technical programme committee members and external reviewers also deserved appreciation for reviewing all submissions while maintaining the high standard of quality for this conference.

ICPEA 2023 would not be possible without the dedicated work and efforts of the organizing committee who worked tirelessly in every aspect. We wish to express our gratitude for your hard work and commitment to making ICPEA 2023 a success. Finally, we would like to wish everyone to stay safe and hope we could meet again in future conference.



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General Chair
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Wan Noraishah Wan Abdul Munim
Yogesh Pundlik
Yusrina Yusof
Zaipatimah Ali
Zeashan Khan
Zuhaila Mat Yasin
Zulkifli Abdul Hamid

Technical Programme

Time (UTC +08:00, Kuala Lumpur, Singapore)	Day 1: 6/3/2023 (Monday)	Day 2: 7/3/2023 (Tuesday)
8:00 - 9:00 am	Registration & Light Refreshment	Registration & Light Refreshment
9:00 - 9:45 am	Opening Ceremony	Forum: "Smart City: Malaysia Experience" by Panel 1: Dr. Lim Seng Boon (UiTM Perak) & Panel 2: Mr. Mohd Khairun Nizam Mohd Sarmin (TNBR)
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10:30 - 11:00 am		Session 2_1 (virtual): Power System Operation and Planning/ Smart Grid/Energy and Environment in Power Engineering Application Session 2_2 (f2f): Renewable Energy and Storage/ Internet of Thing (IoT) in Power Engineering Application/ Energy and Environment in Power Engineering Application Session 2_3 (f2f): High Voltage Engineering & Technology/ Data Analytics in Power Engineering Application
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12:45 - 2:15 pm	Lunch break	Session 2_4 (virtual): Renewable Energy and Storage Session 2_5 (f2f): Power System Operation and Planning Session 2_6 (f2f): Energy and Environment in Power Engineering Application/Power System Operation and Planning
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3:30 - 3:45 pm	Coffee break 2	Coffee Break 2
3:45 - 5:15 pm	Session 1_4 (virtual): Smart Grid/ Renewable Energy and Storage Session 1_5 (f2f): High Voltage Engineering & Technology Session 1_6 (f2f): Power System Operation and Planning/Energy and Environment in Power Engineering Application	Session 2_7 (virtual): Power Electronics and Applications / Energy and Environment in Power Engineering Application Session 2_8 (f2f): Electric and Hybrid Vehicles/ Power Electronics and Applications Session 2_9 (f2f): Renewable Energy and Storage

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Zuhair Shuker (Middle Technical University)
Zulkifli Ibrahim (Universiti Teknikal Malaysia Melaka)
Zulkurnain Abdul-Malek (Universiti Teknologi Malaysia)

Keynote Speakers



Keynote Title:

Planning of Fast Charging Stations (CS) for Electric Vehicles (EV) with Multi Level Charging Strategy

Prof. Dr. Hussain Shareef

Department of Electrical and Communication Engineering, United Arab Emirates University

Biodata:

Dr. Hussain Shareef is currently a professor at the Department of Electrical and Communication Engineering, United Arab Emirates University, and the head of the Green Mobility Research Team at the Emirates Center for Mobility Research.

His research domains are related to power system planning, the integration of renewable power sources, the application of Artificial Intelligence (AI) techniques in power systems, energy management, power quality and electric vehicle grid integration. Dr. Hussain Shareef appeared as the world's top 2% scientist at Stanford University from 2020 to 2022. Among his many awards, Dr. Hussain Shareef is a 2019-2020 recipient of the United Arab Emirates University Award for Excellence in Scholarship and Chancellor Innovation Award 2020-2021. He received his PhD degree from Universiti Teknologi Malaysia (UTM) in 2007 and he has published more than 400 peer-reviewed journal papers in various fields related to power and energy systems. He has more than 5500 citations with an h-index of 37.

Dr. Hussain Shareef is a member of the Mohammed Bin Rashid Academy of Scientists and the Institute of Electrical and Electronic Engineers (IEEE).

Keynote Speakers



Keynote Title:

Sustainability and Power Utility of The Future

Mr. Sansubari Che Mud
Head (Customer & Market) for Distribution Network, Tenaga Nasional Berhad (TNB), Malaysia

Biodata:

Mr. Sansubari Che Mud is the Head (Customer & Market) for Distribution Network, Tenaga Nasional Berhad (TNB). Prior to that, he was Chief Engineer (Asset Strategy & Policy) and General Manager for Sustainable Energy Development for TNB. A strong advocate for sustainable energy development, renewable energy, and energy efficiency. His professional interest focus on sustainable energy development in Malaysia and his current project include Smart Utility 2025 and Smart Energy Management Infrastructure.

Mr. Sansubari earned his Bachelor Degree from University of Warwick, England in Electrical Power and Master's Degree in Power System from University of Malaya and Master of Business Administration (MBA) from Universiti Tenaga Nasional (UNITEN)/Melbourne Business School. He was two times Association of Southeast Asian Nations (ASEAN) Energy Manager's Award recipient for his effort on energy efficiency in Malaysia. His involvement in sustainable energy development started as one of the pioneer team members under Malaysia Special Committee on Renewable Energy (SCORE) which was promoting for renewable energy development and introduced the first commercial grid connected renewable energy power plant project in Malaysia.

Technical Programme

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TECHNICAL PROGRAMME

**2023 IEEE 3rd International Conference
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*"Shaping Sustainability
Through Power Engineering
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**6 - 7th March 2023
Putrajaya, Malaysia**

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Technical Programme

Time (UTC +08:00, Kuala Lumpur, Singapore)	Day 1: 6/3/2023 (Monday)	Day 2: 7/3/2023 (Tuesday)
8:00 - 9:00 am	Registration & Light Refreshment	Registration & Light Refreshment
9:00 - 9:45 am	Opening Ceremony	Forum: "Smart City: Malaysia Experience" by Panel 1: Dr. Lim Seng Boon (UiTM Perak) & Panel 2: Mr. Mohd Khairun Nizam Mohd Sarmin (TNBR)
9:45 - 10:15 am	Keynote Speaker 1: Planning of Fast Charging Stations (CS) for Electric Vehicles (EV) with Multi Level Charging Strategy by Prof. Dr. Hussain Shareef	
10:15 - 10:30 am		Coffee break 1
10:30 - 11:00 am		Session 2_1 (virtual): Power System Operation and Planning/ Smart Grid/Energy and Environment in Power Engineering Application Session 2_2 (f2f): Renewable Energy and Storage/ Internet of Thing (IoT) in Power Engineering Application/ Energy and Environment in Power Engineering Application Session 2_3 (f2f): High Voltage Engineering & Technology/ Data Analytics in Power Engineering Application
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11:15 - 11:30 am	Coffee Break 1	
11:30am - 12:30pm	Keynote Speaker 2: Sustainability and Power Utility of The Future by Mr. Sansubari Che Mud	
12:30 - 12:45 pm		Lunch break
12:45 - 2:15 pm	Lunch break	Session 2_4 (virtual): Renewable Energy and Storage Session 2_5 (f2f): Power System Operation and Planning Session 2_6 (f2f): Energy and Environment in Power Engineering Application/Power System Operation and Planning
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2:30 - 3:30 pm	Session 1_1 (virtual): High Voltage Engineering & Technology / Power System Economics and Electricity Markets / Energy and Environment in Power Engineering Application Session 1_2 (f2f): Power System Operation and Planning Session 1_3 (f2f): Power Electronics and Applications	Coffee Break 2
3:30 - 3:45 pm	Coffee break 2	
3:45 - 5:15 pm	Session 1_4 (virtual): Smart Grid/ Renewable Energy and Storage Session 1_5 (f2f): High Voltage Engineering & Technology Session 1_6 (f2f): Power System Operation and Planning/Energy and Environment in Power Engineering Application	Session 2_7 (virtual): Power Electronics and Applications / Energy and Environment in Power Engineering Application Session 2_8 (f2f): Electric and Hybrid Vehicles/ Power Electronics and Applications Session 2_9 (f2f): Renewable Energy and Storage

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Keynote Speakers



Keynote Title:

Planning of Fast Charging Stations (CS) for Electric Vehicles (EV) with Multi Level Charging Strategy

Prof. Dr. Hussain Shareef

Department of Electrical and Communication Engineering, United Arab Emirates University

Biodata:

Dr. Hussain Shareef is currently a professor at the Department of Electrical and Communication Engineering, United Arab Emirates University, and the head of the Green Mobility Research Team at the Emirates Center for Mobility Research.

His research domains are related to power system planning, the integration of renewable power sources, the application of Artificial Intelligence (AI) techniques in power systems, energy management, power quality and electric vehicle grid integration. Dr. Hussain Shareef appeared as the world's top 2% scientist at Stanford University from 2020 to 2022. Among his many awards, Dr. Hussain Shareef is a 2019-2020 recipient of the United Arab Emirates University Award for Excellence in Scholarship and Chancellor Innovation Award 2020-2021. He received his PhD degree from Universiti Teknologi Malaysia (UTM) in 2007 and he has published more than 400 peer-reviewed journal papers in various fields related to power and energy systems. He has more than 5500 citations with an h-index of 37.

Dr. Hussain Shareef is a member of the Mohammed Bin Rashid Academy of Scientists and the Institute of Electrical and Electronic Engineers (IEEE).

Keynote Speakers



Keynote Title:

Sustainability and Power Utility of The Future

Mr. Sansubari Che Mud
Head (Customer & Market) for Distribution Network, Tenaga Nasional Berhad (TNB), Malaysia

Biodata:

Mr. Sansubari Che Mud is the Head (Customer & Market) for Distribution Network, Tenaga Nasional Berhad (TNB). Prior to that, he was Chief Engineer (Asset Strategy & Policy) and General Manager for Sustainable Energy Development for TNB. A strong advocate for sustainable energy development, renewable energy, and energy efficiency. His professional interest focus on sustainable energy development in Malaysia and his current project include Smart Utility 2025 and Smart Energy Management Infrastructure.

Mr. Sansubari earned his Bachelor Degree from University of Warwick, England in Electrical Power and Master's Degree in Power System from University of Malaya and Master of Business Administration (MBA) from Universiti Tenaga Nasional (UNITEN)/Melbourne Business School. He was two times Association of Southeast Asian Nations (ASEAN) Energy Manager's Award recipient for his effort on energy efficiency in Malaysia. His involvement in sustainable energy development started as one of the pioneer team members under Malaysia Special Committee on Renewable Energy (SCORE) which was promoting for renewable energy development and introduced the first commercial grid connected renewable energy power plant project in Malaysia.

Technical Programme

Time (UTC +08:00, Kuala Lumpur, Singapore)	Day 1: 6/3/2023 (Monday)	Day 2: 7/3/2023 (Tuesday)
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**2023 IEEE 3rd International Conference
in Power Engineering Applications
(ICPEA2023)**

*"Shaping Sustainability
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**6 - 7th March 2023
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Yogesh Pundlik
Yusrina Yusof
Zaipatimah Ali
Zeashan Khan
Zuhaila Mat Yasin
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Technical Programme

Time (UTC +08:00, Kuala Lumpur, Singapore)	Day 1: 6/3/2023 (Monday)	Day 2: 7/3/2023 (Tuesday)
8:00 - 9:00 am	Registration & Light Refreshment	Registration & Light Refreshment
9:00 - 9:45 am	Opening Ceremony	Forum: "Smart City: Malaysia Experience" by Panel 1: Dr. Lim Seng Boon (UiTM Perak) & Panel 2: Mr. Mohd Khairun Nizam Mohd Sarmin (TNBR)
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12:30 - 12:45 pm		
12:45 - 2:15 pm	Lunch break	Session 2_4 (virtual): Renewable Energy and Storage Session 2_5 (f2f): Power System Operation and Planning Session 2_6 (f2f): Energy and Environment in Power Engineering Application/Power System Operation and Planning
2:15 - 2:30 pm		
2:30 - 3:30 pm	Session 1_1 (virtual): High Voltage Engineering & Technology / Power System Economics and Electricity Markets / Energy and Environment in Power Engineering Application Session 1_2 (f2f): Power System Operation and Planning Session 1_3 (f2f): Power Electronics and Applications	
3:30 - 3:45 pm	Coffee break 2	Coffee Break 2
3:45 - 5:15 pm	Session 1_4 (virtual): Smart Grid/ Renewable Energy and Storage Session 1_5 (f2f): High Voltage Engineering & Technology Session 1_6 (f2f): Power System Operation and Planning/Energy and Environment in Power Engineering Application	Session 2_7 (virtual): Power Electronics and Applications / Energy and Environment in Power Engineering Application Session 2_8 (f2f): Electric and Hybrid Vehicles/ Power Electronics and Applications Session 2_9 (f2f): Renewable Energy and Storage

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Keynote Speakers



Keynote Title:

Planning of Fast Charging Stations (CS) for Electric Vehicles (EV) with Multi Level Charging Strategy

Prof. Dr. Hussain Shareef

Department of Electrical and Communication Engineering, United Arab Emirates University

Biodata:

Dr. Hussain Shareef is currently a professor at the Department of Electrical and Communication Engineering, United Arab Emirates University, and the head of the Green Mobility Research Team at the Emirates Center for Mobility Research.

His research domains are related to power system planning, the integration of renewable power sources, the application of Artificial Intelligence (AI) techniques in power systems, energy management, power quality and electric vehicle grid integration. Dr. Hussain Shareef appeared as the world's top 2% scientist at Stanford University from 2020 to 2022. Among his many awards, Dr. Hussain Shareef is a 2019-2020 recipient of the United Arab Emirates University Award for Excellence in Scholarship and Chancellor Innovation Award 2020-2021. He received his PhD degree from Universiti Teknologi Malaysia (UTM) in 2007 and he has published more than 400 peer-reviewed journal papers in various fields related to power and energy systems. He has more than 5500 citations with an h-index of 37.

Dr. Hussain Shareef is a member of the Mohammed Bin Rashid Academy of Scientists and the Institute of Electrical and Electronic Engineers (IEEE).

Keynote Speakers



Keynote Title:

Sustainability and Power Utility of The Future

Mr. Sansubari Che Mud
Head (Customer & Market) for Distribution Network, Tenaga Nasional Berhad (TNB), Malaysia

Biodata:

Mr. Sansubari Che Mud is the Head (Customer & Market) for Distribution Network, Tenaga Nasional Berhad (TNB). Prior to that, he was Chief Engineer (Asset Strategy & Policy) and General Manager for Sustainable Energy Development for TNB. A strong advocate for sustainable energy development, renewable energy, and energy efficiency. His professional interest focus on sustainable energy development in Malaysia and his current project include Smart Utility 2025 and Smart Energy Management Infrastructure.

Mr. Sansubari earned his Bachelor Degree from University of Warwick, England in Electrical Power and Master's Degree in Power System from University of Malaya and Master of Business Administration (MBA) from Universiti Tenaga Nasional (UNITEN)/Melbourne Business School. He was two times Association of Southeast Asian Nations (ASEAN) Energy Manager's Award recipient for his effort on energy efficiency in Malaysia. His involvement in sustainable energy development started as one of the pioneer team members under Malaysia Special Committee on Renewable Energy (SCORE) which was promoting for renewable energy development and introduced the first commercial grid connected renewable energy power plant project in Malaysia.

Technical Programme

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TECHNICAL PROGRAMME

**2023 IEEE 3rd International Conference
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*"Shaping Sustainability
Through Power Engineering
Innovation"*

**6 - 7th March 2023
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