



NE-IECCE 2026 Special Session (SS-08)

Title of Proposed Session:

Next-Generation Power Electronics Interfaces for Green Energy Integrated EV Charging Systems

Technical Outline of the Session

This special session aims to bring together researchers, academicians, and industry professionals to explore the next generation power electronics technologies integrated with green energy resources based electric vehicles (EVs). With the advancement in power converters, and increased demand of battery electric vehicle in transportation sector allows longer driving ranges and reduced charging times in EVs. This session focuses on model-based intelligent control methods designed to meet grid-code requirements, with attention to power-quality performance in V2G and G2V modes and conformity with prevailing EV standards. The special session provides a focused forum for exchanging technical insights, and addressing emerging research opportunities.

Topics of Session

The scope of this Special Session includes, but is not limited to, the following topics:

1. Advanced power converters for EV charging system.
2. Green energy-driven power converter in EVs.
3. Artificial intelligence enabled for EV and battery charging systems.
4. Wireless power transfer and optimal coil design in EVs.
5. Control strategies in grid connected EV charger.

Special Session Organizers

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Dr. Manash Kumar Mishra received the M. Tech degree in electrical engineering from National Institute of Technology, Silchar, in 2016 and the Ph.D. degree in Electrical Engineering from the Indian Institute of Technology (Banaras Hindu University), [IIT (BHU)], Varanasi, in 2022. He was a Postdoctoral Fellow with the Power Electronics Lab in Department of Electrical Engineering, IIT(BHU), from July 2022 to October 2022. Since December 2022, he has been with the Department of Electrical Engineering, National Institute of Technology, Manipur where he joined as an Assistant Professor. He is a Senior Member of the IEEE includes IAS and IES.



2. Dr. Aakash Singh
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Dr. Aakash Singh received the Ph.D. degree from the Department of Electrical Engineering, IIT (BHU), Varanasi, Uttar Pradesh, India, in 2023. From 2017 to 2018, he was a Guest Faculty with the Department of Electrical Engineering, Motilal Nehru National Institute of Technology, Prayagraj, Uttar Pradesh, India. He worked as a Postdoctoral researcher at the Indian Institute of Technology Kanpur (IIT Kanpur) in India. Currently he is serving as an assistant professor in the electrical engineering department at NIT Manipur, Imphal, India. His research interests include power converter design, dc-dc converters, modelling and control. He is a Member of the IEEE includes IAS and IES.



3. Dr. Ranjan Kumar Behera
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Dr. Ranjan Kumar Behera (Senior Member, IEEE) M.Tech. and Ph.D. degrees in electrical engineering from the Indian Institute of Technology Kanpur, Kanpur, India, in 2003 and 2009, respectively. Since 2009, he has been a Faculty Member and is currently an Associate Professor with the Department of Electrical Engineering, Indian Institute of Technology Patna, Patna, India. His research interests include applications of non-linear control theory to power electronic converters, pulse width modulation techniques, and multiphase electric drive control.



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Dr. Amarendra Edpuganti (Senior Member, IEEE) received M.Tech. degree in electrical engineering from the Indian Institute of Technology Kanpur, Kanpur, India, in 2012, and the Ph.D. degree in electrical and computer engineering from the National University of Singapore, Singapore, in 2016. From 2018 to 2022, he was initially as a Postdoctoral Fellow and later as a Research Scientist with Khalifa University, Abu Dhabi, UAE. He is currently an Assistant Professor with the Department of Sustainable Energy Engineering, Indian Institute of Technology Kanpur, Kanpur, India. His research interests include power electronics applications for transportation electrification and renewable energy integration.

