



**IEEE International
Conference on Power
Electronics and
Energy (ICPEE 2025)**



Special Session 03 (SS 03)

SS 03: Control and Wireless Communication for Next Generation Hybrid Electric Vehicles

Organized and co-chaired by:

Organizer 1:

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Call for Papers

Technical Outline of the Session:

The objective of the proposed special session is to unite industry practitioners, engineers, and researchers in order to investigate the most recent developments in wireless communication technologies and control strategies for next-generation hybrid electric vehicles (HEVs). This session emphasizes the importance of intelligent wireless communication frameworks, robust optimization, and advanced control algorithms in the improvement of the performance, efficiency, and reliability of contemporary HEVs. Topics of interest include but are not limited to energy management systems, drive-by-wire technologies, V2X communication, fault-tolerant control, and the role of IoT and AI in connected hybrid electric mobility. Through this session, we seek to foster interdisciplinary dialogue and stimulate innovations that will pave the way for sustainable, safe, and intelligent transportation solutions.

Topic of the Session includes, but are not limited to:

This special session aims to explore the latest advancements in control techniques and wireless communication frameworks tailored for next-generation hybrid electric vehicles. By bringing together experts from academia and industry, the session seeks to address key challenges in efficiency, safety, connectivity, and intelligence for modern HEVs. It provides a platform to share innovative methodologies, case studies, and emerging applications. Contributions are invited in, but not limited to, the following areas:

Advanced Control Strategies for HEVs

Model Predictive Control (MPC), Adaptive & Robust Control

Energy management under varying driving cycles

Handling multi-source powertrains & regenerative braking optimization

Wireless Communication & V2X for HEVs

Vehicle-to-Everything (V2X), Vehicle-to-Grid (V2G) communication

Integration of IoT & 5G in HEVs for data exchange

Cooperative adaptive cruise control using wireless protocols

Cybersecurity & Safety in Connected HEV Systems

Secure wireless protocols for vehicle control

Fault detection & resilience in networked HEV environments

Functional safety with wireless-in-the-loop architectures

Intelligent Energy Management Using AI & IoT

Data-driven predictive control using machine learning Cloud-based battery & energy state estimation

Remote diagnostics and over-the-air updates

Wireless Sensor Networks and Sensor Fusion in HEVs

Integration of multi-source data for improved situational awareness and vehicle dynamics control

Important Dates:

Special Session Paper Submission Due Date: 15.08.2025

Notification of Paper Acceptance Date: 31.08.2025

Camera Ready Paper Submission Due : 15.10.2025

Author guidelines areas per regular paper submission.

[IEEE Template](#)

[Submission Portal](#)

<https://icpee.kiit.ac.in/special-sessions/>

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