

Electric Vehicle Research Group

The Electric Vehicle Lab at the School of Electrical Engineering, KIIT Deemed to be University, is a hub of innovation and learning. Our team consists of dedicated faculty members, PhD scholars, postgraduate students, and undergraduate researchers, all working together to advance electric vehicle technology.

The group focuses on

- ❖ **Electric Drives:** Design and optimization of electric motor drives for improved performance.
- ❖ **Charging Infrastructure:** Innovative solutions for fast and wireless charging technologies.
- ❖ **Vehicle-to-Grid Integration:** Research on seamless integration of electric vehicles with the power grid.
- ❖ **Battery Management Systems:** Development of efficient and reliable systems for battery monitoring and control.
- ❖ **Energy Management:** Strategies for optimal energy usage and distribution in electric vehicles.
- ❖ **Integration renewable energy systems** for the deployment of charging infrastructure.

several other major thrust areas including the development of battery charging system with solar system, the design of compact and high-efficient wireless chargers, innovative magnetic couplers for the wireless charging, and the application of data driven solution for the implementation. Our research extends to renewable energy, wide band gap devices, and the interfacing of these converters for electric vehicles, as well as machine control research. The group has a prolific publication record with several papers published in SCI journals and prestigious conferences. To enhance hands-on experience and practical deployment for students, KIIT DU has signed an MoU with SMPS Electric Control Private Limited.

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Research Thrust Areas are

- [1] Electrical Drives and Control
- [2] Wireless Charging
- [3] Wide Band Gap Devices for the development of advanced power converters
- [4] Battery Management System for EVs
- [5] Energy Management System for EVs
- [6] Charging Infrastructure and Renewable Energy

Industry Collaboration

SMPS ELECTRIC CONTROL PRIVATE LIMITED
(Startup India Regd. No: DIPP80506 & Startup Odisha Regd. No: OSP/SP/01094)

Publications:

- [1] Chowdary, Kantipudi V. V. S. R., Kundan Kumar, Byamakesh Nayak, Abhay Kumar, and Manuele Bertoluzzo. 2023. "Dynamic Wireless Charging Performance Enhancement for Electric Vehicles: Mutual Inductance, Power Transfer Capability, and Efficiency" *Vehicles* 5, no. 4: 1313-1327. <https://doi.org/10.3390/vehicles5040072>.
- [2] Tripathy S, Nandi S, RoyGhatak S, Acharjee P, Sinha P. Optimized planning framework of solar photovoltaic based generation with EV charging station in a rural distribution network considering uncertainties. *Applied Chemical Engineering*. 2023;6(3).

Electric Vehicle Research Team

Faculty Members: (Research Field)

- (1) Dr. K.V.V.S.R. CHOWDARY: Wireless Charging Systems for EVs.
- (2) Prof. Swagat Das: Battery Management System for EVs
- (3) Prof. Subrat Bahera: research on novel DC to DC converters and their control
- (4) Dr. Sriparna Roy Ghatak: Charging Infrastructure
- (5) Dr. S. Kundu: Control of Electrical Machines
- (6) Dr. Deepak Gupta: Energy Management System for EVs
- (7) Prof. Ankit Soni: Charging Infrastructure and Renewable Energy

PhD Research Scholars:

- (1) **Nandi, Sharmistha**
Research on EV Charging system in distribution networks

Post Graduate and graduate Research Scholars

- (1) 2352001: Research on Battery modelling.
- (2) 2142001: Control and Design of an Electric Vehicle battery charger utilizing solar PV system
- (3) 2152002: Bidirectional Charging in Electric Vehicle