Dr. Mahalingam College of Engineering and Technology

Office of Dean Research & Innovation

(Power Electronics and Systems & Control and Automation-PESCA)

Research Interest Group

Knowledge sharing session
Report on "CONTROLS IN ELECTRIC VEHICLES"

Date: 02.10.2024

About the Session:

(Few words about the RIG and the event focused)

S.No.	Name of the Resource Person	Topic	Date & Time	Venue	No of Participants
1.	Dr. Anbalagan Thangavel, Senior Technical Project Manager at Robert Bosch Engineering and Business Solutions Ltd., Coimbatore	Controls in Electric Vehicles	28.09.2024 9.30am to 1.00pm	EEE Conference Hall	30

Objectives:

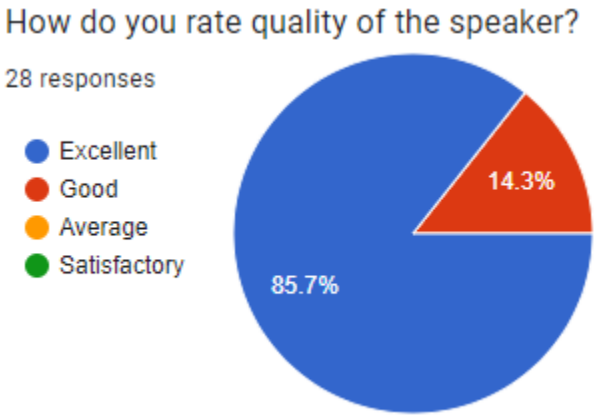
- About the history of electric vehicles and its control systems.
- Discuss global mega trends on connected and automated driving.
- Discuss the major areas of Electric vehicles.
- Explain the control system in EV roadmap.
- Discuss challenges in standards and open world complexities of EVs.

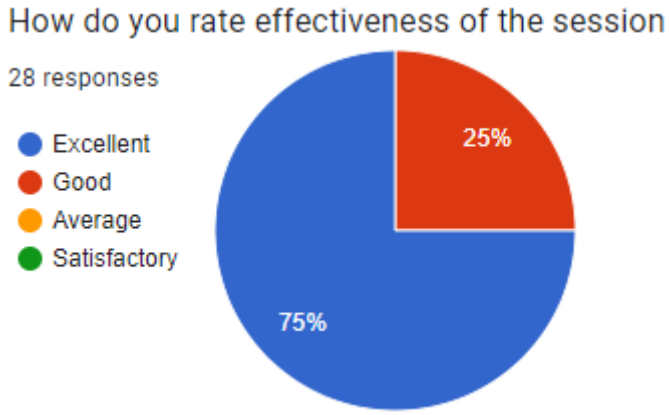
Topics Covered:

- 20th century electric cars competing with steam and gasoline-powered vehicles.
- Critical role in managing power flow, ensuring safety, and optimizing performance.
- With advancements in electronics during the mid-20th century, electric vehicles began to incorporate basic electronic control systems.
- Modern electric vehicles feature highly advanced control systems with integrate multiple functions, such as powertrain control, regenerative braking, battery management, and safety systems.
- Regenerative Braking Systems with advanced control algorithms to recapture energy.
- Battery Management Systems (BMS) utilize real-time monitoring, machine learning, and predictive algorithms to optimize battery life, ensure safety, and manage charging cycles.

- The future of EV control systems involves integration with autonomous driving technologies, vehicle-to-grid (V2G) communication, and AI-driven predictive maintenance.
- Technology usage big-data, sensors & services to load cloud, Algorithms, Privacy and ownership of data, business model emerging, CE Integration, FOTA, Security, V2X and V2I.

Feedback:





Q & A Session/Interaction:

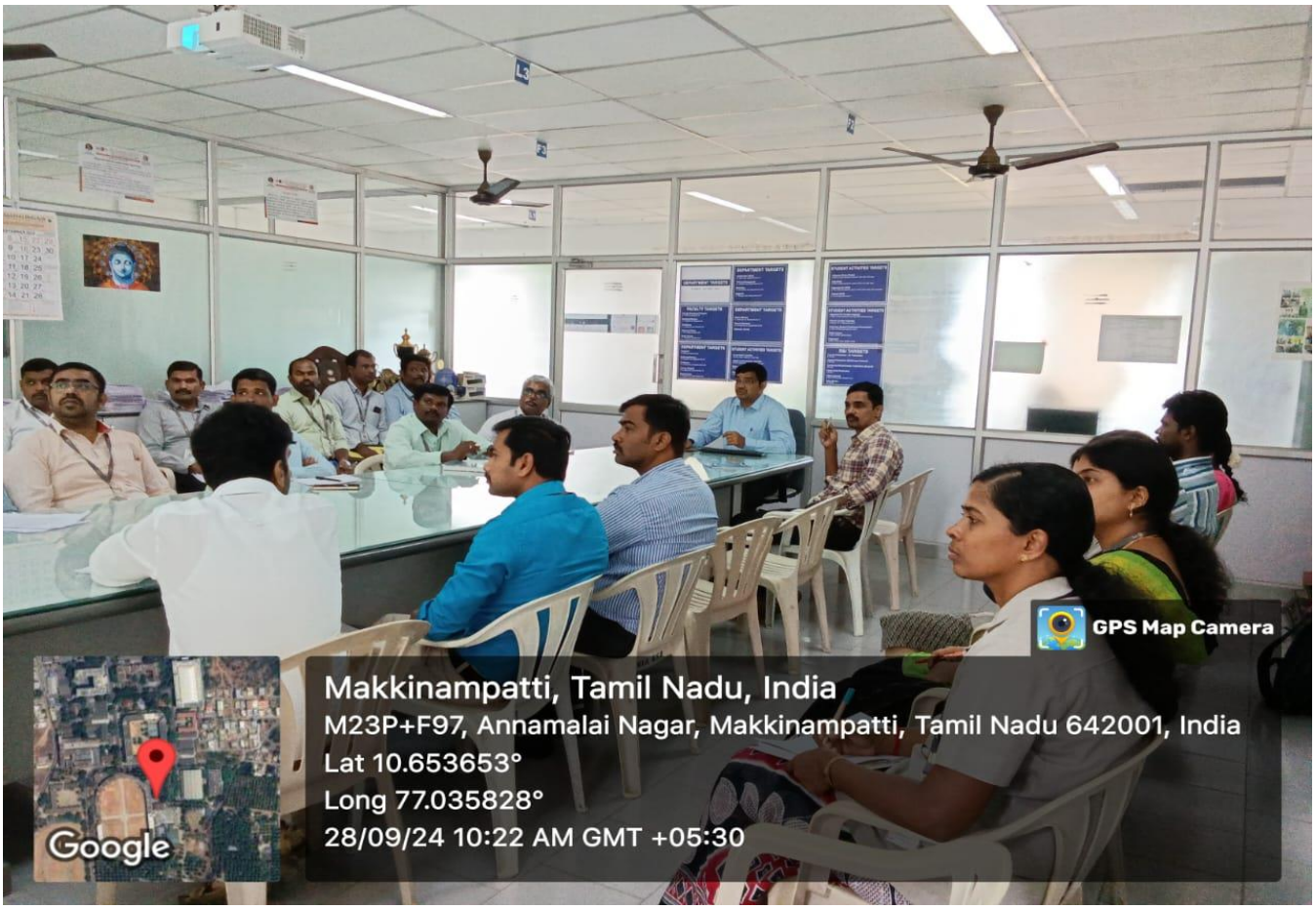
- Discussed car sharing system – Evolution and Revolution in EVs.
  - Autonomous private car
  - Shared Automated EVs.
  - Increment with Driver Assist car
  - Automated car sharing
- Vehicle automation Vs Ownership
- Traffic jam pilot base EVs
- Redundant steering and braking system.
- Redundant system concept – analysis, sensing, localization, connectivity, braking and acceleration concept.
- Safety in automated driving system.
- New challenges faced in the design side like standards, ML concepts.

Outcomes:

- To learn about the EVs real world requirements and its advancements.
- Control system concept in EVs with real time usages.
- EV integration with Real world data's and cloud access.
- Challenges faced in the design and security side of EV based cars and bikes.

Poster of the event

Photos taken during the Session: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Dean R&I

Principal

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Secretary