



AVIT
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY



VINAYAKA MISSION'S
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DEPARTMENT OF MECHANICAL ENGINEERING
SAEINDIA COLLEGIATE CLUB



WEBINAR ON
BASICS OF BATTERY ELECTRIC VEHICLES
&
TECHNOLOGY OVERVIEW

Presented by

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The Department of Mechanical Engineering in association with Society of Automotive Engineers India Collegiate Club organized webinar on **Basics of Battery Electric Vehicles & Technology Overview** on 12th June 2020. As a good start, Prof.L.Prabhu, HoD, Mechanical Engineering welcomed the guest and participants and Webinar Co-ordinator Prof. Dr.M.Prabhakar, Mechanical Engineering elucidated the theme and importance of Webinar. Thiru.Ganesh Sankaran, Chief Program Engineer - Programs, Ford Motor Company Limited, Chennai and Thiru.Ramakrishnan Sivasubramanian, Senior Engineer - Programs, Product Development, Ford Motor Company Limited, Chennai delivered more informative lecture with many illustrations. The duo speakers elaborated the basics about battery operated vehicles -Types of batteries, recent developments, applications and the operational features. The webinar session was much interestingly handled with many statistics and facts. The webinar session was curtailed with Q&A Session, where the experts from the domain cleared the doubts/questions raised by the participants. The webinar

session was attended by more than 550 participants from AVIT and Other organizations. The session was hosted live through zoom virtual platform and as there was an enormous registration for the webinar, the session was streamed live in you tube channel of the Institution.

The Indian government has set ambitious targets to accelerate the adoption of electric vehicles (EVs). By 2023, it wants all three-wheeler's to run on batteries. By 2025, the rule will be applicable to most two-wheelers. In India, power sector decarbonisation is already happening, and industrial decarbonisation will be the next task. So, Every Engineer must have to know the present trends in Electric Vehicles. Hence this session would have surely meet the expected outcome of understanding the basics of Battery operated electric vehicles, Operational Features etc . The webinar session was concluded with a vote of Thanks by Prof. J.Senthil, Mechanical Engineering,AVIT.

BEV Systems Selection – Energy System – BMS

- Battery Management System helps to monitor and ensures the safe operating condition of Battery system
- Key role of a BMS is to
 - Maintain State of Charge (SoC)
 - Maintain State of Health (SoH)
 - Monitor and Balance Cells
 - Safety Monitoring
 - Voltage / Current
 - Temperature
 - HW Isolation

BMS Architecture

Centralized Topology (CT)

- Centralized Master Unit is Directly Connected to Each Cell
- Extensive Wiring from Cells to Master
- Relaying of Currents/temperatures to Single Master Unit

Modular Topology (MT)

- Group of Cells are Monitored by Slave Module
- Isolated Master-Slave Communication
- Local Cell Balancing in Slave
- Slave Modules are Distributed Over Battery Pack to Reduce Wiring Length

- Ensures Optimized Power (Range)
- Minimize Risk of Damage (Life time)
- Monitor & Control of Charge / Discharge

Advantages of BEV over ICE

- EVs are 4X cheaper in terms of running cost/km
- EVs effectively address the import of Oil (Energy Security)
- Lower Service cost because of less consumables (No Oil changes, Spark plug, etc.,)
- EVs offer improved ride handling, responsiveness and ride comfort
- Reduced Noise, Vibration and Harshness issues
- EVs generates instant torque thus offering a faster acceleration

Motor RPM	Motor Torque (Nm)	Motor Power (kW)
0	0	0
2000	~150	~30
4000	~400	~160
6000	~350	~200
8000	~250	~200
10000	~180	~180
12000	~120	~160
14000	~80	~140

Zoom Webinar interface showing a grid of participants. The participant 'Ramakrishnan S' is highlighted with a yellow border.

Participant Name	Participant Name	Participant Name	Participant Name	Participant Name
SGANESH6	Senthil J	Keerthana jeyaraj	N.D.PRAJESH C...	Ramakrishnan S
Dr M Prabhahar .	Shine Thomas	PRABHU L	PARTHIPAN S	prakash Sekar
Samuel Michael	Dr. Upendra Rajak	Sreeram	saravanakumar.M	B.Selva Babu
SELVAMUTHUK...	bubesh kumar	Gaurav Krushna H...	Kapil,Nagaland	Srividhya Vasudevan
saurabh	sangeethas@avit.a...	leela	Antony Casmir	Pranav K.P