XAVIER INSTITUTE OF ENGINEERING

A SISTER INSTITUTION OF ST. XAVIER'S COLLEGE

Guest lecture on Electrical Machines and Battery Storage Technologies in Electric Vehicles

DATE: 01/04/2021

Event Coordinator

Dr Madhavi Parimi

Time & Place:

30 March 2021

4-5:30 pm

Zoom

Department:

Applied Sciences and Humanities

No of participant:

120

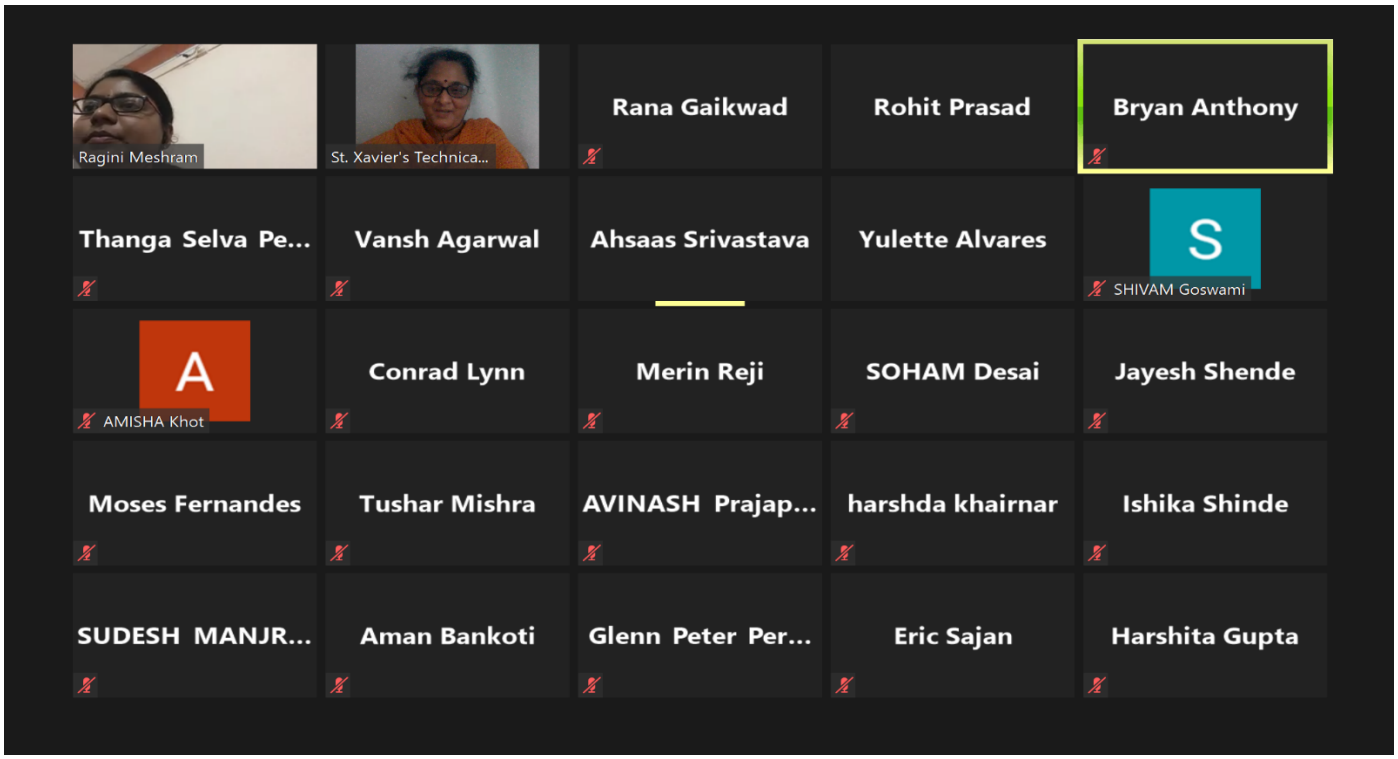
The Department of Applied Sciences and Humanities had arranged for a Guest lecture on Electrical Machines and Battery Storage Technologies in Electric Vehicles on 30 March 2021 at 4pm. The objective of the session was to familiarize the students with the Applications of motors (which is part of their curriculum) in Electric vehicles.

The resource person was Dr Ragini Meshram, Asst Prof, EE Dept, VJTI, who delivered an interesting lecture on the topic - 'Electric Vehicles' (EV) which is indeed the need of the future. Before coming to the technical aspects, introduction to the history of the first EV in world and reasons for its failure was discussed.

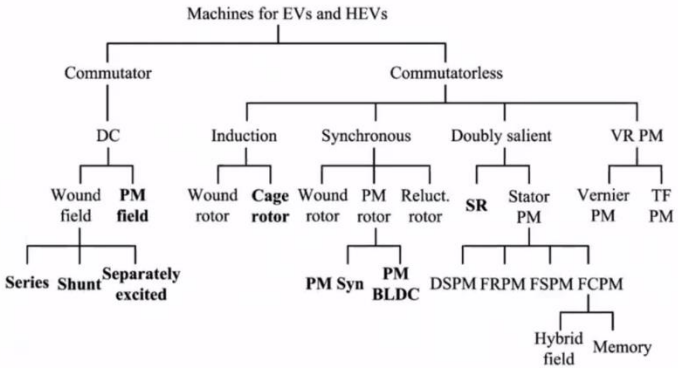
She explained the various types of electric vehicles, need for EV, advantages and disadvantages of EV, the basic structure and working of an EV in comparison to a normal Gasoline vehicle. In the process, a brief look at the surface of aspects related to mechanical engineering of a Vehicle, various types of motors, different battery storage technologies, electric machines for EV were elaborated. And lastly the students were introduced to the various global successful EVs and the Indian market for EV.

The session was focused on a topic which is beyond the scope of the curriculum, emphasizing on the latest technological applications of Electrical machines. Feedback received from the students was encouraging.

Dr Madhavi Parimi
Asst Prof & HoD (AS&H)



Classification of electric machines for EVs



History of Electric Vehicles

The first successful electric car in the U.S. was built in Des Moines, Iowa by Wm. Morrison in 1981

Selection of Storage Technology

Storage technology	Energy density
Lead-acid batteries	100 kJ/kg (30 W-h/kg)
Lithium-ion batteries	600 kJ/kg
Compressed air, 10 MPa	80 kJ/kg (not including tank)
Conventional capacitors	0.2 kJ/kg
Ultracapacitors	20 kJ/kg
Flywheels	100 kJ/kg
Gasoline	43000 kJ/kg

EV Concept