

A REPORT ON

One day Workshop on “Building an Electric Vehicle”

Organized By

DEPARTMENT OF MECHANICAL ENGINEERING

in Association with

Institution’s Innovation Council (IIC), KITW

&

**Centre for Innovation, Incubation, Research &
Entrepreneurship (C-I²RE), KITS Waranagl**

WORKSHOP POSTER



KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE : WARANGAL
(An Autonomous Institute under Kakatiya University, Warangal)
(Accredited by NAAC with 'A' Grade)



KITS WARANGAL

SUMSHODHINI'21

— 27th - 29th JANUARY 2022 —



ISTE TS STUDENTS' CONVENTION - 2022

ISTE KITSW STUDENT CHAPTER (APO16) & TECHNICAL CLUB KITSW

DEPARTMENT OF MECHANICAL ENGINEERING

Presents

WORKSHOP ON "BUILDING AN ELECTRIC VEHICLE"

BY UTON ENERGIA



27 ON 27th JANUARY, 2022



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TO ALL PARTICIPANTS

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Workshop Description:

Have you ever wondered how an electric vehicle work? Do you want to learn how they are designed? Here's your opportunity, because as part of Sumshodhini'21 the Mechanical Engineering Department brings you a 1-day workshop on "BUILDING AN ELECTRIC VEHICLE" to introduce you to the new era of vehicles.

Date: **27/01/2022**
Mode of conduction: **Virtual (Microsoft Teams)**
Timings: **10:00 A.M - 05:00 P.M.**
Number of participants: **67**
Chief Guest: **Mr. K. Harsha Vardhan**

Topics covered:

1. IC engines to electric vehicle (technology shift)
2. Introduction of electric vehicle
 - Definition of an electric vehicle
 - Types of electric vehicles (autonomous, hybrid)
3. IC engines v/s electric vehicle
 - Components
 - Efficiency
 - Weight significance
4. Components / structure of electric vehicles
 - Components
 - Selection system
 - Battery alignment
 - Control system
 - Material significance
5. Electric motor and batteries
 - Types of motors (BLDC, PMSM, IM)
6. Individual components of electric motor

7. Frame of an electric vehicle and its types

- Structure of frames
- Suspension systems
- Modular frame

Introduction about electric vehicles:

Electric vehicles: An electric vehicle (EV) is one that operates on an electric motor, instead of an internal-combustion engine that generates power by burning a mix of fuel and gases. Therefore, such a vehicle is seen as a possible replacement for current-generation automobile, in order to address the issue of rising pollution, global warming, depleting natural resources, etc. Though the concept of electric vehicles has been around for a long time, it has drawn a considerable amount of interest in the past decade amid a rising carbon footprint and other environmental impacts of fuel-based vehicles.

How they differ from typical IC engine: Electric cars are very pleasant to drive compared to internal combustion engine vehicles. The major difference being that they are extremely quiet and are therefore very relaxing on the move. They also deliver power in an incredibly smooth manner, which eliminates the need for a gearbox, making the driving experience even easier. As petrol and diesel prices continue to rise and more stringent conditions come into force on vehicle emissions, motor manufacturers are being encouraged to develop alternatives to traditional internal combustion engine vehicles (ICEVs).

The maintenance of Electric vehicles (EVs) should be less than internal combustion engine vehicles, due to the lack of a gearbox and the oils and cooling fluids that are associated in ICEVs. Electric motors have far less moving parts than conventional petrol / diesel engine too. The running costs of electric vehicles are considerably less for the average commute to work or shopping trip.

Battery longevity is still a bit of an unknown area, many manufacturers are offering long warranties to reassure potential customers. Renault offers a battery-leasing scheme where you pay a monthly fee and they will guarantee the batteries performance.

The beauty of electric vehicles is that tail-pipe emissions are zero, therefore making our towns and cities more pleasant environments. However, they are not without

environmental impact; the electricity used for charging has to come from somewhere! If your electricity comes from a coal fired power station, it may not be anymore CO2 efficient than a conventional diesel car.

Primary Components of an Electric Car: An electric powered car has three primary components. These are the electric engine, motor controller, and battery.

Electric Engine: Unlike a gasoline engine with lots of moving parts, an electric engine or motor only has one moving part. This makes it a very reliable source of motive power. Choosing an electric engine depends on your car's system voltage. They can be structured to use either AC or DC current. AC motors are less expensive and lighter compared to DC engines. They are also more common and they tend to suffer from less mechanical wear and tear. However, AC technology requires a more refined or sophisticated motor controller.

Motor Controller: The motor controller of an electric car administers its complete operation and the distribution of its power at any given moment.

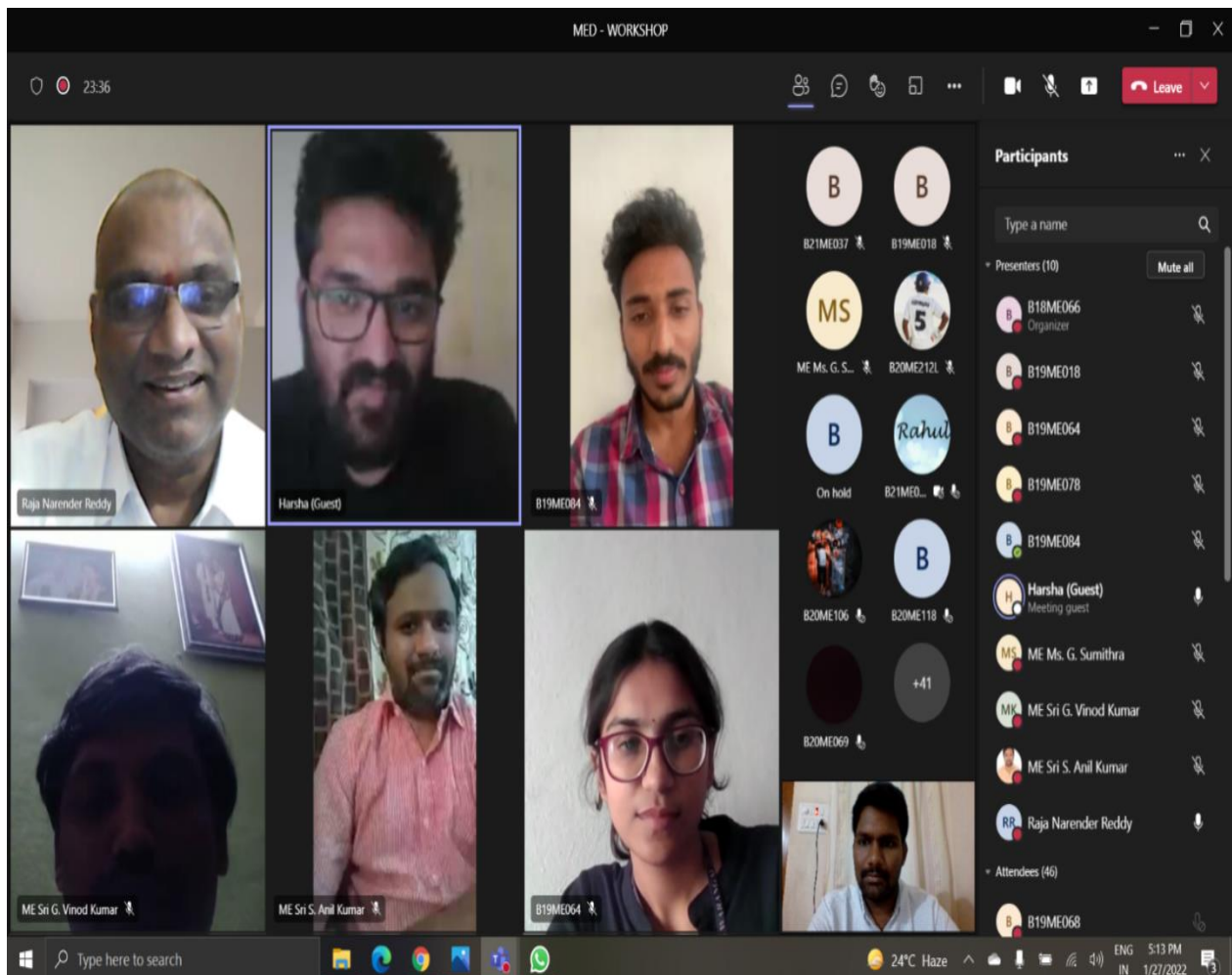
Battery: The battery of an electric car can be charged through the use of ordinary grid electricity at a specialized power station.

Participant List:

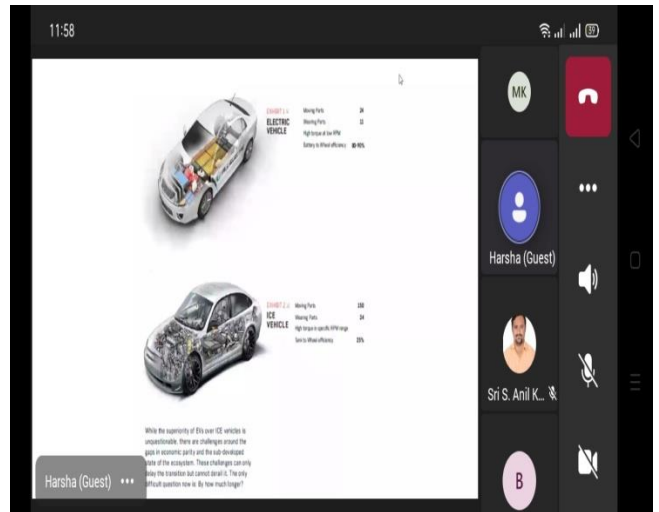
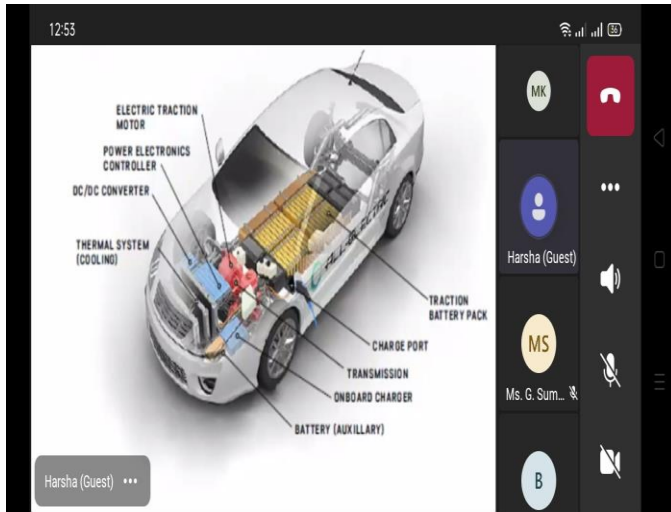
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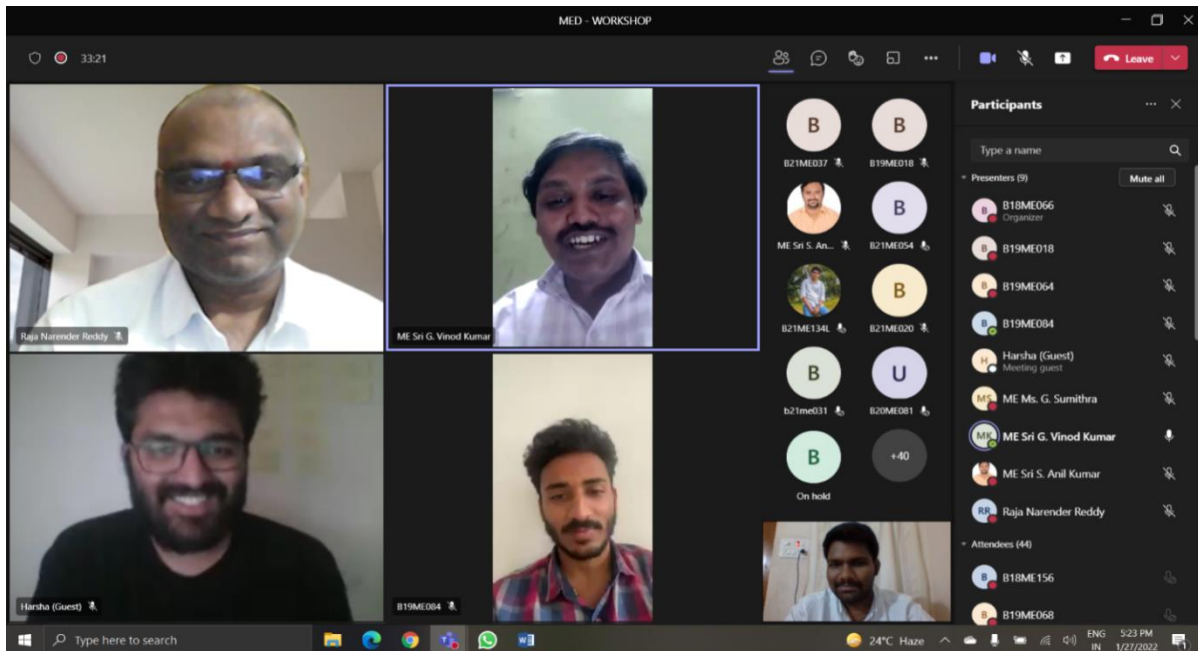
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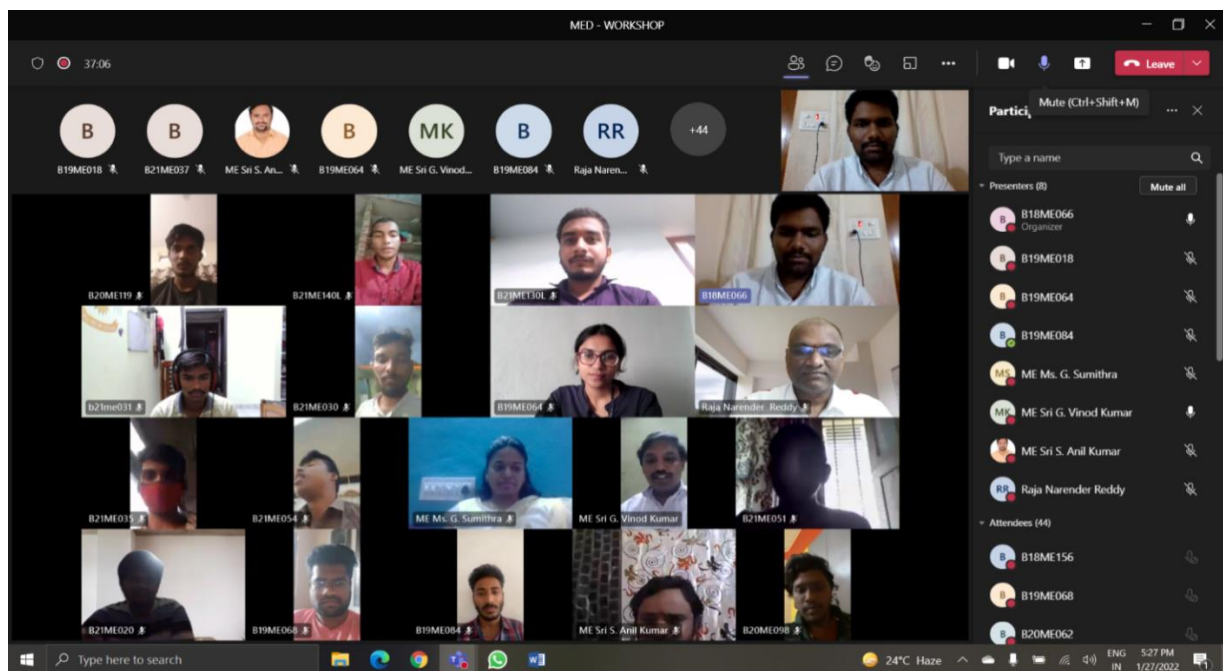
Mr. K.Harshavardhan, Founder & CEO, UTON ENERGIA, Hyderabad, Speaking at inauguration of Workshop “Buildind an Electric Buildind Vehicle” as a part of Sumshodhini’21 on 27th January-2022



Mr. K.Harshavardhan, discussing the working principles of various components of electrical vehicle such as D.C motor, intelligent control board, battery, battery bank etc.



Sri. G.Vinod Kumar, Assistant Professor, MESA faculty In-charge, presenting the report on the workshop at the valadictory



Dr. K.Rajanarander Reddy, HoD, Sri. S.Anil Kumar, Sri. G.Vinod Kumar, Ms. G. Sumithra MESA faculty In-charges, Mr. K. Harshanvardhan, Founder UTON ENERGIA Hyderadad, Mr. K. Satvik Reddy, Student Coordinator and the participants at the worshop valedictory