

Training Program on Battery Management System (16th Sept, 2023 to 16th Oct, 2023)

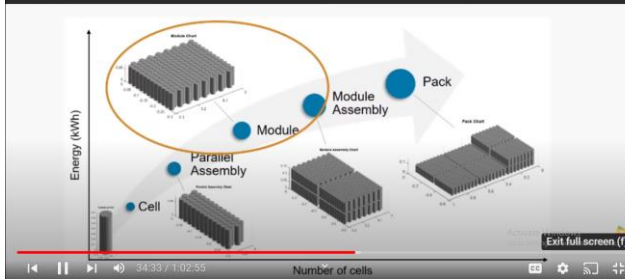
A Battery Management System (BMS) is a crucial component in electric vehicles and various energy storage systems. Its primary role is to monitor and manage the performance, health, and safety of a battery pack. The BMS oversees individual cells within the battery, ensuring they operate within specified voltage and temperature ranges. For this a month long Masterclass on Battery Management System was held from 16th Sept, 2023 to 16th Oct, 2023. Dr. Souvik Ganguli from the Department of Electrical and Instrumentation Engineering, Thapar Institute of Engineering and Technology, Patiala was the coordinator for the program. The program link is provided for reference:

<https://www.youtube.com/watch?v=tU8YKLPMMMA&list=PLMVm21xCcvZeMH0iuEjPx8PxELAEGoEH8&index=2>

The image displays six YouTube video thumbnails from a '30 DAYS MASTERCLASS' on Battery Management Systems (BMS). The thumbnails are arranged in a 3x2 grid. Each thumbnail includes a play button, a progress bar, and a timestamp.

- Top Left:** '30 DAYS MASTERCLASS BATTERY MANAGEMENT SYSTEM'. The video title is 'Day - 1 BMS Masterclass | Basic Battery Module Simulation'. The thumbnail shows a green circuit board.
- Top Right:** 'AGENDA'. The video title is 'Day 1 BMS Masterclass | Basic Battery Module Simulation'. The agenda lists:
 - DAYS 15-17: TEMPERATURE CONTROL AND ANALYSIS
 - DAYS 18-20: EQUIVALENT CIRCUIT MODELS
 - DAYS 21-23: BATTERY MANAGEMENT SYSTEMS (BMS) BASICS
 - DAYS 24-26: TESTING AND CODE GENERATION
 - DAYS 27-30: CLOSED-LOOP TESTING AND DEPLOYMENT
- Middle Left:** 'EV & BMS CAREER PATH'. The video title is 'Day - 1 BMS Masterclass | Basic Battery Module Simulation'. The thumbnail shows a career progression diagram with roles: Engineer, Design Responsible Engineer, Application Engineers, Vehicle Performance Managers, Integration Manager, Program Manager/Technical Lead, Chief Engineer/Technical Specialist, and Senior Manager/VP.
- Middle Right:** 'BATTERY PARAMETERS'. The video title is 'Day - 1 BMS Masterclass | Basic Battery Module Simulation'. The parameters listed are:
 - 1 SOC - STATE OF CHARGE
 - 2 SOH - STATE OF HEALTH
 - 3 SOP - STATE OF POWER
 - 4 DOD - DEPTH OF DISCHARGE
- Bottom Left:** 'WHY BMS IN EV?'. The video title is 'Day - 1 BMS Masterclass | Basic Battery Module Simulation'. The text states:
 - IT MUST MEASURE INDIVIDUAL CELL VOLTAGES
 - THE BMS SHOULD BALANCE BATTERY CELLS PASSIVELY OR ACTIVELY
 - THE BMS MUST MEASURE TEMPERATURES AT DIFFERENT POINTS AS CLOSE AS POSSIBLE TO THE BATTERY
 - THE BMS SHOULD COMMUNICATE INFORMATION TO CONTROL UNITS AND UNDERTAKE ACTION TO ENSURE THE BATTERY WILL BE OPERATED WITHIN SAFETY LIMITSThe thumbnail shows a car chassis with a battery pack and BMS sensors.
- Bottom Right:** 'WHAT IS BATTERY PACK?'. The video title is 'Day 1 BMS Masterclass | Basic Battery Module Simulation'. The text states: 'A BATTERY PACK IS A DEVICE THAT STORES ELECTRICAL ENERGY TO PROVIDE POWER TO AN ELECTRICAL SYSTEM, SUCH AS AN ELECTRIC VEHICLE (EV). THE ENERGY IS STORED IN CELLS THAT ARE ALL CONNECTED TO ONE ANOTHER IN THE BATTERY PACK.' The thumbnail shows a close-up of battery cells.

BATTERY MODULE



Projects that you'll Learn to Develop #2

- BATTERY STATE OF CHARGE ESTIMATION USING COLOUMB / KALMAN
- CONSTRUCTING BATTERY PACK INTEGRATED CELL BALANCING

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