

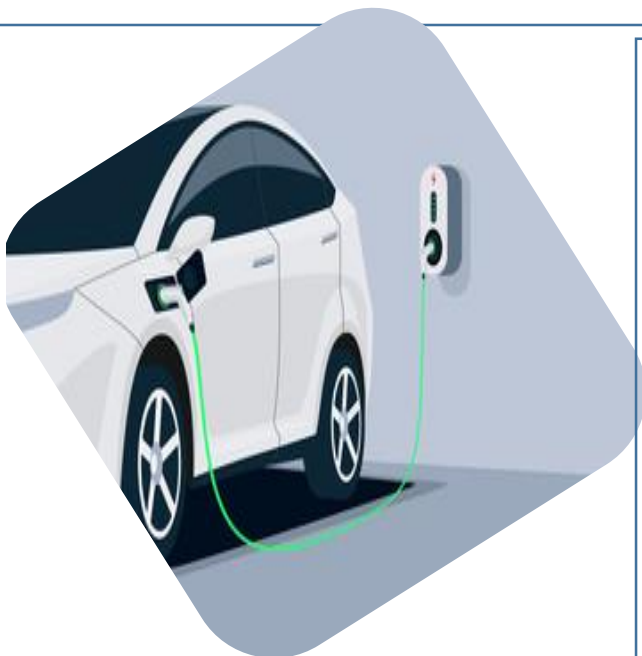
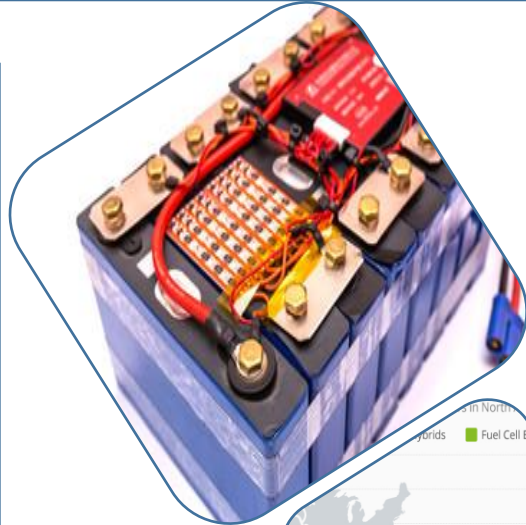
TRAINING AND CERTIFICATION PROGRAM IN BATTERY MODELLING AND SIMULATION

ABOUT:

This program will provide you with a firm foundation in battery basics and function, technical specifications, battery-management-system and most importantly, how to model all these sub-systems in MS Excel & MATLAB-Simulink.

Unique Hands-on Modelling for Product Development

Program will begin with basic understanding of the sub-systems in focus – particularly the governing laws of physics and then move on to the modelling of these sub-systems in either MS Excel™ or MATLAB™ & Simulink™ based on which software is available to each trainee. Once the sub-system is modelled, trainees will get hands on experience in setting up simulations, executing them, post processing results and drawing conclusions relevant to design and product definitions. The training will finally delve on how to set up optimization & robustness checks into simulation.



Certification

Earn a certificate on completion of a course



100% online

Attend whole program at your favorite place



Course 1 of 3 in the

Training program in e-mobility



Approximately 24 hours

To complete in about 14 sessions



Experts

Faculties are experts of automotive industry

SYLLABUS

1. Battery Basics and Applications

a	Battery Basics-1	1. Standard Electrode Potential 2. Various Battery Chemistries	Week 1st	1.5 hours
b	Battery Basics-2	1. Open Circuit Voltage & State of Charge 2. Electro Motive Force & Internal Resistance 3. Series & Parallel Configurations	Week 1st	1.5 hours
c	EV Applications	1. Energy & Power Density 2. Energy Batteries 3. Power Batteries 4. Charging & Discharging Modes	Week 2nd	1.5 hours
d	Battery Specifications	1. Capacity (A-hr) Ratings 2. Peak Power Capacity 3. Energy Capacity 4. Battery Pack Sizing 5. Peak Heat Dissipation 6. Battery Aging 7. Packaging & Cooling	Week 2nd	1.5 hours

2. Battery Management

a.	Cell Balancing	1. Unit Cell Behavior Inside Pack 2. Need for Cell Balancing 3. Balancing Techniques	Week 3rd	1.5 hours
b.	Operational Sensitivity	1. Ambient Sensitivity 2. Dust Sealing 3. Electrode Erosion 4. Memory Effect	Week 3rd	1.5 hours
c.	Battery Management-1	1. Battery Control Parameters 2. Control System Basics - Open & Closed Loop 3. Model Based Control 4. Adaptive Control & Learning 5. Charge Estimation Algorithms	Week 4th	1.5 hours
d.	Battery Management-2	1. Power Request Arbitration 2. Thermal Management 3. Monitoring Sensors & Models 4. Functional Safety Aspects	Week 4th	1.5 hours

3. Battery Modelling and Simulation

a.	Battery Modeling-1	1. Basic Functional Representation 2. Unit Cell modeling & Scaling 3. Pack modeling	Week 5th	1.5 hours
b.	Battery Modeling-2	1. Thermal modeling 2. Electrical Peripherals modeling	Week 5th	1.5 hours
c.	Battery Modeling-3	1. Controls modeling 2. Battery Aging modeling	Week 6th	1.5 hours
d.	Battery Modeling-4	Battery Modeling-4	Week 6th	1.5 hours
e.	Battery Simulation-1	1. Inputs, Assumptions & Simulation	Week 7th	2 hours
f.	Battery Simulation-2	1. Post-processing, Results & Conclusions	Week 7th	2 hours

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A Strategic Research and Consulting company that is enabling Smart and Clean Tech Markets development and growth in Energy; E-Mobility; Solar; LVDC; Environ and Urban sectors. It is helping industries and organization innovate and transform their solutions, services and business model, for faster reforms, higher customer experience and profitable market growth.