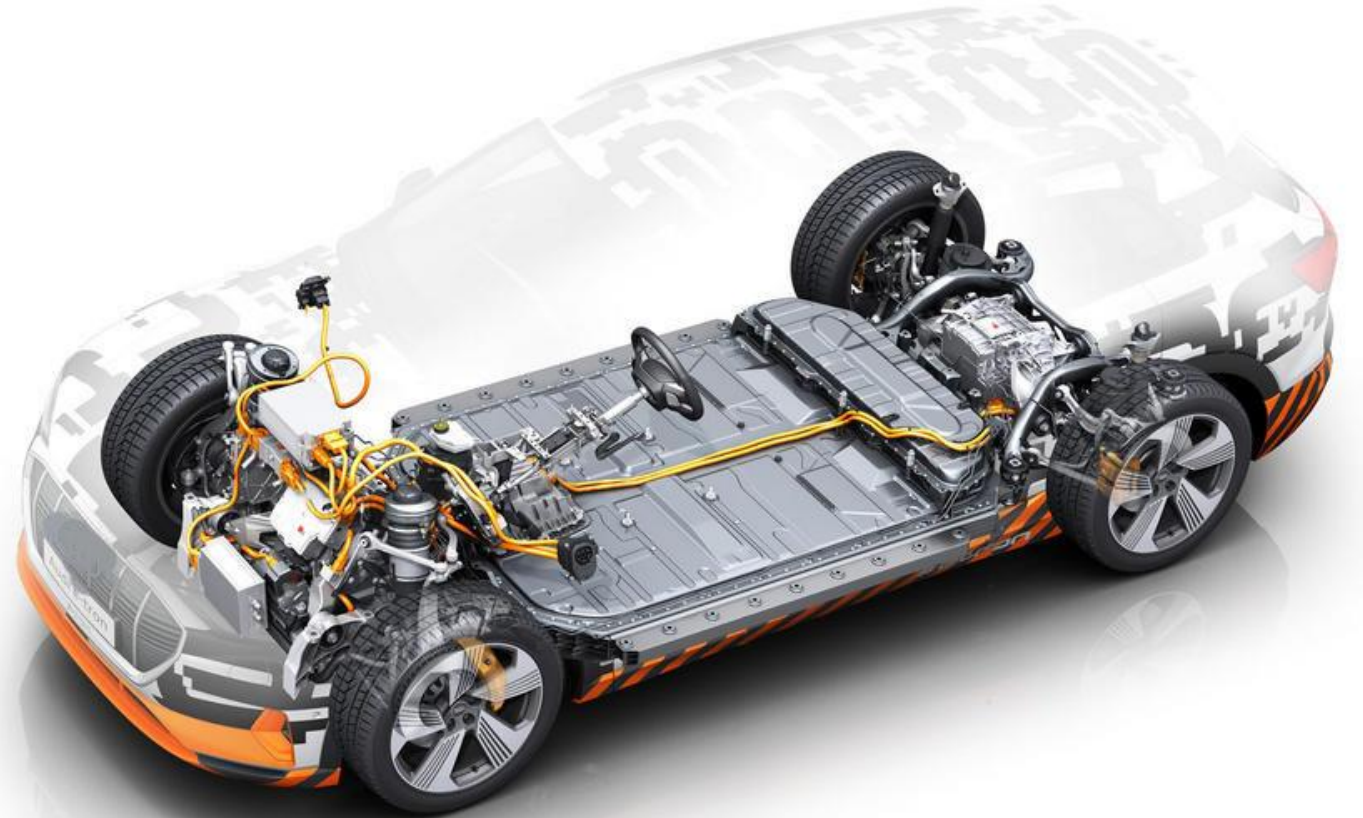


Post Training Impact Report

Battery Modeling and Simulation

Live Online Training Program



Organized by



Certification Partner



Program Summary

Under its **#BuildingEVSystemSkills** initiative, **pManifold EV Academy** is conducting **Battery Modeling and Simulation**, a Live Online Certification Program in partnership with **ASDC**.

23

Total Hours

12 Theory hours
2 Practical hours
1 Assessment hours

12

Theory Sessions

1.5 hour each

02

Practical Sessions

2 hour each

05

Assignments

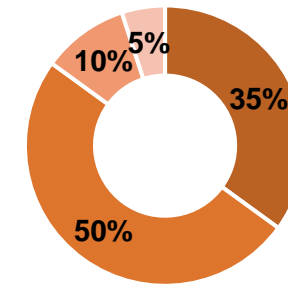
1 per week

11

Group / Individual Projects

1 project for group of 2 participants

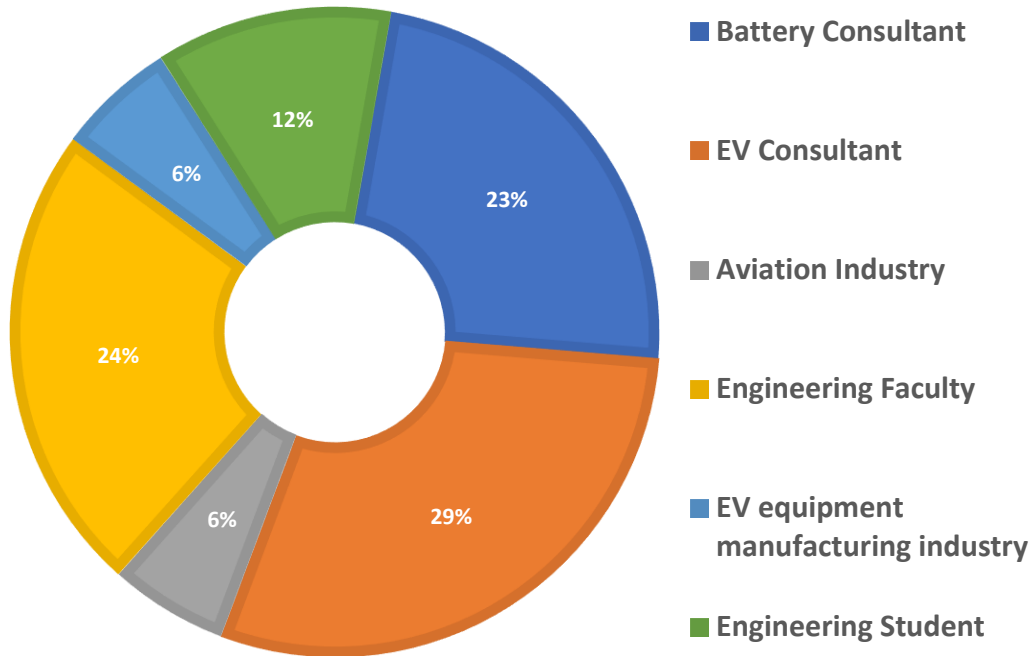
Evaluation Criteria



- Project / Lab work
- Final Exam
- Assignments
- Attendance

Program Uniqueness: First of its kind program globally to train participants in systems and sub-systems modeling of EVs using tools like **Matlab/ SciLab** and **Excel** and help them build applied skills in EVs design, development, sourcing, prototyping, testing, integration, and calibration through principles of **virtual model-based-design**.

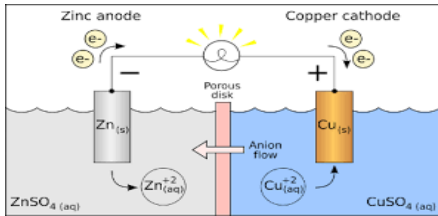
Participants Summary



17 participants

- ✓ Diverse batch including students, faculties, and working professionals in Batteries and e-Mobility domain
- ✓ Their different lenses of looking at EVs and Q&As allowed diving deeper into the topics with increased practical and applied discussions

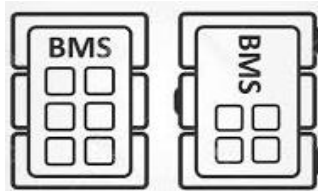
Program Coverage



Battery Basics



Battery Applications



Battery Management System



Battery Modeling and Simulation

✓ This program covered **3 Modules covered in 14 sessions** with below teaching style:

- Live online delivery from two Master Trainers
- Recap of previous learning session
- Interactive questions handling during each slide discussion
- Additional application focus Q&A session at end of the session
- Live practical sessions on **SciLab and Excel modeling** of EV Batteries
- Assignment and battery models debugging help by Trainer

Projects completed by Participants



**BMS Modeling for
an SUV**



**BMS Modeling for
slow charging e-
Bus**



**Battery Thermal
Modeling**



**Battery Modeling for
e-Rikshaw**



**BMS modeling for
Solar based e-
Shopping cart**



**Detachable
Battery Pack for
e-3W**



**Lap time
optimization for
sport EV**



**Solar powered
battery charging
station for Milk
delivery e-cart**

Testimonials

“ One of the best online courses on Battery modeling. Very interactive, as the classes are conducted live. I come from rich IC engine experience, and this course has built my interest towards EVs. It helped me to understand what battery design requires. ”



- e-Mobility Consultant, AVL

“ The program has been very educative and interesting. I was exposed to new set of tools and modeling techniques which is helping me in my current project of battery design for electric vehicles. ”



- EV Battery Consultant, Solar Taxi

“ I learnt lot of new stuffs about EVs especially Battery Pack Configuration and Battery Management Systems. Trainer creates a conducive atmosphere for us to ask questions at any point in time and keeps session more interactive. One can learn a lot within a short time. I am going to utilize course learnings to do research on Sodium and Lithium-ion battery materials. ”



-Faculty, Engineering Institute

“ The program teach simulation using Scilab to all theoretical aspects of unit cell and battery pack to its performance influencing parameters studies. Trainer is full of knowledge and having good domain experience. Course content has basic principles and concepts of cell balance and BMS control. I was able to simulate charging process and control for the self-designed battery pack. ”



- Project Engineer, Solize India Pvt. Ltd.

“ Trainer knows the domain better because of his hands-on rich experience. He tries to clear all the doubts, and that too with so much patience. To the point and rich content. I loved the hands-on modelling part and how EV Academy has synchronized the end mini project with course learnings. This course has helped me a lot to design the battery for several application and how to think in right direction for my future start-up. How i can ensure the longevity of the battery without doing the physical tests in modelled environment, is going to be a core strength in my battery domain knowledge. ”



- Director, CELLARK POWERTECH

Our Experts



Mr. Vikrant Vaidya

Academics: Master in Energy Systems Engineering from University of Michigan, Ann Arbor, US

20+ years of experience in vehicle development & integration - IC Engine, Hybrid Electric as well as Battery Electric Vehicles - for global platforms of Tata Motors, General Motors, Jaguar-Land Rover and Groupe PSA's upcoming BEV for emerging markets. Expertise in product development through powertrain-vehicle integration, model-based controller development and powertrain-in-vehicle calibration. A recruiter & technical trainer for 10+ years & has three records of the invention in hybrid powertrain, battery controls & repurposing.



Mr. Rahul Bagdia

Academics: Dual Masters in Robotics & Control from University of Michigan, Ann Arbor, US

20+ years of extremely diverse global experience in various industries like energy & utilities, electric vehicles, health & life sciences, banking & finance and education. Has worked with Government of India for Electric Vehicle Program Management Cell in areas of policy making, EV infrastructure development, distribution networks and power generation. He has been instrumental in supporting Policy and Technical Standards Development for Electric Vehicles for various countries.



Other Programs



e-Bus System Planning and Optimisation

<https://www.pmanifold.com/ev-academy/electric-bus-system-planning-and-optimisation/>



Electric Vehicle Systems Engineering

<https://www.pmanifold.com/ev-academy/electric-vehicle-systems-engineering/>



Customer Usage

<https://www.pmanifold.com/ev-academy/ev-model-based-controls-development-calibration/>

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