

CERTIFICATE PROGRAM

EV LITHIUM-ION BATTERY CASE

FE DESIGN FOR SAFETY

PROGRAM OBJECTIVE

Design of Lithium-Ion Cell Case to co-relate the EV Side Impact & Side Pole Impact Collusion study on the Battery Case to evaluate the Electro-Mechanical Failure leading to Thermal Runaway cause of Fire.

LEARNING OUTCOME

Design of Lithium-Ion Battery Cell, Pack and Module considering the Design Process, Mfg. and Safety aspects. Further the skill-set to decide the right Battery ElectroChemistry considering the validation requirements and co-relate with Vehicle Crash Impact Test.

TRAINER PROFILE

M.Tech Automotive Engineering - BITS Pilani WILP.

25 Years experienced professional in Automotive Industry & Technical Trainer.

Injection Tooling, CAD/CAM, Automotive Product Design, Engineering, Development and Validation.

CREDENTIAL

Recognition with **Certificate of Completion** will be facilitated at the end of the program. **Certificate of Internship Completion** are provided after successful completion of Internship Live Project.

PREREQUESTIVE

Mechanical / Production or Automotive Engineering Graduate
<2 Year Experienced Professional
Basic working knowledge on any CAD & FEA Software Tool.

FEA LAB SESSIONS

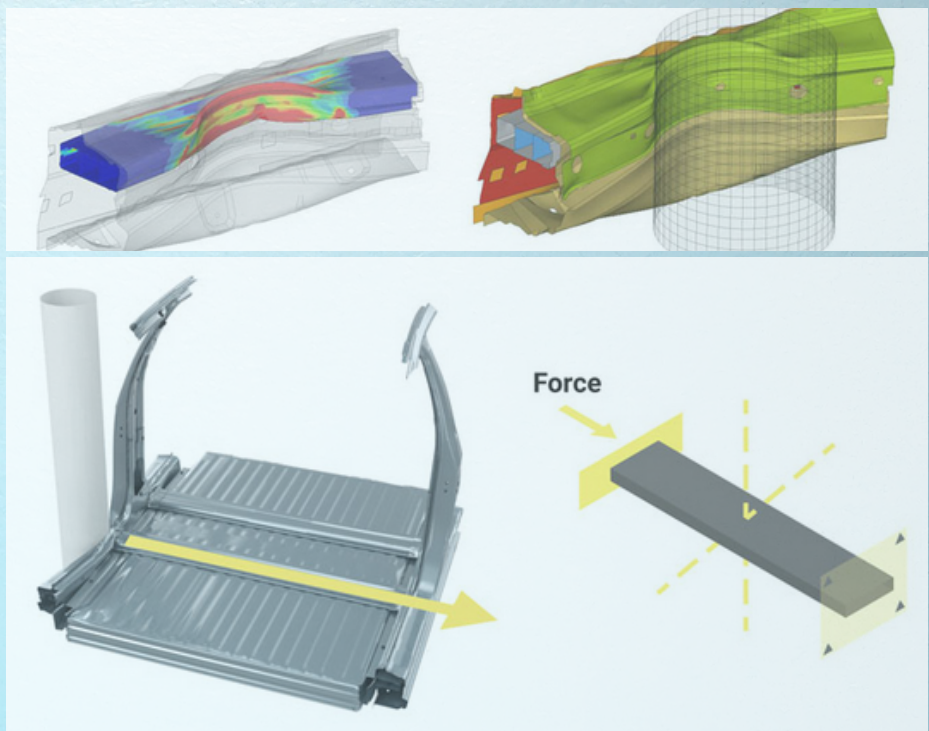
Recorded Lab Sessions are provided based on learning methodology of Ansys FEA tool to **analyse & support the Battery Cell Design for Crash simulation study.**

PROJECT LEARNING

During the Program, apart from classes, assignment are provided on how to design cell pack using CAD & FEA software tool and analyse the Cell-level performance impacts considering Benchmarking case reports.

PROGRAM MODULE

100% online interactive session
Collaborative Skill-set gain with CAD & FEA practices for Cell Design.
Courses are in-line to actual Automotive Tier-1 /OEM Work Methodology.
Recorded lecture back-up.



Battery Performance and Safety

Understand thermal runaway and its implications on Battery Performance throughout the cell life cycle

DAY 1 2 HOURS	DAY 2 2 HOURS	DAY 3 2 HOURS
MODULE-1 - Basics of Lithium Ion-Battery - Battery Chemistry - Cell Construction, Types and Manufacturing Project: Battery Cell 3D Design	MODULE-2 - Cell Chemistry Selection Method for an Application - Regulated Standards for Cell / Pack / Module Battery Test. - Inherent safety features in varied cells Project: Prismatic Cell 3D Design	MODULE-3 - Pros & Cons of varied Cell Technologies - Battery Pack Test and Design Methodology - Thermal System Design Modeling Project: Cell Impact FEA Analysis
DAY 4 2 HOURS	DAY 5 2 HOURS	DAY 6 2 HOURS
MODULE-4 - Understanding the Mechanics of Thermal Runaway - Stages of Thermal Runaway - Mitigation Strategies for Thermal Runaway Project: 5W RCA for the Cell Failure	MODULE-5 - Safety Protection Mechanism on Cell - Detecting Lithium-Ion Cell Internal Faults - Mitigation Failure on EV & Future Technologies Project: Battery Pack Crush Test	MODULE-6 - Case study on Electric Vehicle fires - How to improve internal QA & testing standards - Introduction to Electric Vehicle Safety (EVS) Project: Vehicle Side Impact Test

DURATION: 6 DAYS / 1.5 HOURS ONLINE INTERACTIVE TRAINING + PROJECT / INTERNSHIP*

PROJECT: POST COMPLETION OF THE COURSE, AN PROJECT ON THE **EV BATTERY CASE OPTIMISATION FOR THERMAL-RUNAWAY ON VEHICLE COLLISION** WILL BE PROVIDED TO GAIN DOMAIN EXPERTISE & SKILL-SET.