24 Hours **ADVANCED** Training on

# EV & HEV Drivetrain Simulation in GT-DRIVE

Case Study

Practice

Access to Live Videos

## IST Pvt Ltd

**EV, HEV & Engine Development**
**Staff Augmentation**
**Corporate Training**

## Training Fees

| Category | Training Fees per participant (Rs.) |
|---|---|
| Company Sponsored | 20,000.00 |
| Individual Sponsored | 17,000.00 |


**For registration, please contact us:**

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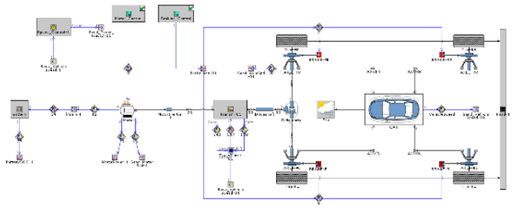
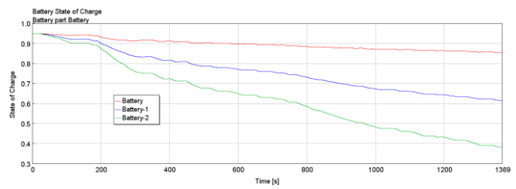
## Agenda Overview

This advanced training module is about in-depth and comprehensive understanding of various aspects of HEV & EV drivetrain system and its performance using 1D simulation GT-DRIVE software. Detailed training agenda is mentioned below.

❑ **HEV & EV modeling**
- ✓ Data required to build and calibrate HEV & EV
- ✓ Model each component of a HEV & EV - Engine, battery, motor, clutch, torque converter, transmissions (AT, MT), drive shafts, axles, tires, brakes, road, vehicle and environment
- ✓ Model control systems – Supervisory, driver, ECU, BMS, motor, TCU, brake (regenerative + friction)
- ✓ Subassemblies - Internal, external, and encryption
- ✓ Model setup - Initialization, parameter sweeps, convergence, run setup, case setup
- ✓ Different architectures – Conventional vehicle, EV and P0, P1,…., series, parallel HEV



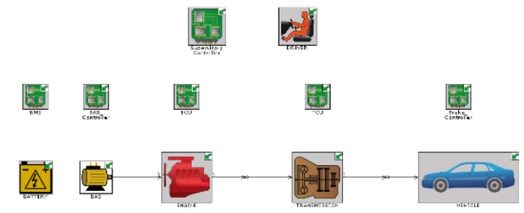
❑ **EV performance evaluation**
- ✓ Predict vehicle performance - Acceleration time, max vehicle speed, time to reach certain distance, tip-in time, gradability and regenerative braking, all electric range (AER) for different driving cycles
- ✓ Interpret change in performance parameters of battery and motor
- ✓ Impact of control strategy, vehicle, transmission, road, battery and motor parameters



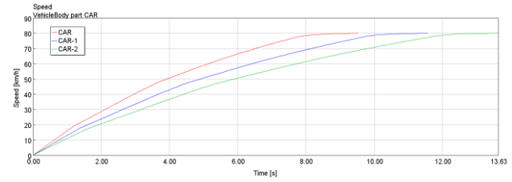

❑ **HEV performance evaluation**
- ✓ Understand control strategy, power distribution,
- ✓ Predict vehicle performance, engine start/stop, electric launch & assist, regenerative braking, energy/fuel economy
- ✓ Interpret change in performance parameters of battery and motor
- ✓ Impact of control strategy, vehicle, transmission, road, battery and motor parameters

## Who Should Attend?

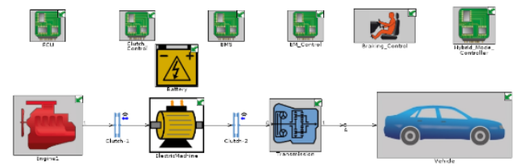
- ❑ Working professionals/ planning to work in HEV & EV drivetrain systems, Vehicle calibration
- ❑ Battery and E-motor manufacturers
- ❑ Electric 2-wheeler and 3-wheeler electric retrofitters
- ❑ E-rickshaw manufacturers
- ❑ OEMs/ Consulting Companies/ Start-ups
- ❑ Engineering Students/ Professors/ Scholars



❑ **Conversion of a convectional vehicle into EV**
- ✓ Convert a conventional vehicle into equivalent EV for similar vehicle performance; and minimal battery, motor size & transmission requirements
- ✓ Investigate with various component sizing and architecture




❑ **Conversion of a convectional vehicle into HEV**
- ✓ Convert a conventional vehicle into equivalent HEV architecture for similar vehicle performance; and minimal battery, motor size and transmission requirements
- ✓ Investigate with various component sizing and architecture (mild, series, etc)



## Trainer

- ❑ Over 19 years of industrial experience in diesel, gasoline, gas engines; HEV & EV; and aircraft engines
- ❑ 1D simulation domain – engine performance, cooling, HVAC, HEV & EV drivetrain, battery, lubrication, acoustics, hydraulics, cranktrain, and valvetrain
- ❑ Worked with GE, Cummins, ESI, MTU (Rolls-Royce), IST
- ❑ Conducting training for 10 years
- ❑ GT-SUITE user for 14 years
- ❑ M.Tech. from IIT Kharagpur