Michael Lalande and Johannes Gerl, Dassault Systèmes | Dassault Systèmes Strategy for Electric Vehicle Development

Abstract

Dassault Systèmes has developed cross-domain engineering design simulation solutions for electric vehicle development. This technological approach can be applied continuously from

- the vehicle architecture phase; physical, electrical and software
- through the concept phase and system design
- to vehicle calibration

Thus reducing development time and costs and improving the customer's ownership experience. Our cross-domain electric vehicle solutions were developed to cover the entire vehicle development process, bringing together the traditional domains of; batteries, electric drives, power electronics, vehicle dynamics, energy management, and more. Thus enabling; Electric Vehicle Performance Optimization

- Optimize and Validate Electric Vehicle Technology at the conceptual stage with ready-to-use virtual models to deliver innovative solutions for vehicle performance
- Perform energetic dimensioning to optimize key components for battery pack, power electronics and electric drivetrain

Battery cell & pack Simulation

- Predict related battery warranty cost based on battery cell ageing simulation
- Simulate battery cells and battery pack to prevent thermal runway and safety issues

Multi-disciplinary Optimization

- Perform cross-discipline integration and simulation at vehicle level to boost multi-disciplinary convergence, select best alternatives and reduce physical testing cost