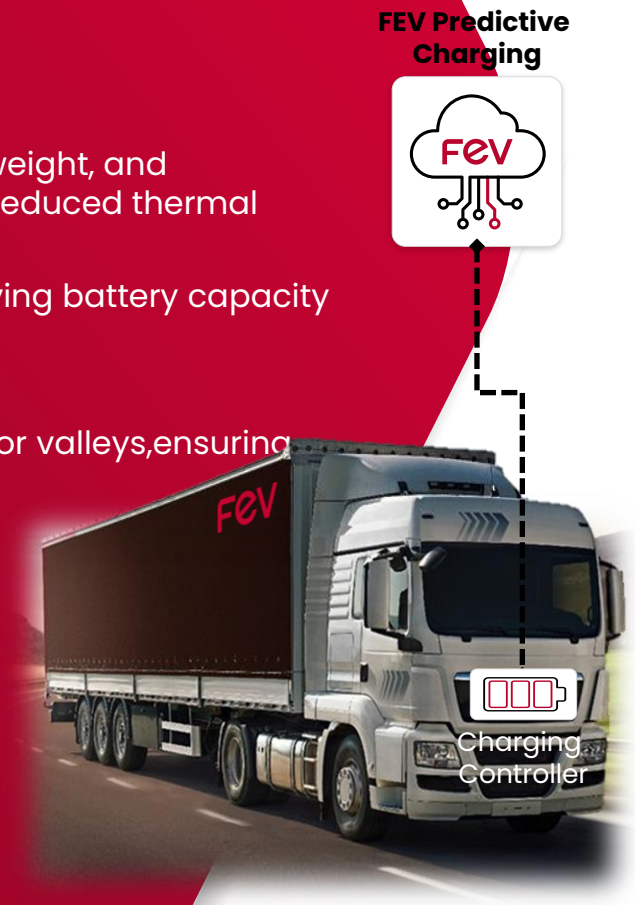
FEV Signature Solutions

FEV Predictive Charging Software

Full range performance for your battery electric trucks meeting ECE-R13 trough recuperation without hardware add-ons

FEV offers

- Predictive charging software - reduced cost, weight, and complexity by eliminated brake resistors and reduced thermal management hardware
- Increased driving range by dynamically reserving battery capacity only when terrain topology requires it
- TCO reduction trough efficient SOC usage
- Avoids performance limitations on flat terrain or valleys,ensuring maximum system efficiency
- Accelerate integration through customizable software modules and engineering support
- Quantify benefits early via simulation studies to validate range and cost improvements



Why FEV

- 45+ years of automotive engineering excellence, supporting global OEMs in delivering reliable, production-ready vehicle technologies
- Decades of BEV development experience, giving FEV unmatched depth in energy management, control software, and heavy-duty electrification
- Patented predictive SOC algorithm delivering a unique competitive advantage in efficiency and compliance
- Flexible collaboration models, including transparent whitebox licensing for maximum reusability and platform scalability
- Full lifecycle support – from concept evaluation to integration, validation, and homologation

Reference projects

European OEM

Series Production

BEV Truck Development (PT System, Predictive Drive, Energy Mngmt)

European OEM

Series Production

BEV Truck Development

European OEM

Series Production

Mass Estimation Software

European OEM

Prototype

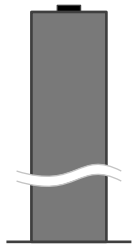
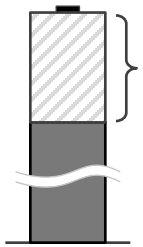
Mass Estimation Software

Asian OEM

Series Production

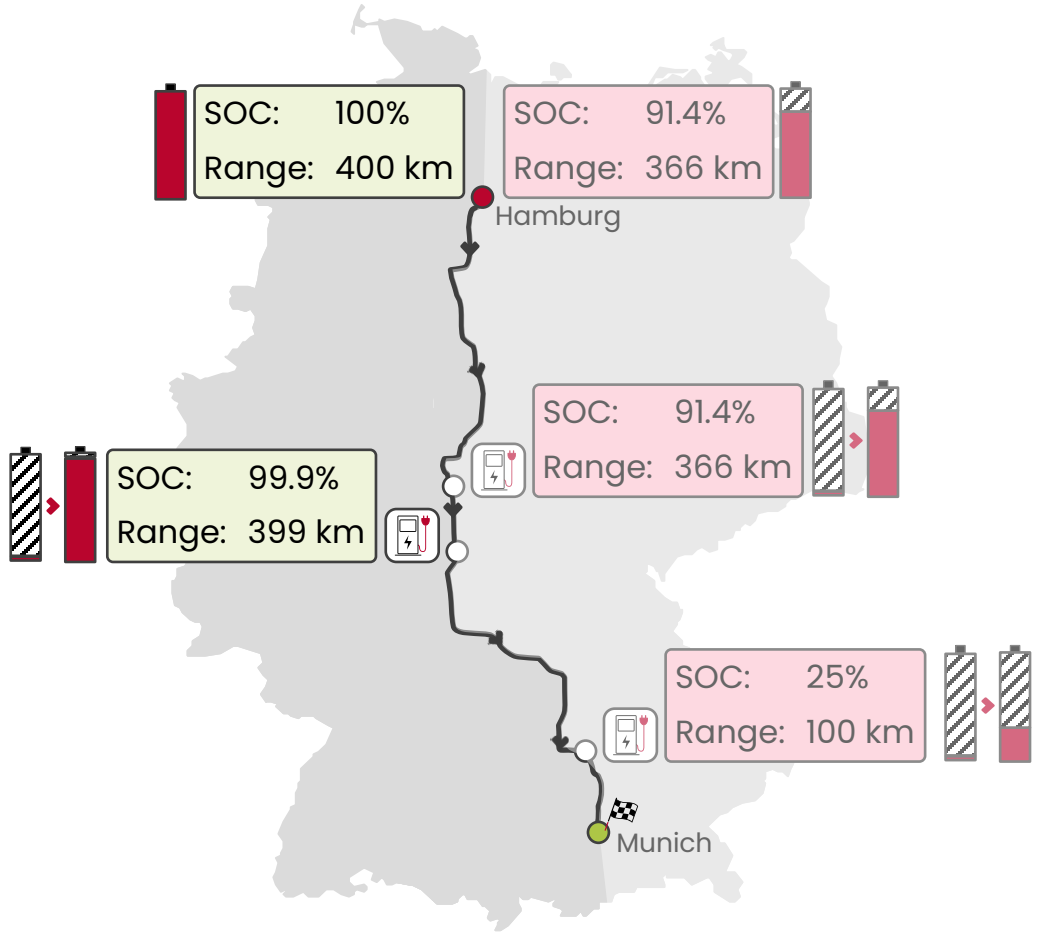
Mass Estimation Software

Maximize range and pass endurance braking requirements with FEV Predictive Charging Solution

Solution	Brake Resistor	Recuperation + FEV Predictive Charging	Recuperation
Brake Resistor	⊖	⊕ Not needed	⊕ Not needed
Costs	⊖	⊕	⊕
Range	 ⊕	 ⊕	 ⊖
Solution Details	Endurance braking is achieved using a brake resistor, which adds significant cost.	Endurance braking is achieved through recuperation. FEV's Predictive Charging Solution reserves battery capacity only when necessary.	Endurance braking is achieved through recuperation, which requires dedicated battery capacity.
Result	●	⊕	●

Predictive SOC limitation improves range compared to conventional SOC strategies[1]

Predictive Charging SOC Limitation



w/o Predictive Charging SOC Limitation

[1] Range is increased compared to vehicles w/o Predictive Charging SOC Limitation and w/o a brake resistor system or service-brake-supported endurance braking

Predictive SOC Limitation: A Fully Integrated Model-Based Control Approach

USE THE FULL POTENTIAL OF YOUR BATTERY CAPACITY WITHOUT COMPROMISING THE DRIVER'S FLEXIBILITY

Vehicle Mass

- Vehicle mass determination as input for the vehicle resistance estimation

Resistance Estimation

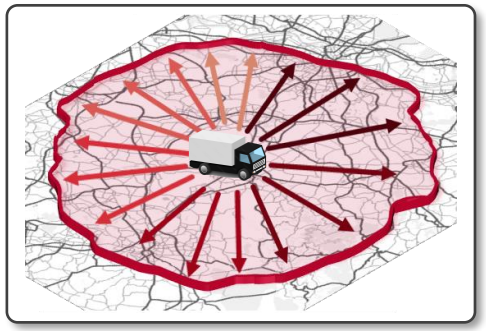
- Vehicle resistance estimation for calculation relevant wheel forces

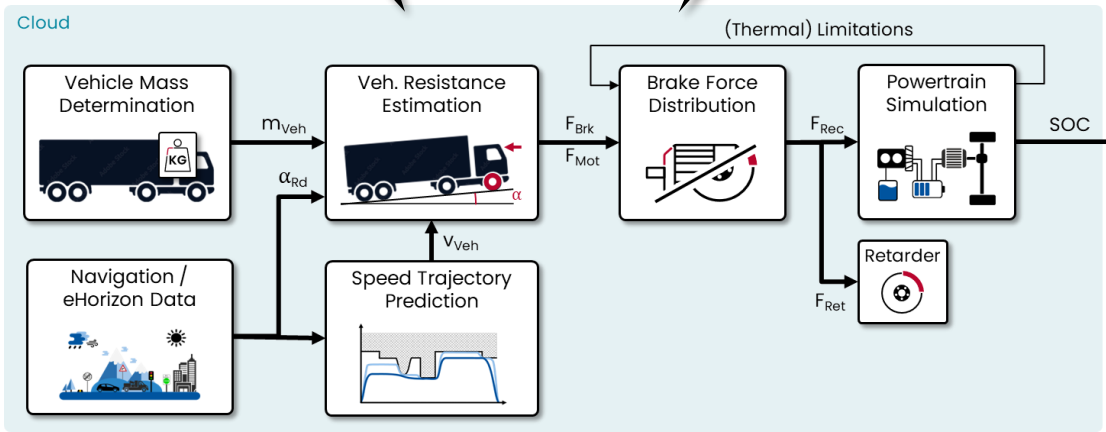
Brake Force Distribution

- Distributing brake forces among endurance brake systems

Powertrain Simulation

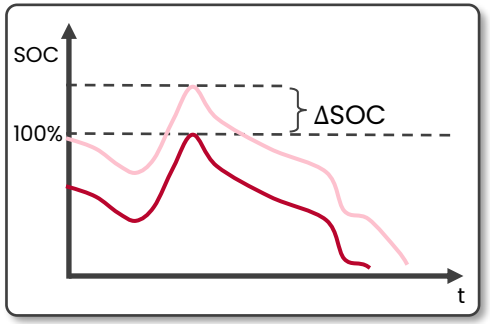
- SOC trajectory and thermal load prediction





SOC Limitation

- Arbitrate and set SOC limits



Route Determination

- Maximum reachable height difference considering all driving directions

Speed Trajectory

- Homologation Scenario Type IIA

Get in touch with us for further information

www.fev.com/en/signature-solutions