

FEV Signature Solutions Powertrain Designer Tool for Electric and Hybrid Vehicles

Accelerate your powertrain development

FEV offers

- ◆ Fast and high-quality powertrain design according to your requirements with FEV's unique Powertrain Designer Tool
 - providing EDU and battery design in concept phase for all applications, including passenger cars and commercial vehicles
 - fully automated AI based optimization for searching an optimal powertrain combined with optimal torque split and gear shifting
 - rapidly specify components for various automotive applications.
 - fast evaluation of thousands of design variations based on component sizing and backwards simulation approach
 - user defined generation of relevant figures to visualize the results



Why FEV

- ◆ Longstanding expertise in automotive e-powertrain design and optimization processes
- ◆ One-stop-shop for your whole powertrain development support up to series
- ◆ High simulation accuracy validated by various vehicle applications and continuously optimized
- ◆ White box option to enable you to use FEV's tool within your company, including further developing the tool on your own
- ◆ Additional services, as customization of tool to exactly address customers' needs
- ◆ Customer friendly license model, as one time license fee and tailored license scope

Selected reference projects

HYDROGEN STORAGE CU SOFTWARE

■ Series development

■ Concept study

■ Conference paper



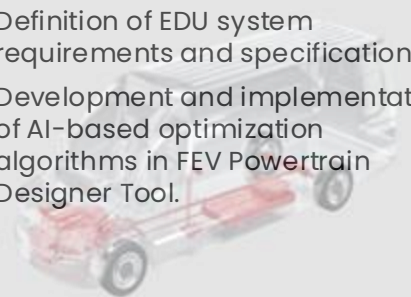
EU-Funded project

Automated Global Powertrain Optimization for Electric Van

- AI-based Electric Drive Unit optimization for Electric Van
- Completion in 2025

FEV responsibility

- Definition of EDU system requirements and specifications
- Development and implementation of AI-based optimization algorithms in FEV Powertrain Designer Tool.



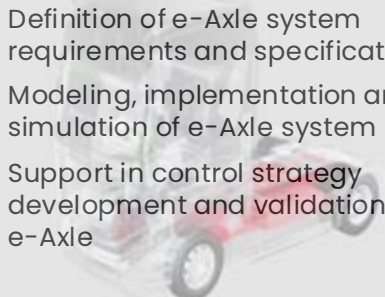
Asian OEM

Systems engineering for heavy duty e-Axle

- Support in the development of e-axle for heavy duty truck
- Completion in 2025

FEV responsibility

- Definition of e-Axle system requirements and specifications
- Modeling, implementation and simulation of e-Axle system
- Support in control strategy development and validation for the e-Axle



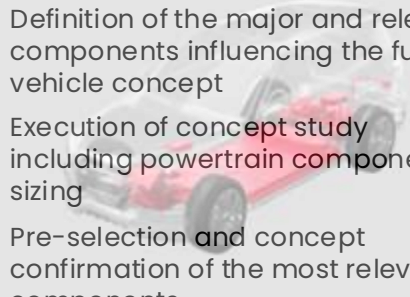
Asian OEM

Concept high level powertrain dimensioning

- Conduct a concept study of powertrain system for an electric vehicle application
- Completion in 2023

FEV responsibility

- Definition of the major and relevant components influencing the full vehicle concept
- Execution of concept study including powertrain component sizing
- Pre-selection and concept confirmation of the most relevant components



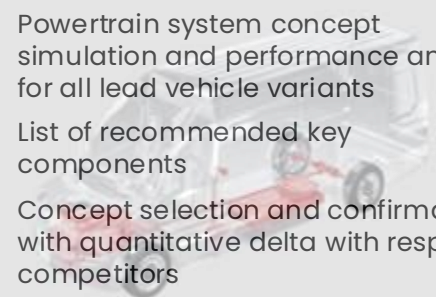
European OEM

Concept high level powertrain configuration

- Conduct a concept study of powertrain system for light duty commercial vehicle
- Completion in 2023

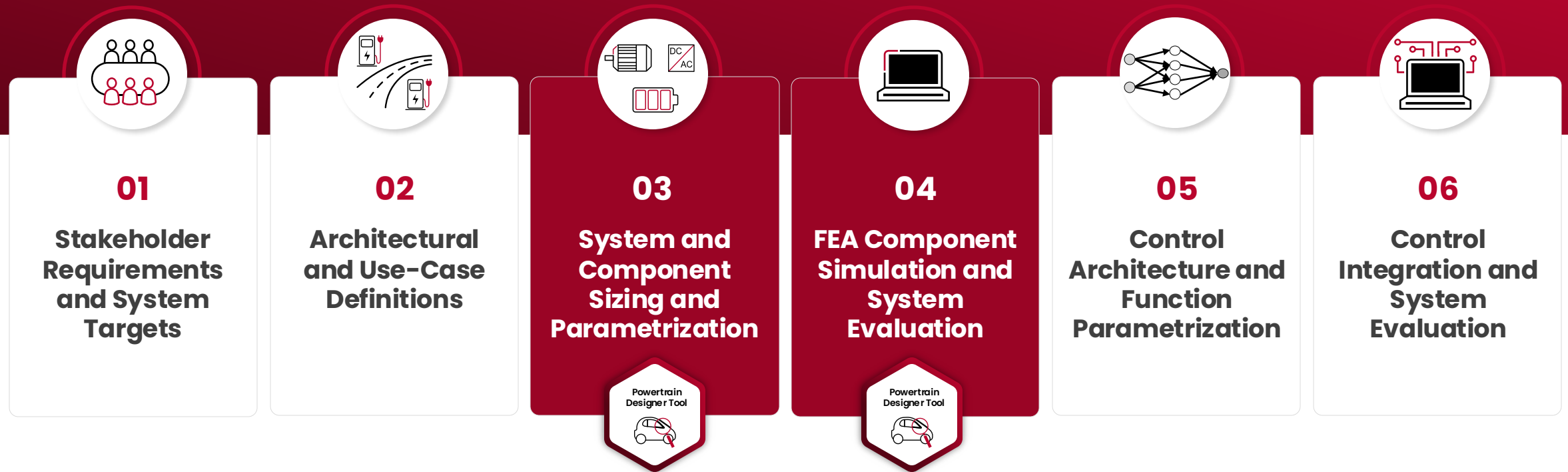
FEV responsibility

- Powertrain system concept simulation and performance analysis for all lead vehicle variants
- List of recommended key components
- Concept selection and confirmation with quantitative delta with respect competitors



FEVs system development framework integrates the appropriate design tool for complex automotive design and control processes

POWERTRAIN DESIGNER TOOL AS PART OF SYSTEMS DESIGN AND OPTIMIZATION PROCESS



Features of Powertrain Designer Tool

01

Component Scaling
Torque / Power scaling
Losses scaling
Mass scaling
DC-Voltage scaling

02

Determine Wheel Request
E-Motor torque & power
Gear number & ratio

03

GUI & APP
User-friendly
Visualization of results
Auto. report generation
Option as blackbox

03
GUI & APP



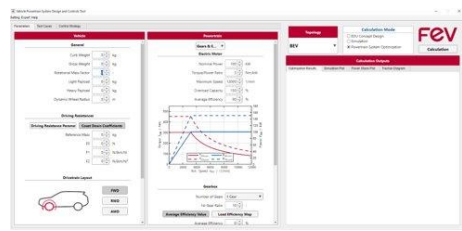
02
Determine Wheel Request



01
Component Scaling



Powertrain Designer Tool



**E-Machine
Transmission
Battery**



04
Simulation



04

Simulation
Backwards simulation
Energy consumption
Vehicle performance
Legislation cycles

05

Customized User Profiles
User defined cycles
Real driving cycles

06

Customized User Profiles
Electromagnetic design
Lifetime evaluation
Manufacturing evaluation
Thermal management
Global Optimizer

05
Co-Simulation / Optimization



AI based

06
Customized User Profiles



Get in touch with us for further information



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signature-solutions](http://www.fev.com/en/signature-solutions)