FEV Signature Solutions

FEV Concept Development Process

Our process provides you with an early and comprehensive concept evaluation to ensure that you choose the best solution

- Dedicated concept phase with initial basis of assessment
- CAD design in the simultaneous engineering approach
- CAE loops based on defined boundary conditions & requirements

Exemplary case - EV battery exoskeleton concept

- Potential hot form quenching (HFQ) technology application
- Higher part integration, stiffness and optimized geometry
- Cell-to-Pack (CTP) approach
- Superior gravimetric & volumetric energy density
- Applicable for all type of vehicles

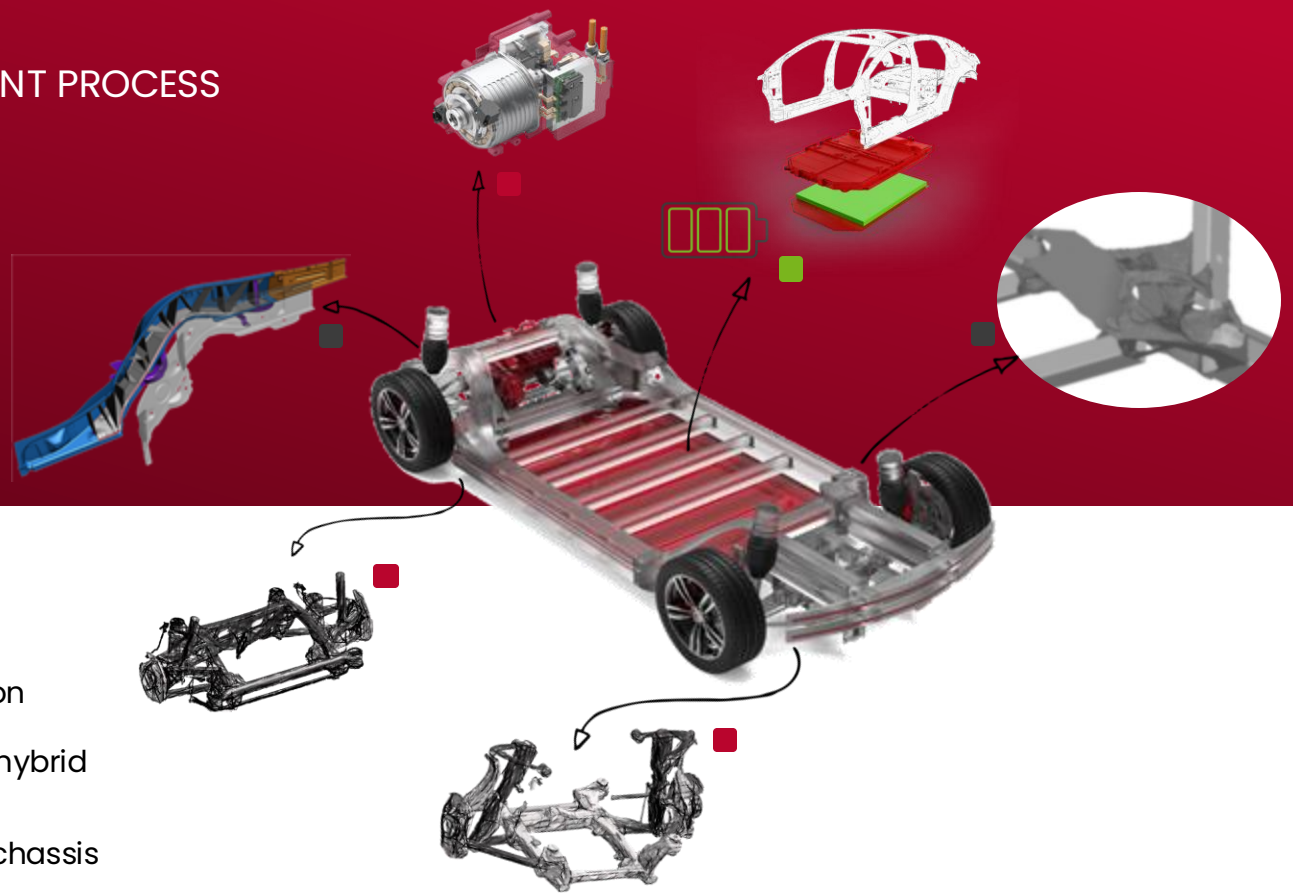
Why FEV

- Experienced in all fields of vehicle development, including battery development & integration from conventional hang-on concepts (CTM & CTP) up to “Cell-to-Chassis” solution including dedicated testing
- Established partnerships with companies having expert knowledge in specific areas, as hot form quenching technologies
- Additional services as supporting you through the whole development process to series production

FCDP (FEV Concept Development Process)

Reference projects

FEV CONCEPT DEVELOPMENT PROCESS



- Battery integration
- Mega-casting / hybrid casting
- Powertrain and chassis integration

EXAMPLES OF INNOVATIVE LIGHT WEIGHT SOLUTIONS

- EV battery housing development incl. structural integration
- Structural platform concept development
- Development of light weight solutions (e.g., hybrid casting, mega castings, additive manufacturing, etc.)
- Development and integration of powertrain and chassis components

Patents

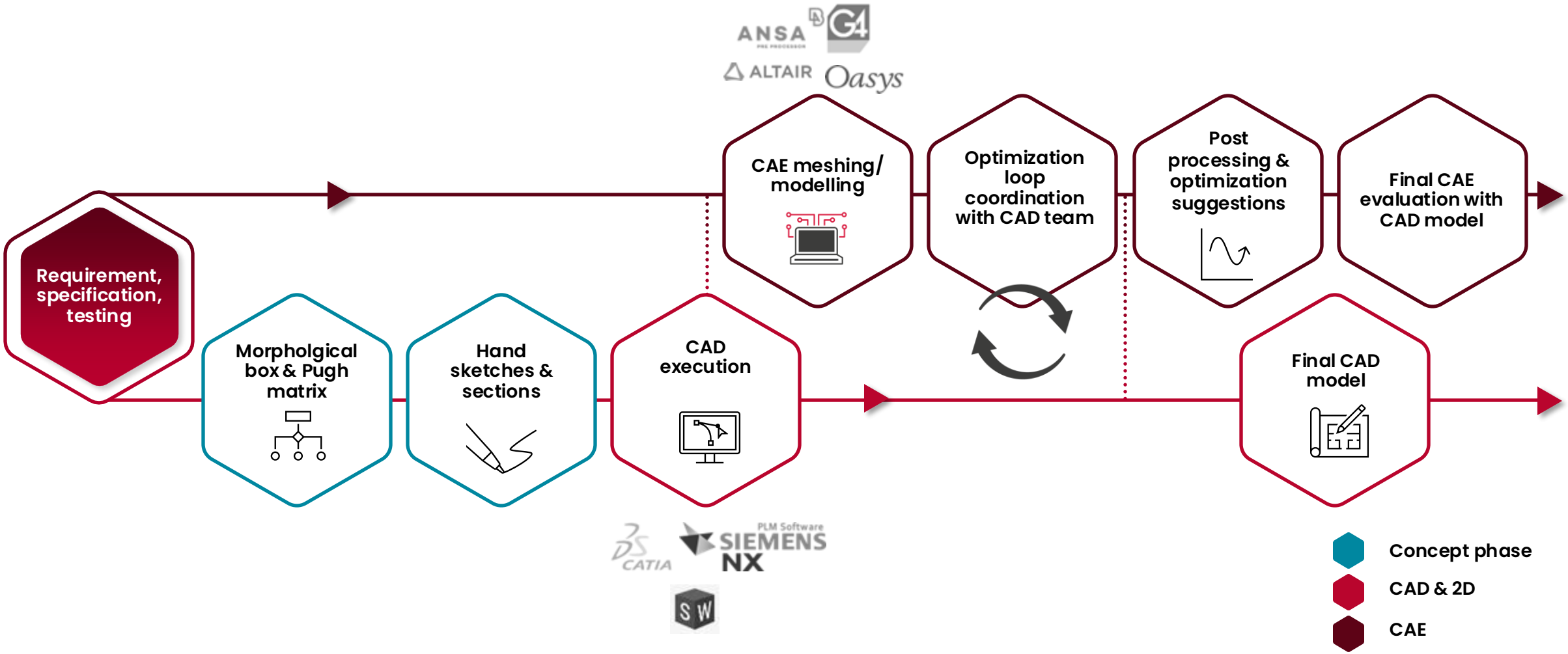
Patent application
Offermanns, Hooker, Zabirov:
Battery with exoskeleton
DE102023106370A1

Patent application
Offermanns, Hooker, Zabirov:
Battery for electrically powered vehicle
DE102023128119A1

Patent application
Offermanns, Hooker, Zabirov:
Battery with substructure
DE102023108189A1

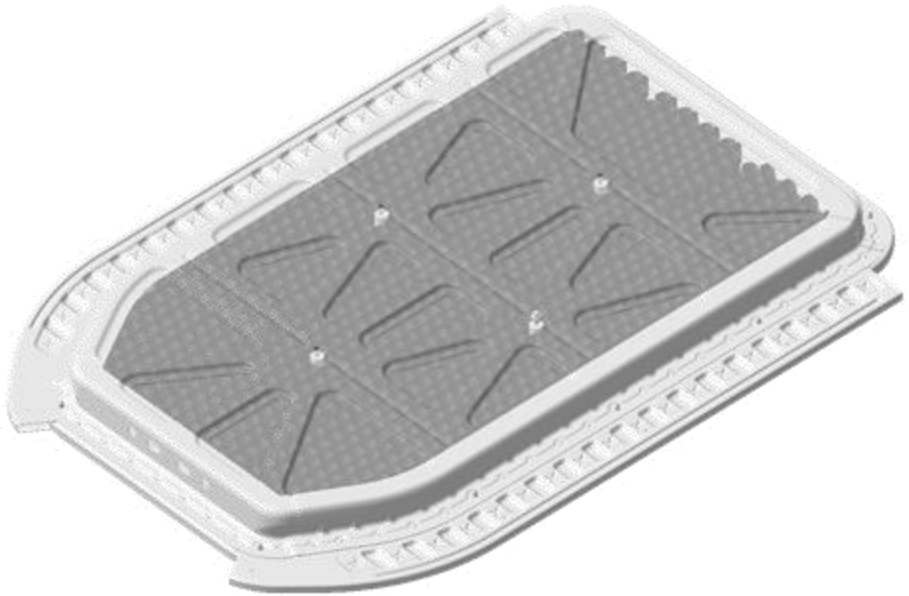
After concept ideation and pre-assessment, implementation of the development process in CAD and support by the means of CAE

FEV CONCEPT DEVELOPMENT PROCESS



FEV´s battery exoskeleton concept
Developed & approved using the FEV Concept Development Process

EV BATTERY HOUSING USING HFQ TECHNOLOGY



Innovative design	Exoskeleton concept with part integrated lid and base containing load-conducting structures. This results, for example, in an improved flow of force in the event of a crash.
Gravimetric energy density	With almost the same mass compared to a reference battery housing and an increase in the nominal energy content, this results in a high gravimetric energy content.
Volumetric energy density	Thanks to the clever placement of crossbeams to support the load, the battery interior could be designed without additional support structures, which significantly improves the volumetric energy density.
Range	Assuming comparable consumption, the range can be enlarged by increasing the nominal energy content and the gravimetric energy density.
Network development	Development together with a partner focused on aluminum hot form quenching (HFQ).

Get in touch with us for further information

www.fev.com/en/signature-solutions