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Disclaimer: Engineering Center Steyr GmbH & Co KG, Vehicle Engineering

Vehicle Prototyping & Testing

Prototyping

- Prototype Parts & Sub Systems
- Demonstration Vehicles
- Mule Vehicles
- Full Vehicles

HIL Test Benches

- Full vehicle disassembly
- Reassemble of all components outside the chassis
- Integration of new components
- Measurement of signals and functions
- Test of new components and gateways
- Use of gateway tools to combine different systems and new components

Vehicle Testing

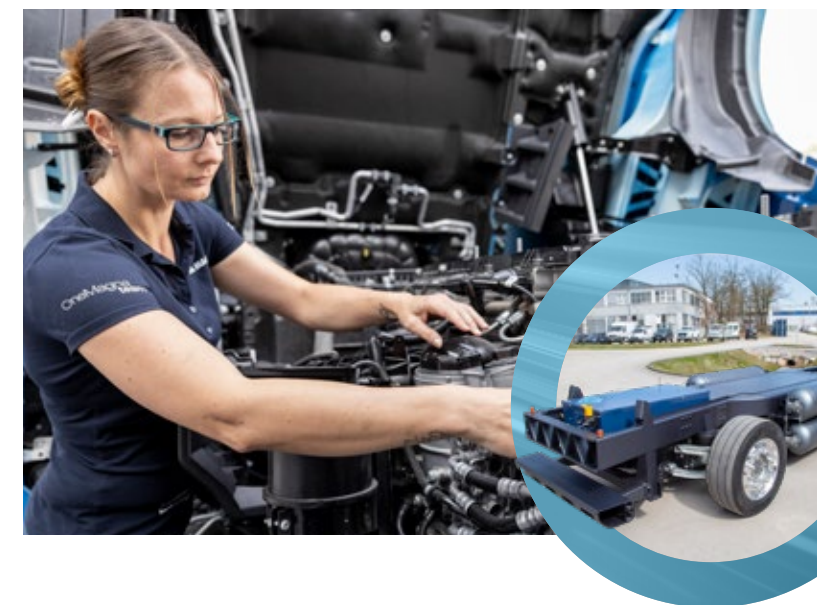
- Subjective and objective vehicle evaluation
- Vehicle tuning
- Functional & Durability testing
- Testing resources

Measurement Services

- Vehicle dynamics / Comfort
- Vehicle durability / Development tests
- System / Component measurement services
- EE system analysis



Vehicle Engineering



Vehicle Engineering
from One Source by
Magna Powertrain
Engineering Center Steyr

engineering.mpt.magna.com



Styling

Concept Design Development

- Trend research / styling benchmark
- Orientation program / mood boards
- Design strategy
- Theme development exterior / interior

Surface & Visualization

- Fast modelling (polygon modelling)
- CAS – 3D theme development
- Class A surfacing
- Powerwall visualization
- Virtual reality design check

Serial Design Development

- Theme verification
- Serial design support during realization
- Styling – technical unification
- Color & trim
- Detail design

Hardware Modelling

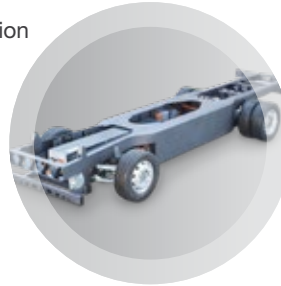
- Design check model exterior
- Design check model interior
- Scale models
- Clay models
- Interior seating buck



Chassis

Chassis Frame

- Ride & handling simulation and performance target setting
- Frame for special vehicle application
- Brake system simulation and integration
- Lightweight solutions
- Strength & fatigue simulation

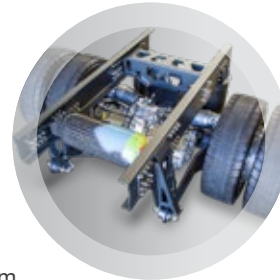


Axle / Suspension System

- Rigid axle suspension
- Independent suspension
- Pusher- / trailing axles suspension
- Spring types (Air, Steel, Hydraulic)
- Kinematics simulation and performance target setting

Steering System

- System design for standard rigid axle or independent suspension
- Kinematics steering & suspension system development
- Steering column kinematics
- Steering ratios & forces
- Steering system interface development



Powertrain Integration

- Passenger cars to heavy duty trucks
- Powertrain packaging
- Interface system development
- Cooling system
- Air intake, fuel and after treatment system
- Powertrain performance and energy demand optimization



System engineering

System Architecture

- Development of vehicle systems
- System specification
- System benchmarking
- System validation
- HV / LV system design



System Requirements Engineering

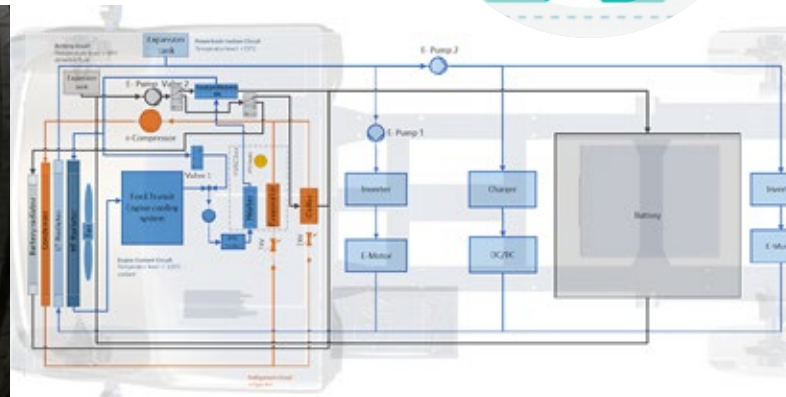
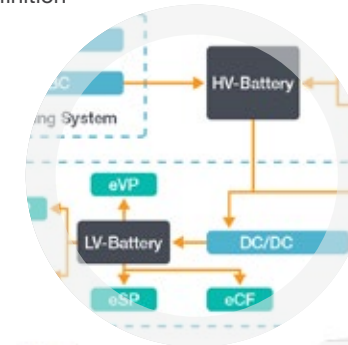
- System requirements engineering
- Function development
- Vehicle system application

Vehicle Simulation

- Vehicle performance analysis
- Vehicle topology evaluation
- Specification of powertrain components
- Plant model build up for SiL analysis

Energy Management

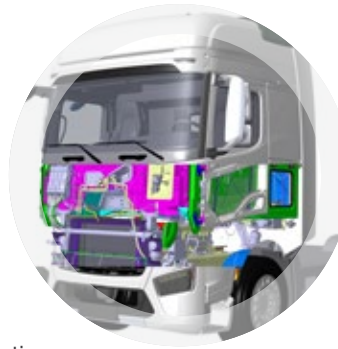
- Vehicle energy management concept investigation
- VTM system architecture definition
- Validation of VTM system



Cabin / body

Cabin Concept

- Line up & dimensions definition
- Ergonomic & package layout
- Modularity / assembly concepts
- Legal requirements / regulations
- Specification book
- Chassis and E/E interface investigations



Body in White Development (BIW)

- Function integration
- BIW structure & door design
- Performance & crash optimization
- Light weight solutions
- Modular assembly

Exterior Development

- Interface integration (e.g. E/E, cameras, ADAS, ...)
- Design for bumper, hood, steps, spoilers, ...
- Aerodynamic & pollution optimization
- Assembly and maintenance concepts
- Manufacturing & material definition



Interior Development

- Integration of interfaces
- Modern living & equipment
- Ergonomic driver's place, HMI
- Assembly and maintenance solutions
- Design for dashboard, storages, trims, berth, ...
- Manufacturing, splitting line & material definition

