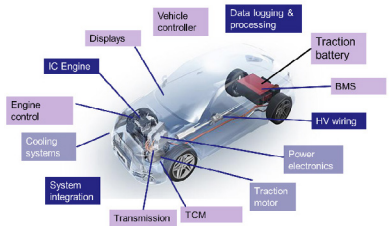
MAHLE Powertrain 03/2025

MAHLE Powertrain

Control Systems



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MAHLE Meet vehicle

MAHLE Flexible ECU

Control Systems

At MAHLE we developed our own engine controls and subsequently we developed a wide range of related control applications for hybrid vehicle controls, motor controls, thermal controls and battery management and we have these systems integrated and running in vehicles.

We are seeing big changes in the controls systems being developed for vehicles, the processes, the applications, functional safety and the wider interfacing and integration challenges. MAHLE has solutions for these challenges – from ASIL QM functional control developments to handling ASIL D hazards.

Systems Engineering

Systems engineering is key to addressing the challenges from the proliferation of electronic controls across the vehicle, whether in new applications or replacement systems.

Benefits

- Our engineers have systems experience, demonstrated on numerous developments

› Review critical technologies & supplier options

› Iteratively assess & model system responses

› Carry out safety analysis

› Develop ASIL decompositions

› Allocate requirements to individual systems

› Specify systems & select suppliers

› Define working frameworks & partner agreements

Vehicle control systems
Functional safety

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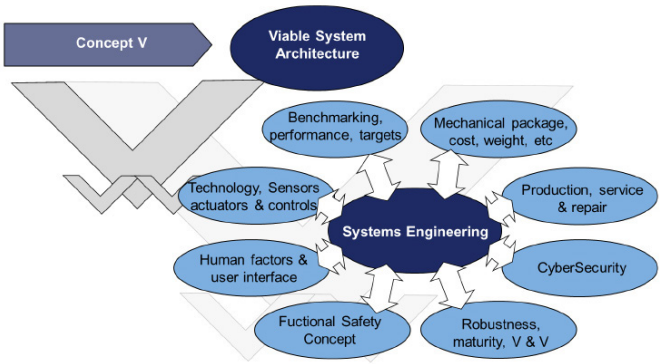
Controls Support

- Control system development
- Safety analysis
- Requirements management
- Model based software development
- Supplier co-ordination
- Software test engineering



Systems engineering architecture

MAHLE Powertrain demonstrator vehicles

Systems Development Consultancy

- Project management
- System design & development
- Systems & safety architectures
- Systems integration
- Analysis & simulation
- Controls & safety
- In-house & partner solutions
- Off-the-shelf & bespoke

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