

CRUISE™ M Top Use Cases

Multiphysics Software by AVL

Model Based Control Function Development and Calibration

Challenge

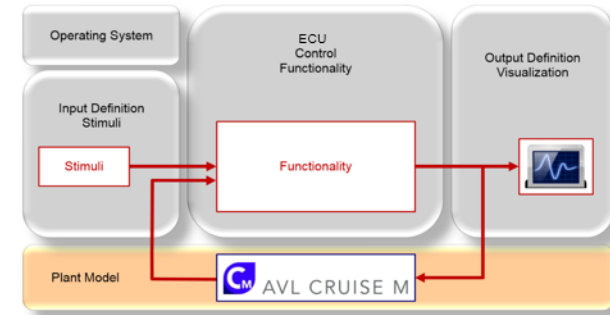
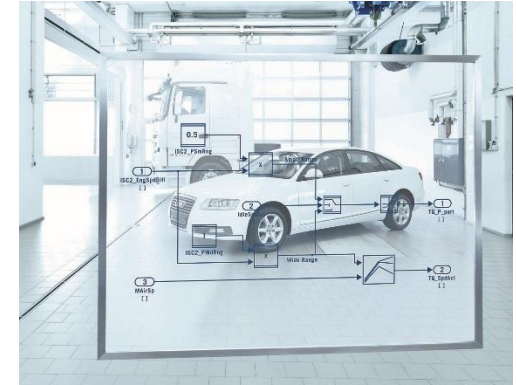
- The scope of work faced by the control function development and calibration teams grew exponentially
- Ever growing cross-domain teams deal today with control function development and optimization of huge number of calibration parameters for several power units and several vehicle configurations at the same time

Solution

- AVL CRUISE™ M supports seamless control function development and calibration from MiL to SiL to HiL.
- CRUISE M's modularity with scalable model fidelity and an open integration concept
- Use of highly mature, real-time-capable models for model based control function development. This methodology enables the frontloading of function development and calibration tasks

Results

Model based function development assure consistent, comparable and reproducible boundary conditions. Tasks start even before the first hardware is available. It lowers risks of missing critical operating conditions without actual risk to man and equipment.



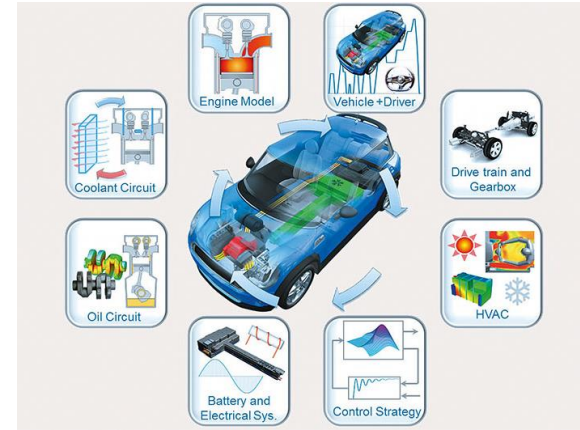
Vehicle Thermal Management

Challenge

- Vehicle development tasks are handled by a large number of divisions and departments
- For optimum component and system performance it is necessary to link all tasks as early as possible during the development process.

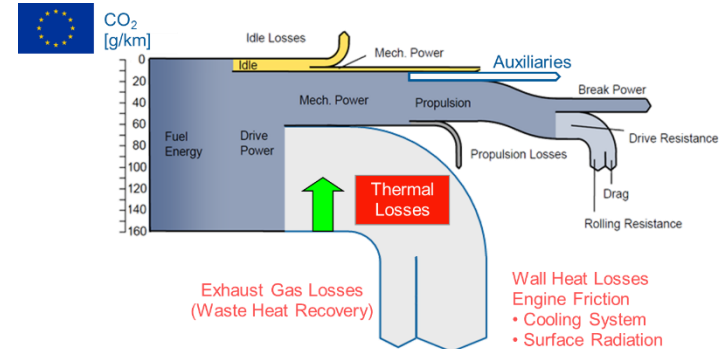
Solution

AVL CRUISE™ M offers a comprehensive simulation environment to facilitate the seamless development and optimization of component and vehicle thermal management and control strategies related to thermal management.



Results

AVL CRUISE™ M supports component and system optimization considering all thermal interactions what enables the development of operating and control strategies for fast engine warm-up, effective cooling of critical powertrain components and on demand heating and cooling of the passenger compartment



System Simulation for Powertrain Optimization

Challenge

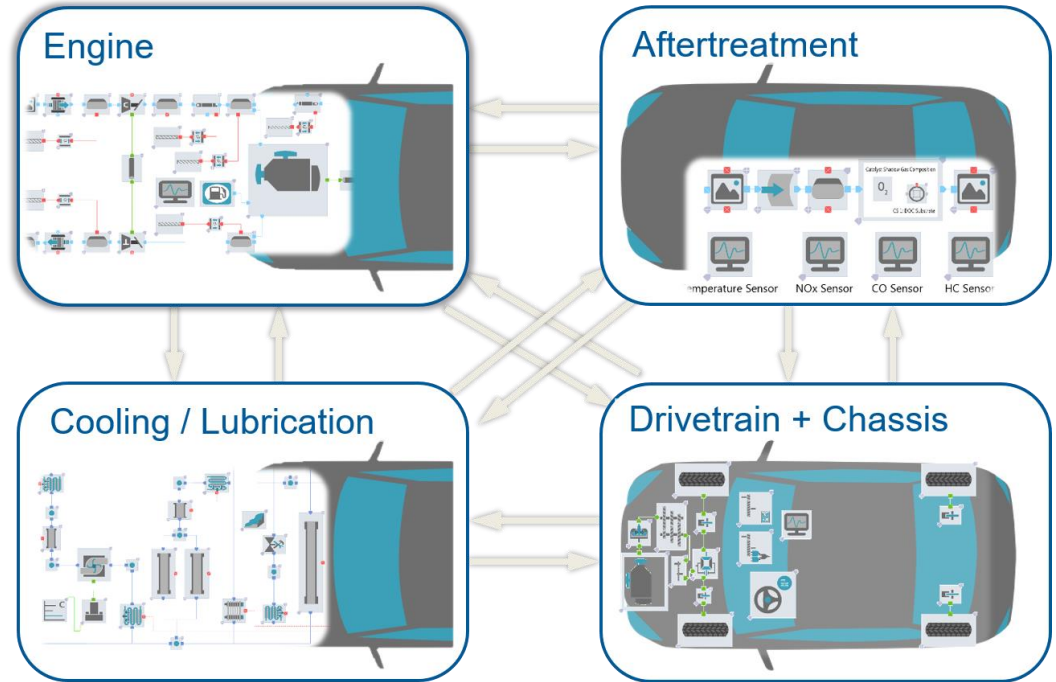
Engineers and developers are confronted with a balancing act between lowering exhaust emissions, enhancing performance, optimizing fuel economy and improving drive quality.

Solution

- The multidisciplinary system simulation tool AVL CRUISE™ M supports all kinds of parameter optimization, component matching and subsystem integration
- Possible failures can be found in an early stage, even when no or limited hardware is available

Results

AVL CRUISE™ M based on physical models delivers accurate results on system and component level, which supports concept decisions on a virtual basis and enables the reduction of expensive tests?



Virtual System Integration for Optimizing Propulsion and Energy System Efficiency

Challenge

- Environmental demands for green shipping are a challenge for choosing and matching propulsion components with respect to maximum energy efficiency and low emissions concepts
- Due to the multiple propulsion options, the system configuration complexity is increasing while tests before commissioning are limited

Solution

- System complexity requires virtual system integration
- AVL's CRUISE™ M is a multidisciplinary simulation software for virtual integration and system optimization

Results

AVL CRUISE™ M delivers accurate results on the system and component level, which supports concept decisions on a virtual basis and reduce expensive tests with hardware configuration

