**AVL CRUISE M**

AVL CRUISE M Engine

CO_2 reduction goals demand a wide range of engine operating conditions to be investigated. AVL CRUISE M Engine models help to achieve targeted specifications and control strategies.

THE CHALLENGE

- Reduction of development time and cost despite increasing engine complexity
- Need to find optimal balance between fuel consumption, emission and performance
- Shift ECU calibration tasks to an early stage to be better prepared for experimental hardware tests
- Performing engine tests at various conditions, like altitude operation, extreme cold and hot conditions

THE SOLUTION

- Hardware-in-the-loop component testing in interaction with all sub-systems shifting tasks from testbed to office.
- Model-based control function development and ECU calibration with real-time virtual engine at an early stage
- Optimization of turbocharging control systems in interaction with gas-path, combustion and drivetrain
- Emission production and conversion simulation to meet legislative targets
- Assessment of transient gear shifting events
- Flexible model customization to achieve best combination of standard and custom models
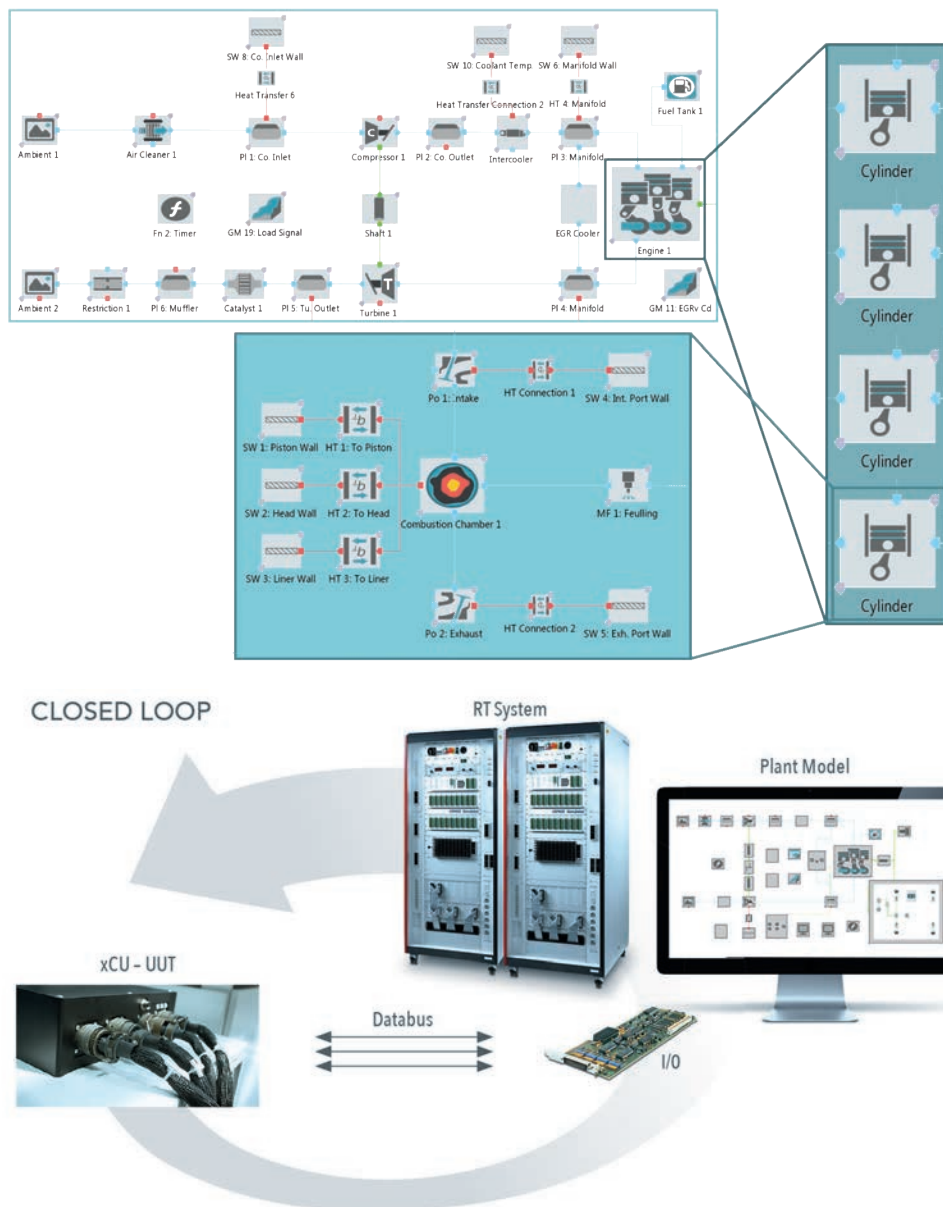
CRUISE M ENGINE PROVIDES REALTIME ENGINE MODELS FOR SYSTEM LEVEL SIMULATION IN OFFICE, HIL AND TESTING APPLICATIONS

Essential for powertrain engineering:
- Rapid setup of simulation models
- Wide variety of use cases
- Many application fields
- Applicable for all types of powertrains
- Suitable for desktop application and HiL investigation
- Dedicated numerical solvers for explicit constant time step and implicit adaptive time step integration
- Easy model variation management

Crank-angle resolved, real-time engine model re-usable along entire development process:
- Three engine modeling depths available: empirical, semi-empirical and physical
- Physical, crank-angle resolved cylinder: basis for state-of-the-art combustion/emission models
- Physical, crank-angle resolved gas path: captures pulsations in air path and drive-train

Vehicle thermal and energy management solution:
Used together with Drivetrain and Flow modules for integration into a single multi-physics system model

FOR FURTHER INFORMATION PLEASE CONTACT:

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