



Engines and Engine Systems



Production downsizing engine



Engine build

Detailed Engine Systems Development

MAHLE Powertrain are recognised experts in advanced IC engine design and development.

With the conflicting objectives of increased power and torque with reduced fuel consumption and emissions, the need for advanced engine technologies has never been greater. In recent times, we have developed a range of new technologies including novel combustion systems, MAHLE Jet Ignition®, VVT systems, Torque boost CamInCam® and cooled, high pressure EGR.

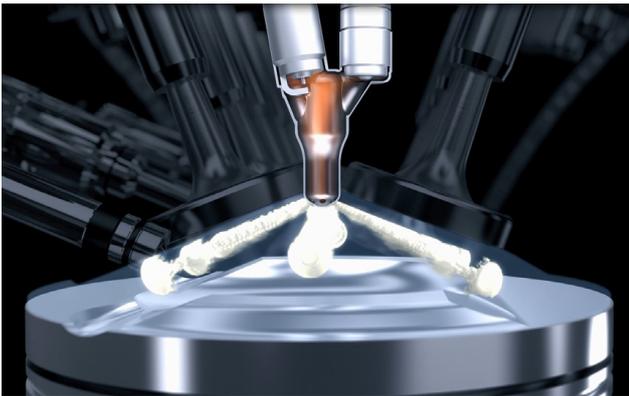
- Concept demonstration with rapidly developed prototype engines
- Software development using MAHLE Flexible ECU (MFE) platform
- Thermodynamic engine development
- Detailed engine mapping
- Emissions calibration & exhaust aftertreatment specification
- Engine & vehicle benchmarking
- Certification, master proving & Production Vehicle Evaluation (PVE) testing



Wealth of engine design experience
Single cylinder to V12 configurations

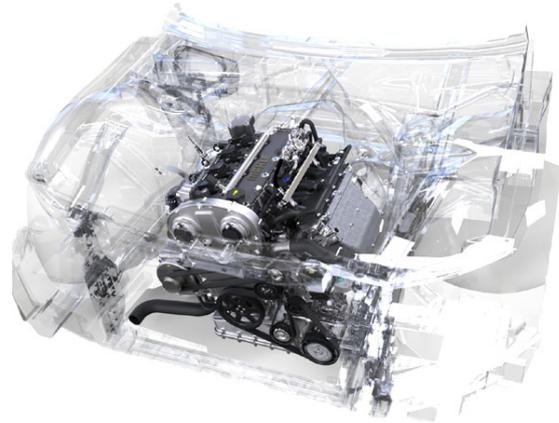
Engine Design and Development

- Fundamental Research
- Concept Design
- Simulation & Analysis
- Detail Design
- Packaging Studies
- Prototyping
- Engine Mapping
- Combustion System Development
- Performance & Emissions Development
- Boosting & EGR Development
- Robustness & Reliability
- Validation Testing

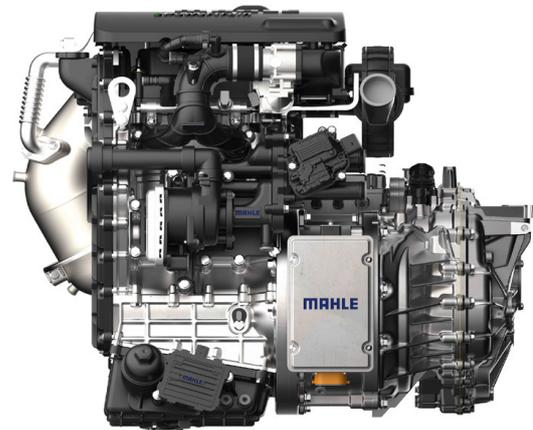


Downsizing Highlights

- Downsizing > 35% with fuel consumption benefits > 20%
- Careful application of complementary technologies
- Sharp focus on combustion system development
- Engine optimisation for minimal friction losses
- In-depth understanding of turbocharger behavior
- Advanced pressure charging



Packaging studies & 3D laser scanning



MAHLE Modular Hybrid Powertrain

Summary

MAHLE Powertrain offers engine design experience from single cylinder to V12 configurations. Our experts also specialise in detailed engine systems development testing, engine mapping, simulation and analysis to ensure optimised performance, economy, robustness and reliability.