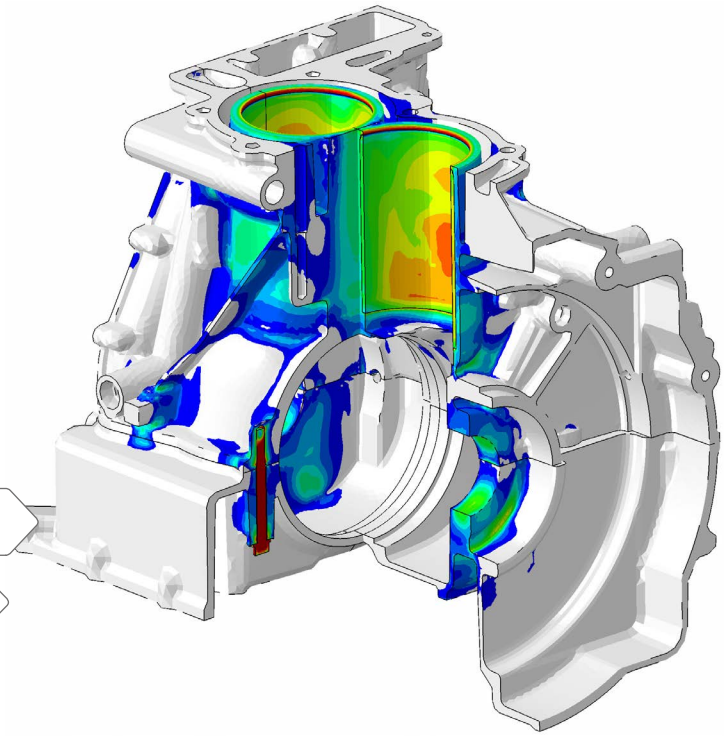
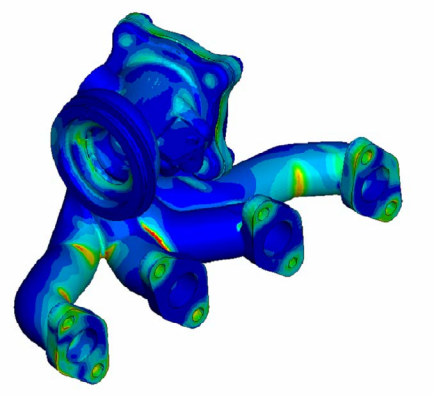
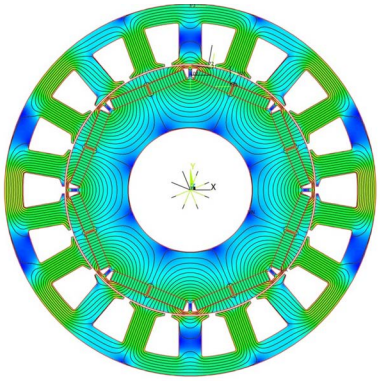
MAHLE
Powertrain

MAHLE Powertrain Simulation Capabilities



- Experience in simulating all powertrain systems
- State-of-the-art CAE software packages
- Highly advanced computing resources





Building confidence from the outset

As powertrain systems become increasingly complex, the need for thorough and detailed analysis at the early stage of a project is vital to build confidence in the designs and to confirm that all key elements meet the product specification.

Whilst working in the virtual world, the accuracy of models and the ability to predict and simulate behaviour and performance forms the foundation of any successful project.

The effective use of modern software and simulation tools, combined with extensive experience and an expert team, can provide realistic cost and time savings as high confidence levels will allow opportunities to skip the traditional early prototype phases of a project.

We operate as an integrated team to ensure that all project tasks gain maximum benefit from the collective input of all of our highly skilled engineers.

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MAHLE product information 01/2020

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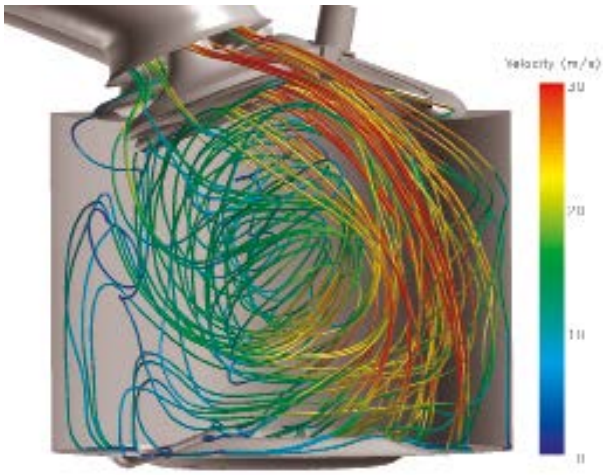
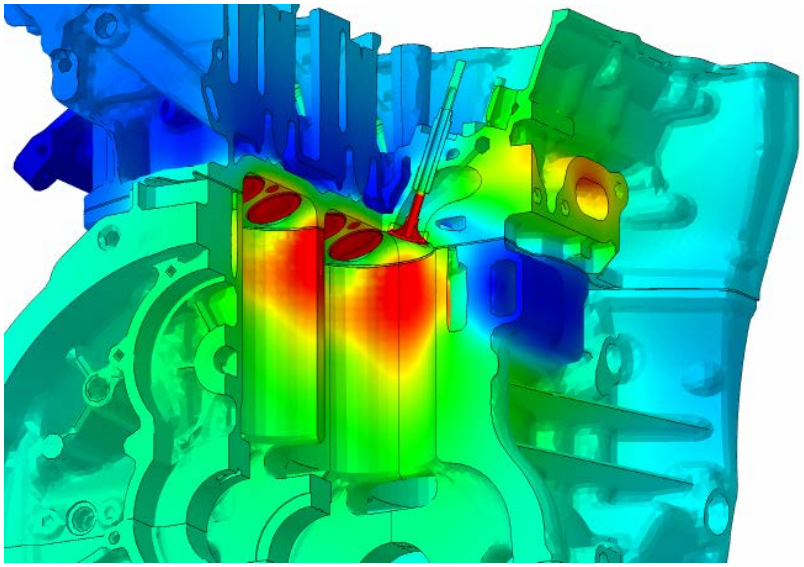
MAHLE Powertrain Simulation Capabilities

We undertake:

- 1D simulations for engine and vehicle performance and fuel consumption
- 1D fluid flow simulation for oil, cooling systems and full vehicle thermal management including electric and hybrid vehicle systems
- 3D CFD for heat transfer including transient conjugate heat transfer within engine structures and power electronics
- 3D CFD of fluid flow through the engine specialising in transient in-cylinder mixture preparation, combustion analysis and knock prediction
- Multi-body dynamics for dynamic behaviour of mechanical systems including full hybrid powertrain dynamics and radiated noise prediction
- FEA for stress calculations and fatigue analysis for structural and component durability for ICE and hybrid drivetrain components
- Electro magnetic field simulation within electric motors





Preferred Software Tools
GT-Suite
MAHLE BISS
Star CMM+ / Converge CFD
AVL Excite
Abaqus / Altair Hyperworks
ECS FEMFAT
Altair Flux / MOTORCAD
Car Maker
MATLAB / Simulink
iSight

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