MAHLE Powertrain
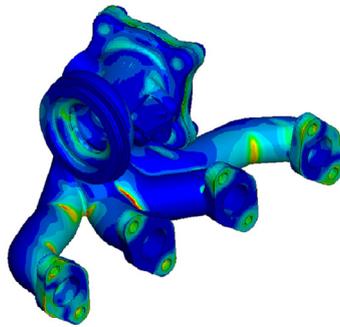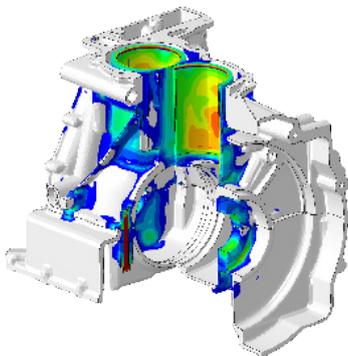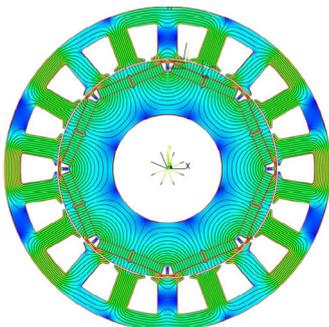
Simulation Capabilities

Exhaust manifold analysis model

eMotor analysis model

Experience in Simulating Powertrain Systems

Looking to build 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.
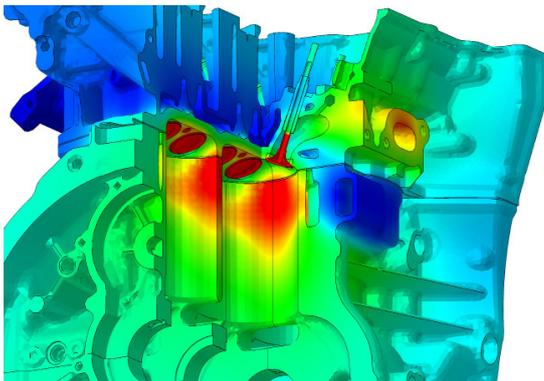
Preferred software tools

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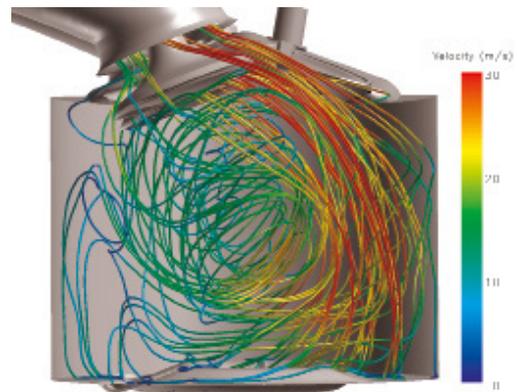- Car Maker
- MATLAB / Simulink
- iSight

State-of-the-art CAE software packages

Highly advanced computing resources

MAHLE Powertrain

Benefits

- 1D simulations for engine & vehicle performance & 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 motorsystems

Intake gas flow simulation

Thermo-mechanical analysis

Software, Tools & Services

Equipment	
Data Exchange:	Fusion DX, Odette, FTP, Open DXM
PLM Systems:	PTC Windchill, TeamCentre Interface
CAD Systems	PTC Creo, Catia V5/V6, Siemens UG NX
3D Scanning & Printing:	Geomagic Wrap, Geomagic X
3D Tolerance Analysis:	3DCS
Visualisation &\ Clash Detection:	Key Shot Rendering, Catia 4D Navigator, Creoview, Vis Mockup, 3D Caliper (Wall Thickness Analysis)
BOM Management	Windchill, SAP