



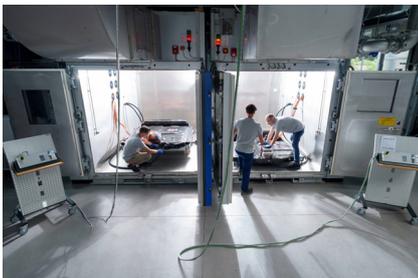
Engineering Consultants



Car on 4WD dyno



Complex engine harness rig



Battery testing facility in Stuttgart, Germany

Experienced Engineering Consultants

MAHLE Powertrain is a global engineering consultancy that specialises in the design, development and integration of advanced internal combustion engines and electrified powertrain systems.

As recognised experts in these fields, MAHLE Powertrain is engaged in the extensive research, development and application of new traditional and advanced drivelines into cost-effective, production feasible solutions for enhanced efficiency, improved fuel economy and lower emissions.

With five technical centres strategically located in the UK, Germany and China, MAHLE Powertrain is well positioned to deliver innovative solutions around the globe. MAHLE Powertrain has more than 200 employees based in the UK and 300 in total worldwide.

Our new BDC facilities in both the UK and Germany incorporate climatic test chambers for pack development and validation testing, as well as dedicated battery build areas. These new facility investments supplement our existing module test and cell characterisation capabilities.

The Vehicle Development Centre (VDC) at our Northampton, UK headquarters offers 4WD vehicle emissions development testing with both altitude and climatic simulation capability, accredited to ISO 17025 for Euro6 emissions testing. The VDC is the only one of its type in the UK.

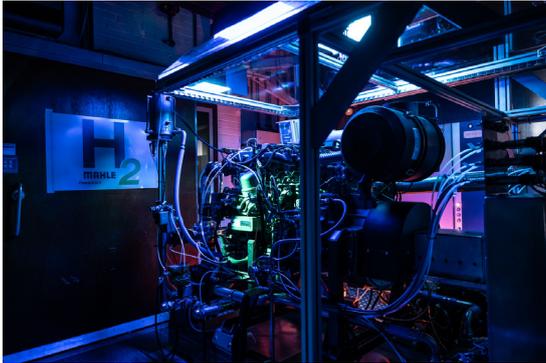
Our extensive engine test facilities in the UK now include a dedicated storage compound for green hydrogen to support our on-going advanced combustion development projects for heavy-duty applications.



Sustained high performance
Supporting global customers

Key Benefits

- Broad spectrum of skills & capabilities to support global customers
- Expert knowledge, detailed understanding & extensive experience in electrification & e-mobility technologies
- Supporting automotive industry with optimised solutions



Engine testbed

Key Facilities

- Battery Development Centre (BDC)
- Vehicle Development Centre (VDC)
- Safety systems for hydrogen fuelled vehicle testing
- Engine & transmission test beds (transient & steady state)
- Chassis dynos - 4WD altitude, climatic & ambient
- Fully equipped vehicle workshop
- Engine & transmission build & instrumentation shop
- Dedicated friction teardown cell
- Port flow & valve motion rigs
- Multi-fuel handling capability



Fast-charging motorcycle battery pack



Battery pack testing in Northampton, UK

Key Capabilities

- Feasibility studies
- Detailed design, analysis & simulation (1D & 3D)
- Driveline modelling
- Combustion research
- Performance & emissions development
- Driveability & OBD calibration
- Thermodynamic analysis
- Powertrain controls
- MAHLE Flexible ECU (MFE)
- Installation & integration
- Packaging studies
- Electrification & hybridisation
- Prototype engine build
- Demonstrator build
- Battery & eMotor design & testing
- Electrical systems development



Solar loading in VDC chamber 2