

MAHLE

Powertrain



Vehicle Development Centre

World leading test, development and validation facilities,
with full climatic control and barometric capability

Taking Control of Vehicle Development

As the world challenges the automotive industry to develop vehicle powertrains that meet the latest emissions targets, MAHLE Powertrain has set itself in the best possible position to support its customers in that goal. This is why MAHLE Powertrain has built its Vehicle Development Centre (VDC).

The VDC will focus on the complete development of new powertrain solutions, including electrification and internal combustion systems, from concept right through to production support. Engineers have faced the difficulty of carrying out development for RDE (Real Driving Emissions) and full vehicle tests in typically unpredictable environments, including open roads where traffic, weather conditions and a multitude of adverse conditions can effect testing. Now MAHLE Powertrain has enabled its customers to take control and bring development back into controlled laboratory conditions where engineers can make valued decisions in their development processes.

The VDC will focus on the complete vehicle development process for EV and ICE systems as well as battery development (in our companion Battery Development Centre), starting with the latest in predictive analysis tools and vehicle simulation. This allowing engineers to make conscious decisions on their powertrain hardware requirements, right at the start of their development programme.



- Altitude testing capability
- 4 wheel drive chassis dyno
- Full climatic simulation
- Full integration with customer systems



>> New 4WD chamber with full climatic simulation, solar array and hydrogen venting

MAHLE Powertrain Vehicle Development Centre

Validating hardware choices and correlating analysis models, through steady state and transient engine testing allows engineers to make informed decisions based on predictive vehicle behaviour before the need to build costly prototype vehicles.



Benefits

- The VDC is the UK's only barometric vehicle test chamber
 - › Altitude capability up to 5,000 metres
 - › Climatic testing from -40°C to +60°C
 - › Road gradient simulation
- Detailed insights in diverse environments
- Robust assessment of vehicle performance in real world operating conditions
- Latest HORIBA Vulcan 4WD chassis dynamometer and full emissions equipment
- Testing to all worldwide standards
- ISO 17025 accreditation for test data accuracy
- Hydrogen testing capability with H2 safety domed roof and extraction chimney
- Solar array (meets Federal SC03 specifications)

Development Process

- Steady state powertrain testing
- Powertrain system simulation
- Final validation process includes real world driving
 - › PEMS (Portable Emissions Measurement System) testing on VCA certified routes
 - › Tailpipe emissions are dynamically measured
- VDC combined with full powertrain engineering service capabilities propels MAHLE Powertrain to the forefront of powertrain development worldwide

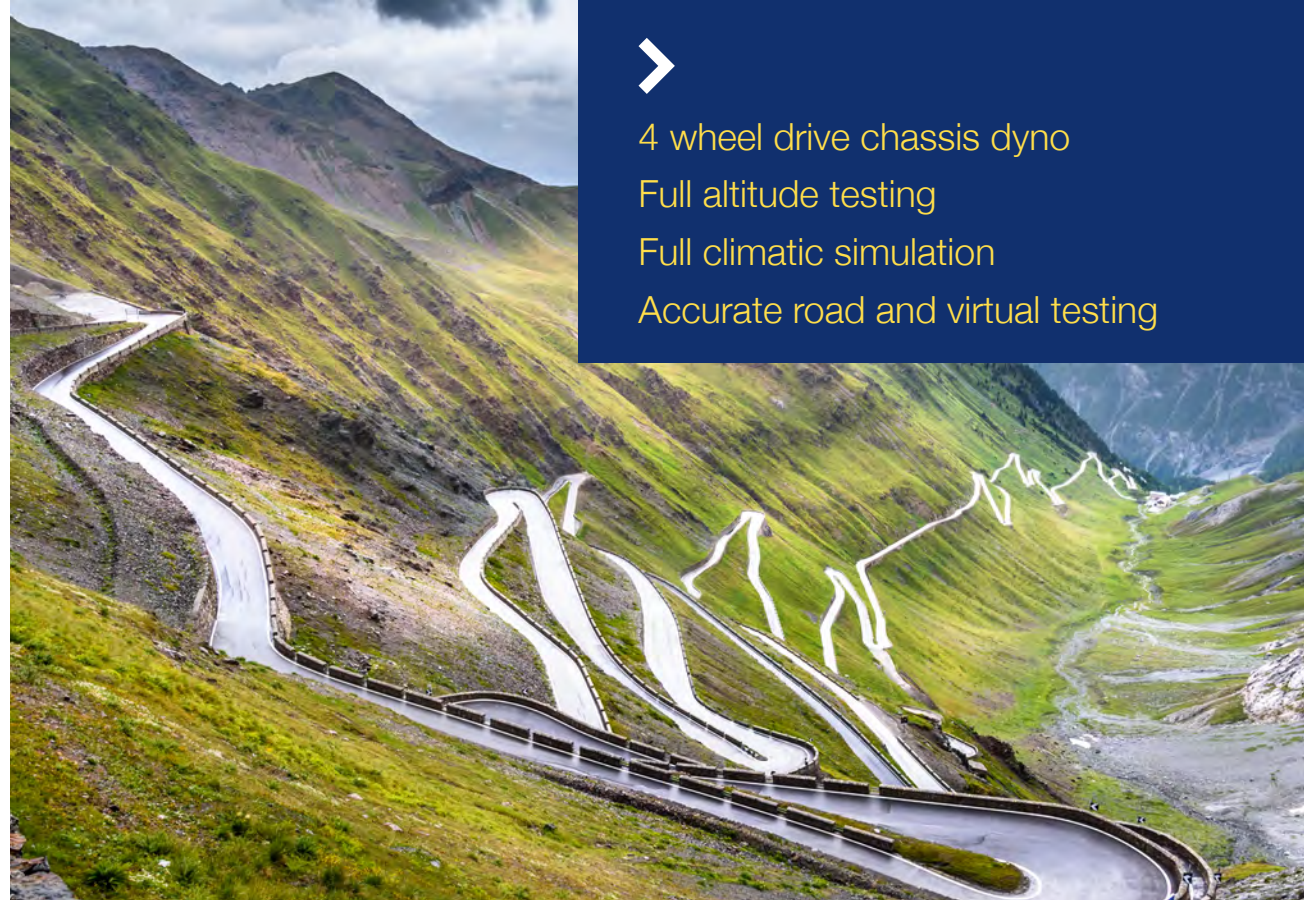
Climatic / Altitude		Test Specifications	
Temp range, °C	-40 /+60	Emissions	Euro 6c, US SULEV, China National 6
Temp constancy, K	+/- 1.2	Max Speed, km/h	250
Humidity, g/kg air	5.5/12.2 +/- 5%	Max Force, N	6,400 (12,500) ¹
Pressure range, mbar	540/1050	Max Power, kW per axle	230/230 (450/450) ¹
Max altitude simulation, m	5,000	Mass limit per axle, kg	2,500

Test your vehicles on any road in the world - without leaving the UK

The MAHLE Powertrain VDC allows for complete, accurate and virtual simulation of any road in the world, allowing us to mitigate the risks of real driving tests on open roads, adverse weather, unforeseen traffic conditions and minimising the resources and manpower required to operate these tests.

Our full climatic and barometric chambers allow us to accurately simulate any test routes such as Furka Pass or the Stelvio Pass, all from the convenience and security of our testing chambers in Northampton.

- Full climatic control and simulation (between -40 C° - +60 C°)
- Barometric chamber allows for altitude tests up to 5000m
- Mitigate the risk of real world driving tests, from adverse weather to traffic
- Minimise travel costs and insurance risk
- 2 and 4 wheel dynos available, for testing of all vehicles including passenger cars, light commercial vehicles and motorbikes



4 wheel drive chassis dyno
Full altitude testing
Full climatic simulation
Accurate road and virtual testing

High altitude
up to 5000m with
gradient compensation



Watch our VDC Video



Expertise to support turnkey vehicle development and testing

MAHLE Powertrain support turnkey vehicle development and testing programmes with world-leading engineering expertise, offering a comprehensive service that provides support through the entire test and validation process.

Offering more than a simple pass/fail test process, our engineers are on hand to guide you through the development or testing processes and provide complete guidance and advise on interpreting complex data and how to fix any problems quickly and efficiently. This means your vehicle test programmes become more efficient, saving your time and ultimately providing better returns from your investment.

ISO: 17025

In addition, all MPT engineers have years of experience to handle all test, simulation and calibration processes, which can free your engineering teams to focus on other critical programmes within your own vehicle development. Having achieved ISO:17025 for the extremely high quality of our test data, we can meet any quality standards and sign off on data gateways.

The VDC currently runs on a 24/5 basis, with the capability and flexibility to support customer programmes that require shorter turn-around times or greater volume in-chamber test cycles.

Calibration Expertise

In addition to a turnkey vehicle test and validation service, MPT provide expert calibration services, including thermodynamic development, vehicle benchmarking, certification, virtual simulation and our unique MApps™ tools, all of which are available to customer to help deliver successful calibration services for customers.



Highly skilled engineers

MPT provide engineering excellence to support turnkey vehicle development in electrification and ICE programmes.



Leading the way

This barometric vehicle test chamber is a one of a kind facility that extends MAHLE Powertrain's testing capabilities and puts them as one of the leading powertrain development facilities worldwide.

MAHLE Powertrain offers 4WD dyno testing with both full climatic simulation and altitude capabilities, with highly skilled engineers that are experts in both conventional ICE and electric powertrain design, whether it's integrating an existing powertrain into a new vehicle or completely new powertrain development.

Contact MAHLE Powertrain today to discuss your vehicle development and testing requirements. With two fully equipped chambers available, we have capacity for a wide range of EV and ICE vehicle testing for full vehicles and all automotive systems.

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