

A complete energy benchmark service

Case study overview

An OEM approached HORIBA MIRA to carry out a suite of benchmarking exercises on a competitor's mid-sized electric passenger car.

The key aims were to observe the competitor's energy management strategies and thermal management approach, as well as identify any limitations in areas such as charging in high or low ambient temperatures.

This would help set a series of tangible targets for the OEM's development team to meet and ensure the OEM stayed ahead of the competition.

Engineering team deployed: A team of ten consultants and technicians in the UK.



Whole-vehicle thermal engineering



Electric passenger car



UK



The expertise and resources at HORIBA MIRA meant we could handle all aspects of this project, from identifying and sourcing a suitable benchmarking vehicle to planning and executing a complex series of tests in-house with no risk to the end customer. If the customer had wanted to outsource each test individually, the project would have been significantly more time consuming and expensive.

Ben Gale, Solution Leader for Automotive Energy Efficiency
HORIBA MIRA



Approach

HORIBA MIRA purchased the target vehicle, which was stripped down and comprehensively instrumented with more than 250 sensors, covering temperatures, airflows, pressures, currents, voltages and the vehicle communication network (CAN).

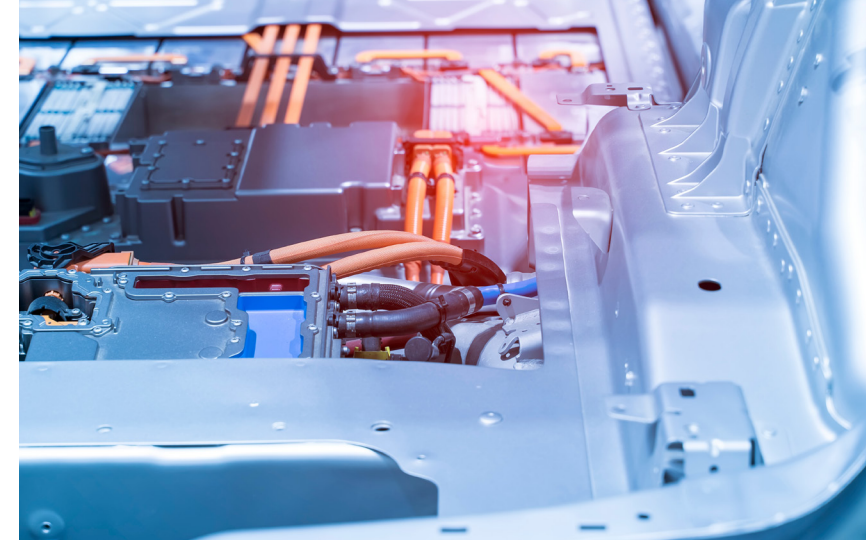
The vehicle was then put through a comprehensive suite of benchmarking exercises across HORIBA MIRA's facilities (proving ground, climatic chambers, climatic wind tunnel etc.) capturing the full range of operation, including hot and cold starts, elevated temperature at high speed, gradeability, repeated acceleration, charging/battery preconditioning, and standard range cycles such as WLTP and EPA '5-cycle'.

Engineers from HORIBA MIRA worked with the OEM team to define the aims, instrumentation lists, and test plans to ensure that facility time was used as efficiently as possible. The same team then handled the data processing and analysis, working through the huge volumes of information generated during three weeks of intense testing.

Successes and benefits

Engineers from HORIBA MIRA led the complete benchmarking process, with key benefits including:

- ✓ Suitable **benchmark vehicle** identified, acquired and instrumented by HORIBA MIRA meant that the OEM had confidence that the targets generated would give them a **competitive product**
- ✓ Access to HORIBA MIRA's **state-of-the-art facilities** and specialist equipment in a single location gave an efficient and **comprehensive measurement** activity
- ✓ HORIBA MIRA's **considerable experience** in test planning optimised the benchmarking to ensure maximum value for money with efficient use of high capital facilities and **flexibility** around re-scheduling
- ✓ **Comprehensive benchmarking** of the vehicle generated huge volumes of data for analysis. Both the technical report and valuable raw data were delivered to the OEM, meaning **immediate decisions** could be made by their team and **deeper investigations** into the data could be conducted throughout the product development if they needed



Deliverables

- ✓ Benchmark vehicle selection / procurement
- ✓ Comprehensive instrumentation
- ✓ Test planning and optimisation
- ✓ Efficient access to high capital facilities
- ✓ Data collection, analysis, and target setting