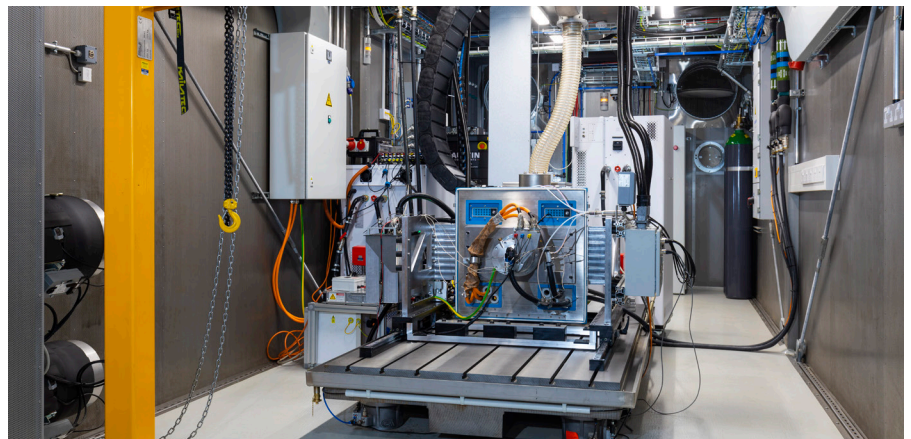


FACT SHEET

ELECTRIC VEHICLE FLUIDS TESTING

Intertek delivers one of the broadest ranges of development and testing services for combustion engine, hybrid and pure electric propulsion systems and associated fuels and lubricants. Our expert engineers are constantly developing new testing and analysis services to enhance the performance of our customers' products.



Why EV Cooling Fluids Testing?

The rapid development of electric vehicle systems across the E-Motor, Electric Drive Unit (EDU), and battery has changed the management of cooling and lubrication.. These systems are becoming increasingly power-dense, demanding an increased attention to the choice of fluids, their thermal performance, and their electrical and lubricating properties. Energy companies are working together with OEMs to develop EV fluids designed to work specifically within electric vehicle systems to deliver high-performance cooling, while being electrically inert to the magnetic fields created by the rotating e-machine, and in many cases also lubricating the transmission system. With the complexity of developing new fluids for a rapidly advancing technology, OEMs and Tier 1 suppliers can face many challenges including:

- Minimising thermal losses at bearings level
- Avoiding demagnetisation in Permanent Magnet Synchronous Motors (PMSM)
- Measuring thermal performance of the product in whole speed/torque envelope
- Reducing the number of different cooling fluids in a vehicle to reduce cost & complexity
- Enhancing lubrication capabilities of the fluid, contributing to overall system efficiency and durability

Our EV fluids test capabilities

Developing a new automotive fluid is a complex process with several critical areas to test and monitor within the EDU, E-Motor, full vehicle, battery, and post-test fluid analysis. These include:

- Impact on range and efficiency
 - Impact on durability
 - Impact on cooling and heat transfer
 - Long-term endurance of the fluid
 - Real-world and on-road performance and efficiency
- An independent testing specialist with extensive expertise in automotive fuels and lubricants, as well as powertrain systems and electric vehicle driveline systems, is vital to help maximise your product performance. At Intertek, our experts can test both the real-world performance of EV fluids and post-test fluid analysis, including:
- Fluid cooling and/or lubrication capabilities within the EDU, E-Motor, and battery
 - Vibration testing to simulate road conditions
 - High-speed or high load test cycles to test fluid efficiency and performance
 - Fluid analysis
 - Continuous thermal monitoring
 - Large scale data acquisition
 - Back-to-back cycle testing for E-motors

Our EV fluids services

1. Rig testing of fluids in EV axle modules (EDUs) and in eMotors
 - Impact of fluids on efficiency, heat transfer & cooling, endurance and robustness and NVH
2. Special rigs to test specific fluid properties in high speed eMotors
 - Impact of fluids on rotational losses, heat transfer & cooling
3. Full electric vehicle precision lab testing
 - Impact of fluids on range and temperatures on legislated and real-world test cycles
4. Real world on-road vehicle testing across the globe
 - Impact of fluids on range and durability an many different real-world locations
5. Analytical lab testing of fluids and wear particles
 - Lubricant oil tests:
 - Viscosity
 - Lubricity
 - Durability
 - Transformer fluid tests:
 - Dielectric strength
 - Heat capacity
 - Flash point

ELECTRIC MOTOR COOLING FLUIDS TESTING

Intertek advantage

Intertek's expertise in fluid testing and analysis services combined with its expertise in EV powertrain testing supports customers development journey to market. Our UK facilities boast an array of industry-leading test equipment, including our EV testing Centre of Excellence and one of the most established facilities in Europe, specialising in fuels, fuel additives and lubricants testing. Furthermore, our global network of testing sites and specialist laboratories both across the UK and the globe offer manufacturers access to decades of industry expertise and state-of-the-art testing capabilities.

Additionally, all UK Transportation Technologies test facilities are fully accredited to ISO 9001 and 14001, and we are recognised by the UK Vehicle Certification Agency for European Engine Power Certification. We offer a complete suite of Assurance, Testing, Inspection, Certification (ATIC) services for automotive including:

- Battery testing
- Homologation & certification services
- Global market access
- Design Verification Plan (DVP) consultancy
- EV charging
- And more

About Intertek

Intertek is a leading Total Quality Assurance provider to industries worldwide. Our network of more than 1,000 laboratories and offices in more than 100 countries, delivers innovative and bespoke Assurance, Testing, Inspection and Certification solutions for our customers' operations and supply chains. Intertek's Total Quality Assurance expertise, delivered consistently with precision, pace and passion, enables our customers to power ahead safely. To find an office or laboratory in a particular country, please visit [intertek.com/contact](https://www.intertek.com/contact).



Find out more about EV fluids testing:



FOR MORE INFORMATION



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