

TÜV Rheinland: Test Center for Electric Vehicle Drive Batteries

Facts and figures at a glance

Operating company and performance profile:

- TÜV Rheinland Automotive Component Testing GmbH
Joint venture of TÜV Rheinland (majority shareholder) and ConAC (subsidiary of PEM Aachen; main shareholder: Professor Achim Kampker), founded November 2020
- Market presence under the name TÜV Rheinland
- Website: www.tuv.com/batterylab
- Management: Artur Schneider and Ansgar vom Hemdt
- Number of employees at full capacity: 25
- Integrated in the Engineering & Homologation business field of the Mobility business stream of TÜV Rheinland
- Service: In cooperation with the partners, mapping of the entire vehicle battery value chain – development support, testing and type approval with a focus on safety and reliability

Construction and location:

- Dutch–German industrial park Avantis in Aachen/Heerlen;
address: Bohr 12, 52072 Aachen, Germany
- Conversion and use of an existing building together with RWTH Aachen, PEM Motion and other technology startups
- Test lab on the Smart Mobility Solution Campus with startups, RWTH and companies active in the mobility sector
- Amount invested: EUR 24 million
- Building time: approx. 18 months
- Launch of operations: June 2022

Facts and figures relating to laboratory operations:

- Accredited by the German Accreditation Office in accordance with DIN EN ISO/IEC 17025 (“General requirements for the competence of testing and calibration laboratories”)
- Laboratory floor space: approx. 2,200 square meters
- Total site area: approx. 12,500 square meters
- Testing services for battery systems up to 800 kilograms, 230 cm x 160 cm x 40 cm (L, W, H), 150 kWh
- Testing based on mandatory specifications for lithium-ion batteries, including for transportation (UN 38.3) and type approval in accordance with ECE R 100 for EU/Japan
- Further voluntary tests in accordance with manufacturer specifications for additional quality assurance (e.g. based on test specification for high-voltage batteries LV 124)
- Electrical and mechanical testing, environmental simulations and abuse tests.
Technical equipment includes:
 - Twelve 250 kW power channels (1000 A, 1,000 V to 1,200 V) with up to 300 kW (30s) overload
 - Twelve battery coolant circuits: water/glycol; temperature range: -40°C to 90°C; max. net cooling capacity: 21 kW; flow range: 0.2 to 20 l/min
 - Seven climate chambers for environmental simulations (temperature range: -60°C to +90°C; relative humidity: 10% to 95%)
 - Corrosion chamber: salt spray (20°C to 40°C) and dew (20°C to 50°C)
 - Test stand for dust tests (performance of IP5 and IP6 tests)
 - Surge chamber with 24 nozzles
 - Shaker for the battery system: 200 kN vibration / 800 kN shock; power channels (2 x 250 kW)
 - Shaker for cell/module
 - Thermal shock system (with ice water basin, immersion depth of 1 meter)
 - Battery abuse center: drop tests, nail penetration, over-discharge / deep discharge, pressure, crush and fire simulation, two test rooms, extensive safety equipment, exhaust scrubber

As of: June 2022