Press Release

Add value.
Inspire trust.

Safe innovations for the hydrogen economy – state-of-the-art testing and certification facilities for components and complete H_2 systems

April 28, 2026

TÜV SÜD opens new hydrogen testing laboratory in Garching

Munich/Garching. The hydrogen economy is gaining momentum worldwide and is a key component of climate neutrality, security of supply and industrial transformation. With the opening of its new hydrogen testing laboratory at its Garching site near Munich, TÜV SÜD is consistently expanding its commitment to this forward-looking sector. The laboratory offers state-of-the-art testing and certification facilities for materials and components right through to complete hydrogen systems – from development to global market approval. At the official opening, TÜV SÜD also welcomed Hubert Aiwanger, Bavarian Minister of State for Economic Affairs, Regional Development and Energy, and Deputy Minister-President.

Yesterday, TÜV SÜD officially opened the doors of its new laboratory at Daimlerstraße in Garching near Munich. During a festive opening ceremony, guests from industry were given a tour of the new testing and certification facilities. The program included expert presentations on trends and challenges in the hydrogen economy, guided laboratory tours, and discussions with industry experts.

Hubert Aiwanger also gave a welcome address to the guests: “The new hydrogen testing laboratory is another piece of the puzzle in the roll-out of the hydrogen infrastructure. In Garching, hydrogen is being made market-ready – through tests, inspections and certifications of the highest standard. When TÜV SÜD certifies something, it is safe and recognised worldwide. That is exactly what we need if we want to stay at the forefront of hydrogen technology.”

Hydrogen as a key technology for the energy transition

Internationally, hydrogen is regarded as a strategic energy carrier for the decarbonization of energy-intensive industries, heavy-duty transport, aviation, and shipping, as well as a storage medium for renewable energies. National and European strategies underscore the growing economic significance of this technology. However, the market ramp-up requires not only investments in infrastructure and production but, above all, reliable safety and quality standards.

To ensure that hydrogen can safely realize its potential, robust components, reliable materials, and internationally recognized testing and certification processes are crucial. This is precisely where TÜV SÜD comes in. “The energy transition needs safe innovations – and hydrogen is a central building block. With our new laboratory, we are creating the conditions to make hydrogen technologies reliable, compliant with standards, and market-ready,” emphasized Karl Meier, COO of TÜV SÜD Product Service GmbH, at the opening.

Comprehensive testing expertise throughout the product lifecycle

The new hydrogen testing laboratory in Garching supports manufacturers throughout the entire product lifecycle – from the early development phase through material qualification and design validation to certification, production monitoring, and global market approval.

A particular focus is on testing metallic and non-metallic materials for their hydrogen compatibility. This is because hydrogen can lead to embrittlement, cracking, or permeation effects, which can significantly impact the safety and service life of components. Accordingly, the testing scope includes, among other things:

- Static and cyclic hydrogen exposure
- SSRT and fatigue tests on H_2-exposed specimens
- Permeation measurements at the specimen and component level
- Compatibility studies of metallic and non-metallic materials
- Investigations into embrittlement, corrosion, and cracking

Based on its own test specifications, TÜV SÜD evaluates the suitability of materials for safe use in hydrogen applications (“H_2-Ready”), thereby providing a reliable basis for decision-making in development and design.

State-of-the-art test benches for realistic stress scenarios

With its laboratory, TÜV SÜD is making targeted investments in high-performance test benches for demanding applications in the automotive, industrial, and energy sectors. The goal

is to replicate real operating conditions as precisely as possible and to validate products under extreme load conditions.

Among the new additions is a hydrogen pressure cycler with a multi-stage booster compressor. It enables pressure cycles up to ≥ 150 MPa, as well as tests in temperature ranges from -40 °C to +180 °C. The test bench is designed for 24/7 operation and features automatic leakage and cycle monitoring. This allows for the simulation of realistic, accelerated life tests under extreme conditions.

Another milestone is a shaker for hydrogen system components. The combination of hydrogen, pressure and vibration is a crucial factor, particularly for applications in the mobility sector.

The infrastructure is complemented by H_2 gas flow test benches (including preconditioned, pre-cooled hydrogen), permeation test systems, and combined leakage and exposure test benches with automatic monitoring. Tests can be conducted using hydrogen, nitrogen, or helium, among other gases, and cover both component and system testing.

Testing of Complete Systems and Global Market Approval

In addition to materials testing, the service portfolio includes the validation of complete components and systems. These include, among others, valves, pressure regulators, lines and fittings, sensors, seals and hoses, refueling systems, as well as hydrogen tanks and systems for stationary and mobile applications.

The tests are conducted in accordance with relevant international standards and regulations, including ISO, ANSI, CSA, and UN regulations, as well as European Pressure Equipment Directives. In areas without established standards, TÜV SÜD develops its own test specifications to define minimum requirements for safety and performance in a transparent and traceable manner.

As an internationally active testing and certification service provider, TÜV SÜD supports manufacturers in gaining global market access – from basic testing and certifications with optional marks for hydrogen system components to production monitoring and auditing of manufacturer laboratories. The laboratories operate in accordance with ISO 17025 and are integrated into corresponding surveillance programs. In addition, TÜV SÜD is actively involved in international standards bodies and industry initiatives to help shape and further develop the regulatory framework for hydrogen technologies.

By expanding its hydrogen testing capabilities, TÜV SÜD underscores its commitment to bringing innovations to market in a safe, sustainable, and future-proof manner – and thereby making a substantial contribution to the successful implementation of the energy transition.

Further information:

- Hydrogen Solutions for Safety & Compliance Efficiency | TÜV SÜD

Caption: Opening of the new hydrogen testing laboratory by Karl Meier, COO TÜV SÜD Product Service GmbH; Hubert Aiwanger, Bavarian Minister of State for Economic Affairs, Regional Development and Energy and Deputy Minister-President, and Holger Lindner, CEO TÜV SÜD Product Service Division.

Note for editorial staff: The press release and the photos are available on the Internet at: tuvsud.com/newsroom.

Media Relations

TÜV SÜD Public Relations Westendstraße 199 80686 Munich, Germany	Dirk Moser-Delarami Phone +49 89 5791-1592 Email dirk.moser-delarami@tuvsud.com Internet tuvsud.com/newsroom

Founded in 1866 as a steam boiler inspection association, the TÜV SÜD Group has evolved into a global enterprise. Around 30,000 employees work at over 1,000 locations in about 50 countries to continually improve technology, systems and expertise. They contribute significantly to making technical innovations such as Industry 4.0, autonomous driving and renewable energy safe and reliable. tuvsud.com