**TÜV Rheinland: Updated Certification Program for Hydrogen**

Various levels of certification possible / Renewable, low-carbon, climate-neutral, green, turquoise, blue, or compliant with the EU’s Renewable Energy Directive II / Test marks document different certification scopes / Information at [www.tuv.com/hydrogen](http://www.tuv.com/hydrogen)

**Cologne, April 25, 2023.** TÜV Rheinland has updated its certification program for hydrogen. In doing so, the testing service provider has implemented the latest developments and requirements of the market. For example, the standard now incorporates supplementing directives 2018/2001 of the European Union’s “Renewable Energy Directive II.” In addition, TÜV Rheinland took into account new emission limits and extended the product scope to hydrogen derivatives (e.g. ammonia, methane, and methanol) when certifying according to the standard. Launched almost two years ago under the name “H2.21,” the TÜV Rheinland standard aims to promote the use of hydrogen as an energy carrier by making transparent how the hydrogen was produced. The standard is internationally applicable.

The production of hydrogen is highly energy intensive and is conventionally based on fossil energy carriers. Therefore, only the sustainable production and application of hydrogen has the potential to displace fossil-based energy carriers and consequently reduce greenhouse gases. Depending on the production process, energy power supply, and emission threshold, there are various classifications of hydrogen, such as renewable, low-carbon, and carbon-neutral. “If the manufacturing process involves the electrolysis of water, only electricity from renewable sources is used for this electrolysis, and greenhouse gas emissions generated during the determined life cycle do not exceed a specified threshold, the product may be labeled as ‘green hydrogen,’” explains Norbert Heidelmann, who with his team is responsible for hydrogen certification at TÜV Rheinland.

**What is the difference between “renewable,” “low-carbon,” and “carbon-neutral” hydrogen?**

Renewable hydrogen addresses hydrogen produced by electrolysis of water or aqueous solutions (e.g., chlor-alkali electrolysis) using electricity from renewable non-biological sources. Low-carbon hydrogen addresses all hydrogen production routes and therefore enables all technologies and processes to be subjected to certification.

Another requirement is that the greenhouse gas emissions reduction from the use of renewable and low-carbon fuels should be at least 70% compared to the fuels they are replacing.

Carbon-neutral hydrogen can be considered when all emissions caused during the determined life cycle are compensated for. This involves an offsetting mechanism through purchasing and retiring registered CO2-reduction certificates from internationally recognized climate-protection programs or emission rights from established trading systems.

**H2.21 standard takes country-specific features into account**

Currently, there are a variety of government schemes on the market as well as private voluntary hydrogen-certification schemes.

“With cross-border trade in mind, TÜV Rheinland has designed the H2.21 standard to be flexible enough to adapt to heterogeneous, specific market requirements,” said Wolfgang Spahn from TÜV Rheinland, global manager of the Energy & Environment business field. The updated standard is valid from March 1, 2023. Certifications or re-certifications of hydrogen by TÜV Rheinland must comply with the updated criteria as of this date. Certificates issued on the basis of the older version remain valid until their expiration date.

For more information, visit [www.tuv.com/hydrogen](http://www.tuv.com/hydrogen).

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Your contact for editorial questions:

Press Office TÜV Rheinland, Phone: +49 2 21 8 0621 48

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