

Standard Paves the Way for Green Hydrogen: Safe and Reliable Connection of Water Electrolysis Systems

Greater safety and clarity for the hydrogen economy: The German Commission for Electrical, Electronic & Information Technologies (DKE) within VDE has published its first standard for the design and installation of electrical systems in hydrogen electrolysis plants.

(Frankfurt am Main, October 20, 2026) Green hydrogen is considered a key component of the energy transition. It allows excess wind and solar energy to be stored—and, unlike other storage solutions such as battery storage, it is transportable. However, the construction of large water electrolysis plants, where hydrogen is produced, is complex and involves significant regulatory hurdles. A solution is now available to ensure electrical safety and reliable connection.

The new standard **DIN VDE 0100-782, “Requirements for Special Types of Premises, Rooms, and Installations—Water Electrolysis Systems,”** is part of the [DIN VDE 0100](#) series (in German), which describes how to install electrical systems safely and reliably. “In electrolysis, we make use of an effect that electrical engineers traditionally prefer to avoid for safety reasons: we deliberately pass current through water to produce hydrogen. That is precisely why a clear regulatory framework is needed,” says Roman Ludwig, chair of the relevant DKE standards committee, AK 221.1.14.

The electrical safety requirements are high, in part because the current levels for a single load are exceptionally high. Although electrolysis systems with up to 1,000 volts AC or 1,500 volts DC are considered low-voltage systems, However, the technical challenge lies in the very high direct currents required for electrolysis: they frequently exceed 1,000 amperes and can reach more than 10,000 amperes in large-scale systems. By way of comparison: In a typical household, electrical circuits are usually rated for only 16 amperes. Furthermore, such a system

cannot simply be shut down. After the power supply is disconnected, the electrolyzer behaves like a fuel cell and continues to feed voltage into the system. “Without appropriate measures, this residual voltage can persist for days or even weeks—at potentially life-threatening energy levels,” warns working group leader Ludwig. The standard therefore places special emphasis on protective measures, such as automatic power shutdown and protection against overload currents or short circuits. General installation configurations are illustrated using examples, as each electrolysis system has its own specific requirements.

Recently, the construction of new plants in Germany has stalled. Many projects are currently in the planning stages or nearing completion, meaning that installed electrolysis capacity could soon surge. With the new standard, construction can proceed according to uniform requirements and rules, says Ludwig: “Until now, operators had to assess each individual system on a case-by-case basis. Given the expected scale-up, this is no longer practical. In addition, the number of people involved who lack electrical engineering qualifications—such as those from the fields of process engineering or maintenance—is increasing. The standard is therefore intended to specify measures already during installation to minimize risks in a targeted manner.”

DIN VDE 0100-782 Requirements for Special Types of Premises, Rooms, and Installations—Water Electrolysis Systems is now part of the [VDE Standards Library](#) (in German).

About DKE:

The DKE German Commission for Electrical, Electronic & Information Technologies (DKE) is the national platform for about 10,000 experts from industry, science and public administration to elaborate standards and safety specifications for electrical engineering, electronics and information technology. Standards support global trade and, among other things, the safety, interoperability and functionality of products and systems. As a competence centre for electrotechnical standardization, the DKE represents the interests of German industry in European (CENELEC, ETSI) and international standardization organizations (IEC). In addition, the DKE provides comprehensive services in the field of standardization and VDE specifications.

For more information, visit www.dke.de

About VDE:

VDE, one of the largest technology organizations in Europe, has been regarded as a synonym for innovation and technological progress for more than 130 years. VDE is the only organization

in the world that combines science, standardization, testing, certification, and application consulting under one umbrella. The VDE mark has been synonymous with the highest safety standards and consumer protection for more than 100 years.

Our passion is the advancement of technology, the next generation of engineers and technologists, and lifelong learning and career development “on the job”. Within the VDE network more than 2,000 employees at over 60 locations worldwide, more than 100,000 honorary experts, and around 1,500 companies are dedicated to ensuring a future worth living: networked, digital, electrical. Shaping the e-dialistic future.

The VDE (VDE Association for Electrical, Electronic & Information Technologies) is headquartered in Frankfurt am Main. For more information, visit www.vde.com

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