DEHN protects.

Hydrogen electrolysis systems

Customer

FEST GmbH

Project overview

Industry

Energy generation

Application

Development of a lightning protection concept for electrolysers

Service

DEHNconcept planning service

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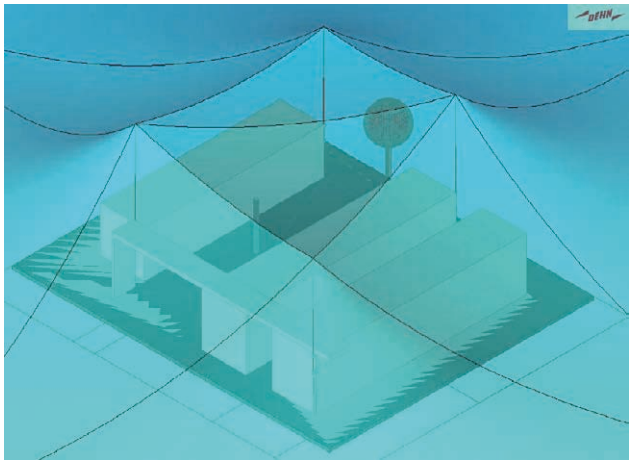
The FEST Group, an international company with over 300 employees at 7 locations worldwide, has long since established itself as an experienced partner for process automation in the manufacturing industries. Under the name and business segment "green-h2-systems", FEST offers the conception, planning and production for the turnkey installation and maintenance of solutions for green hydrogen in a technological alliance with partner companies.
Their portfolio includes individual hydrogen electrolysis systems up to 50 MW in a container design. As well as hydrogen refuelling and storage systems and power solutions for supplying power-to-gas (X) systems. With the modular concept in a container design, FEST can respond flexibly to customer requirements. Green-h2-systems therefore enables the provision of green energy based on renewable resources through the production, transport and storage of hydrogen to contracting and engineering.

The challenge

Hydrogen is a key component of the energy revolution and is therefore attracting more and more attention from industry. This chemical element is more flammable than other gases, however, and there is a high risk of explosion when handling it. For this reason, system operators are obliged to develop and implement a comprehensive protection concept.
A comprehensive protection concept includes external lightning protection, earthing/equipotential bonding and surge protection. With regard to surges and lightning strikes, Ex zones and Ex system parts must be taken into account and protected.
In order to be able to determine and minimise the hazards and consequences of direct and indirect lightning strikes, the two technical rules TRGS 751 and TRGS 723 are definitive. A lightning protection concept protects potentially explosive areas in zones 0 and 1 as well as parts of an installation that can be struck directly by lightning. Examples of this are vent stacks, chimneys, aboveground tanks and pipelines.

The solution

With the planning service DEHNconcept, a lightning protection concept for electrolysers was created for the FEST Group. Components of the planning of such a concept are a risk analysis, a 3D plan of a lightning protection/earthing system, as well as the planning of the surge protection. The basis for this is the risk analysis according to IEC 62305 Part 2 – Risk Management. This determines the class of LPS with which the risk potential of structures is assessed. The "LPL II" class of LPS was calculated for the installations of the FEST Group,



on the basis of which a 3D plan was prepared. By using the rolling sphere method, the air-termination rods were precisely positioned to produce a protected volume for the system. For effective system protection, a holistic approach is required. The external lightning protection system was therefore supplemented with a coordinated surge protection concept. All power and data cables and conductors leading into the building from outside were taken into consideration here. With the DEHNplan software licence, the FEST Group can also expand plans in the future, integrate additional parts of the installation and reposition air-termination rods accordingly.

Benefits of the DEHN solution

- Risk analysis, planning of external lightning protection/earthing and surge protection concept from a single source
- Compliant with standard IEC 62305
- 3D planning: a HVI and/or conventional lightning protection system
- Safe operation in hazardous areas
- 20 years of experience in the field of insulated lightning protection systems: an effective, tried-and-tested and long-lasting system
- Reduction of costs and installation time thanks to optimum planning of the protection concept
- Service: on-site inspection

Title photo: Fest GmbH

Surge Protection
Lightning Protection
Safety Equipment
DEHN protects.

DEHN SE
Hans-Dehn-Str. 1
Postfach 1640
92306 Neumarkt, Germany

Tel. +49 9181 906-0
Fax +49 9181 906-1100
info@dehn.de
www.dehn-international.com