



DEHN protects.

The world's first hydrogen hybrid power plant in Prenzlau

Customer



ENERTRAG AG

Project overview

Branch

Alternative power generation

Application

Concept development and implementation of the external lightning protection system in the form of an isolated lightning protection system for systems located in hazardous areas, surge protection at the transitions between lightning protection zones and terminal devices

Hardware

Telescopic lightning protection masts

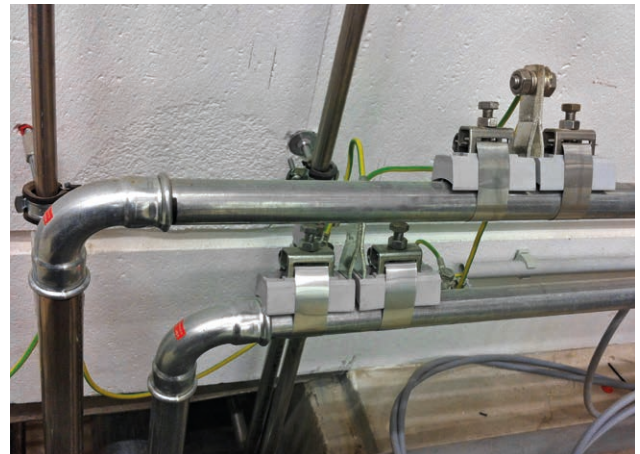
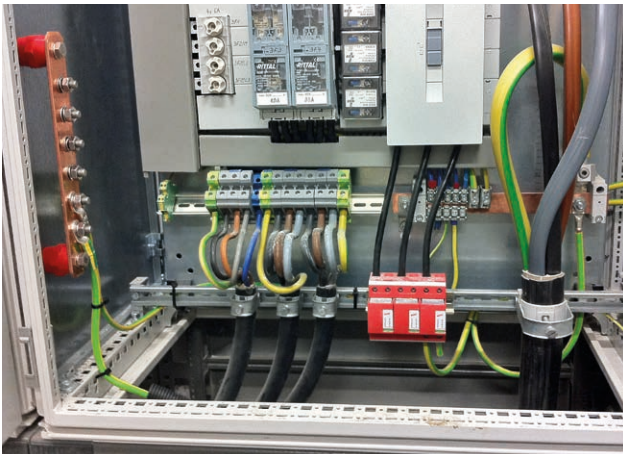
HVI Conductor

Ex pipe clamps

Surge protective devices

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The world's first hydrogen hybrid power plant in Berlin/Prenzlau is a unique, ground-breaking pioneering project: Funded by the German Federal Ministry, the federal state of Brandenburg and the European Regional Development Fund, the power plant is the first of its kind to combine wind, hydrogen and biogas. The electricity generated in three wind turbines is used for the production of CO₂-free "green" hydrogen. This hydrogen is stored and then used in a hydrogen-biogas combined heat and power plant for the production of electricity and heat. Moreover, the hydrogen can be used for hydrogen filling stations in Berlin and Hamburg which are run by the TOTAL energy company. Consequently, green hydrogen ensures CO₂-free mobility in the German capital!

Challenge

The unique pilot project "hybrid power station Prenzlau" was implemented in the Uckermark region. The hall for hydrogen generation and the nearby biogas plant are the highest objects in this expansive, flat area. This makes them especially prone to direct lightning strikes. A specific lightning and surge protection concept was developed for the system as a whole taking all the conditions in the existing buildings and installations into account. The entire interior of the hall was classified as an Ex zone and protected accordingly. Interaction and possible interference with the nearby biogas plant were also considered.

Solution

Ex zones throughout the hall interior made it impossible to install a conventional (non-isolated) lightning protection system. Drilling holes into the aerated concrete walls of the hall in order to attach the air-termination system was not an option, as it might have weakened the entire structure. Neither was it possible to use pressure plates and bolts to fix the

air-termination system in place since they would have penetrated the walls into the Ex zones on the inside. As a result, the protection concept developed consisted of an isolated air-termination system which was completely separate from the structure. Isolated telescopic lightning protection masts now protect the hall for hydrogen generation and the nearby storage tank. The biogas plant is protected by tried and tested HVI system components for isolated lightning protection installed directly on the structure itself.

Benefits of the DEHN solution

- ➔ Optimal protection against surges and direct lightning strikes taking Ex zones and system parts in hazardous areas into account
- ➔ Reduced costs and installation time thanks to optimal planning of the external lightning protection system
- ➔ More than 15 years of experience in the field of isolated lightning protection systems: Effective, robust, tried and tested system
- ➔ Fast and cost-effective implementation of lightning protection measures after the hall had been built as part of the external works. Easy integration in the construction process without significantly affecting other trades. Consideration of movement and service areas which are not allowed to be built upon.
- ➔ Support with documentation – all necessary evidence of statics and wind load calculations was provided
- ➔ Extensive technical support with the realisation of the protection concept