



# DEHN protects.

IPI intelligent transformer substations  
by Ingenieurbüro Pfeffer

## Customer

- I Ingenieurbüro
- P Pfeffer GmbH
- I Industriervertretungen

## Project overview

### Sector

Energy technology

### Application

Intelligent transformer substations

### Hardware

(Depending on application)

- DEHNvenCI
- DEHNrail
- Blitzductor XT
- DEHNpatch
- DEHNgate

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## Ingenieurbüro Pfeffer GmbH

Ingenieurbüro Pfeffer designs, plans and markets ready to use solutions for all kinds of transformer stations for power supply companies, network operators and industry. In addition, Pfeffer expands and updates existing substations delivering all the necessary components. Pfeffer solutions are always at the cutting edge of technology to meet the current standards and regulations.

Decades of experience and a wide range of successfully completed projects guarantee reliable planning for the customer. The power supply landscape is in the process of transition: new political expectations, new guidelines, laws and standards. Ingenieurbüro Pfeffer combats these changes by constantly expanding its range of engineering services, building partnerships and cooperating with institutions of higher education.

## Challenge

The intelligent expansion of the power supply network, integration of renewable energy sources and electromobility, all present the power supply companies with new challenges, especially when it comes to transformer substations. The construction of new and expensive power lines can be optimised using intelligent transformer substations. In doing so, the IPI ION acts as an outpost of the control room. The implementation of intelligent solutions like adjustable transformer substations, longitudinal voltage controllers, control systems and telecontrols as well as monitoring units serves the timely detection of grid overload, the reduction or prevention of power failures and enables quick and preventative troubleshooting. Constant availability is essential here. As, however, the secondary technology installed consists of sensitive electronic components and there is an increased risk of coupling lightning current and surges from nearby and distant lightning strikes in the increasingly networked SMART GRID, the risk of damage is growing.

The consequence is expensive repair and maintenance work involving considerable manpower and reducing availability.

## Solution

Pfeffer relies on a tested lightning and surge protection concept by DEHN to ensure both system and operational reliability and fulfil the requirements laid down, for example, in the standard IEC 60364-4-44.



To protect the energy side in compliance with IEC 60364-5-53, a DEHNvenCI is installed directly at the feed point on the low-voltage side. This is a combined arrester type 1+2+3 based on spark-gap technology. The integrated backup fuse makes the installation of the arrester practical, compact and independent of the nominal current of the system. In addition, BLITZDUCTOR-XT or DEHNpatch is used to protect copper based data and communication cables. The same applies to coaxial cables leading to external transmission technology. Here, DEHNgate provides ample protection against the field impact of lightning flashes. Depending on the system constellation, type 3 surge arresters like DEHNrail may be used to offer sensitive control devices additional protection.

One also has the option of integrating the surge protective devices in the control room should one wish to implement a preventative maintenance concept.

## Advantages of the DEHN solution

- Surge arrester for energy technology with integrated arrester backup fuse
- Surge arrester for data and communications technology with "Life Check" function
  - Can be included in the control system
  - Laboratory-tested protective effect
  - Quality products, developed and manufactured in Germany
  - VDE certification