



# DEHN protects.

Charging infrastructure for electric mobility  
from Spelsberg

## Customer

Günther Spelsberg  
GmbH + Co.KG

## Project overview

### Industry

Electric mobility

### Applications

AC and DC charging stations  
Power supply distribution  
board  
Charging stations for e-bikes

### Hardware

(depending on the application)

DEHNvap EMOB

DEHNshield ZP SG

DEHNcord 3P

DEHNguard

DEHNpatch

BLITZDUCTORconnect

# DEHN protects.

## Charging infrastructure for electric mobility from Spelsberg



### Günther Spelsberg GmbH + Co.KG

Spelsberg is a market leader in the electrical industry with more than 116 years of experience in the fields of electrical installation and enclosure technology. With products and systems that are always ahead of the game and that impress due to their clever details, the company is setting new standards, particularly with respect to safety. The globally active company manufactures its products exclusively in Germany and employs a total of approximately 450 employees at its various sites and subsidiaries.

### Challenge

With Connect E-Mobility, Spelsberg provides components that ensure a reliable power supply. Spelsberg offers customers from all sectors safe and certified enclosures as well as individual enclosure solutions for all fields of application, e.g. for power supplies, charging posts and wall boxes, or for e-bike charging stations.

To ensure maximum satisfaction and, at the same time, the mobility of electric vehicle and e-bike owners, safe operation of charging solutions and standard-compliant solutions take top priority. However, since installation locations and environments differ from region to region, external influences and threats cannot be ignored. This includes the threat of lightning discharges and surges. Not only direct or nearby, but also remote lightning discharges cause damage to electronic equipment in the charging infrastructure, e.g. to measuring equipment, communication technology or the charging controller. If the electric vehicle is charged during a lightning event, it is also affected. This results in costly damage to the charging infrastructure and vehicle batteries and high maintenance costs. This not only restricts the vehicle owner's mobility, but also has potential consequences for property insurers.

### Solution

In order to avoid this, Spelsberg relies on tested lightning and surge protection solutions from DEHN. This ensures that applicable international normative requirements are fulfilled since IEC 62364-4-44, clause 443, IEC 62364-5-53, clause 534 and IEC 60364-7-722 require surge protection measures for the charging infrastructure.

Depending on the threat scenarios, it must be decided whether type 1 + type 2 combined arresters or simply type 2 surge arresters need be considered. If, for example, charging posts are installed in outdoor locations, not only surges but often also the injection of partial lightning currents are to be feared. In which case, type 1+2 combined arresters should be used. If the charging stations are open to the public, VDE AR-N-4100 must also be taken into account. This standard describes additional re-



AC charging station 2 x 22 kW with integrated DEHNvap EMOB

quirements on type 1 arresters in the main power supply system. For example, only type 1 arresters with voltage-switching characteristics (spark gaps) may be used. The solution: RAC spark-gap-based type 1 + 2 DEHNshield ZP SG combined arresters which are snapped onto the 40 mm busbar system or the universal DEHNvap EMOB. This arrester was specifically designed for the charging infrastructure and can be used up to 250 A without an additional backup fuse. Both variants offer maximum protection and are fully compliant with VDE-AR-N-4100.

If wall boxes or charging stations, for example for e-bikes, are installed inside multi-storey car parks, type 2 + 3 surge arresters should generally be selected. However, there are often space issues, which can be solved by using DEHNcord 3P. This extremely compact arrester with a width of 2 standard DIN modules can be integrated almost anywhere, even in the tightest installation space. The use of data interfaces such as RS485 bus lines or Ethernet rounds off the protection concept. A tested system solution from two strong partners for protecting the charging infrastructure and the electric vehicle.

### Benefits of the DEHN solution

- ➔ Type 1 + 2 combined arresters based on RAC spark gaps
- ➔ Compact type 2 + 3 combined arresters designed for wall boxes
- ➔ Meet all relevant normative requirements
- ➔ Laboratory-tested protective effects