



DEHN protects
Smart Power Grids



Reliable power supply thanks to highly available distribution grids



Protection of smart power grids

In the future, the structures for power generation, transmission and distribution in high, medium and low-voltage systems will be more complex and flexible than today. New topics such as smart grid, smart metering and smart home require innovative solutions. But also the increasing share in energies from decentralised, renewable resources in combination with centralised power stations as well as energy storage systems and intelligent technologies require a reliable and coordinated overall system. Such a cross-linked energy market is also referred to as **smart energy**.

The energy landscape is becoming increasingly complex and thus the probability of damage to electronic equipment caused by lightning strikes and surges or electromagnetic interference is also considerably increased.

This is due to the

- Wide introduction of electronic devices and systems
- Decreasing signal level and the resulting increasing sensitivity
- Increasing large-area networking.

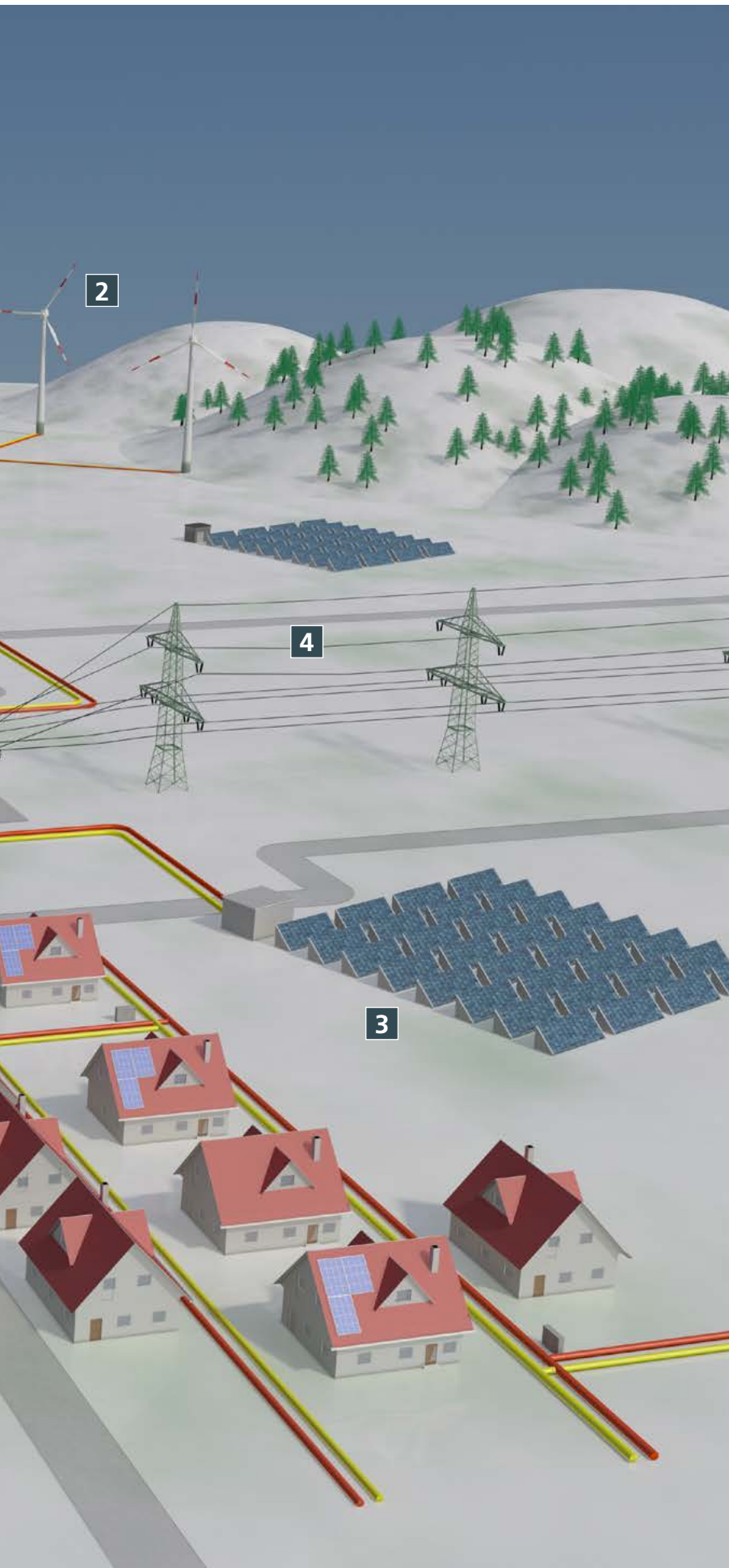
Destruction of electrical and electronic devices and systems is often invisible, however, it frequently leads to long operational interruptions. Consequential damage is sometimes considerably higher than the actual hardware damage.

To achieve high system availability and the resulting security of supply, a comprehensive protection concept is required which must include both lightning and surge protection. This is the only way to ensure safe and stable power supply.

Another important aspect is the protection of people working on e.g. transformer stations who must be protected by personal protective equipment. If required, arc fault protection systems should also be used.

DEHN is your one-stop shop: we offer surge protection, lightning protection and safety equipment solutions from one source.





Power grid of the future

While the traditional energy landscape is characterised by centralised power generation, unidirectional energy flow and load dependency, future grid operation will face new challenges:

- Multidirectional energy flow
- Volatile and distributed power generation
- Increasing number of electronic components for smart telecontrol, information and communication systems

This particularly affects distribution grids in rural areas which are supplied with green electricity from photovoltaic systems and wind turbines and transport it into all directions.

Power generation and distribution systems

- 1 Large centralised power plants
- 2 Onshore and offshore wind turbines
- 3 Free field and rooftop photovoltaic systems
- 4 Transmission networks (high voltage)
- 5 Substations
- 6 Distribution grids (low voltage) with intelligent transformer substations as well as power supply, information technology and communication systems



DEHN protects intelligent transformer substations

DEHN offers protection systems and components for protecting sensitive electronic systems in intelligent transformer substations against lightning strikes and surges.

Transformer substations play a key role at the junction between medium and low voltage. If they are equipped with core components such as remotely controllable switch disconnectors and circuit breakers, regulated transformer substations, telecontrol systems, communication and control devices, they are referred to as intelligent transformer substations.

To plan an adequate lightning and surge protection concept, the risk of the local threat potential must be specifically assessed and analysed on a case-to-case basis.

Solutions from DEHN protect the overall system and thus ensure system availability and include arresters for power supply, information technology and communication systems as well as external lightning protection components.



External lightning protection and equipotential bonding components

DEHN offers components for a complete lightning protection system ranging from the earth-termination system to the air-termination system. This also includes components for the functional and lightning equipotential bonding system.

Fixed earthing terminals



Type	Part No.
Fixed earthing terminal	478 011
Fixed earthing terminal	478 112

Conductors



Type	Part No.
Stainless steel strip	860 335
Tinned copper cable	832 292

Equipotential bonding bars



Type	Part No.
Equipotential bonding bar	472 239

Earth rods



Type	Part No.
Earth rod	620 902

Clamps



Type	Part No.
Connecting clamp	478 129
Terminal bracket	649 015

Air-termination rods



Type	Part No.
Air-termination rod	101 000



Source: WAGO Kontakttechnik GmbH & Co. KG

Products for power supply systems



Lightning / surge protection for power supply systems

Coordinated surge protection measures for power supply systems prevent the risk of damage caused by lightning currents and surges and increase grid availability in the long run. With the Red/Line® product series, DEHN offers surge protective devices with different designs for protecting power supply systems.

DEHNvenCI

Spark-gap-based combined arrester with integrated arrester backup fuse.



Type	Part No.
DVCI 1 255 FM*	961 205

DEHNguard®

DG S and DG SE H LI are universal arresters. DG SE H LI with integrated "Lifetime Indication" early warning system is ideally suited for systems which require permanent availability. DG M is a modular multipole surge arrester with a high discharge capacity.



Type	Part No.
DG S 275 FM*	952 090
DG SE H LI 275 FM*	952 930
DG SE H LI 1000 FM*	952 937
DG M TN 275 FM*	952 205
DG M TNC 275 FM*	952 305

DEHNrail

Type 3 surge arrester with a high discharge capacity.



Type	Part No.
DR M 2P 255 FM*	953 205
DR M 4P 255 FM*	953 405

DEHNbloc® Maxi S

Coordinated lightning current arrester for busbars.



Type	Part No.
DBM 1 255 S	900 220

DEHNmid

Surge arrester of line discharge class 1 for medium-voltage systems.



Type	Part No.
DMI 30 10 1 L	990 010
DIC 10	994 003



Products for information
technology systems

Lightning / surge protection for information technology systems

A protection concept with Yellow/Line products from DEHN prevents damage to information technology and data systems. Condition monitoring is indispensable for operational safety and system availability. This is ensured by LifeCheck® arrester monitoring via RFID technology. Arresters can, for example, be remotely monitored via a wireless network.

DEHNgate

Universal lightning current / surge arrester with maximum discharge capacity for coaxial systems.



Type	Part No.
DGA G SMA	929 039
DGA G BNC	929 042
DGA G N	929 044

DEHNpatch Class E / PoE+

Universal surge arrester for Ethernet* and similar applications in structured cabling systems according to class E up to 250 MHz.



Type	Part No.
DPA M CAT6 RJ45S 48	929 100
DPA M CLE RJ45B 48	929 121

BLITZDUCTOR®

Universal lightning current / surge arrester with actiVsense® technology and integrated LifeCheck® monitoring system. Consists of a BXT BAS base part and BXT ML2 / ML4 module.



Type	Part No.
BXT BAS	920 300
BXT ML2 BD HFS 5	920 271
BXT ML4 BD HF 5	920 371
BXTU ML4 BD 0-180	920 349

LifeCheck® SPD monitoring system with RFID technology

DEHNrecord SCM XT monitors up to 10 arresters in a group, DEHNrecord MCM XT up to 150 arresters in networked groups. Faults are transmitted via a remote signalling contact and are visually indicated. DEHNrecord is vibration and shock-tested according to EN 60068-2.



Type	Part No.
DRC MCM XT	910 695
DRC SCM XT	910 696

Reader M1+

Portable device with LifeCheck® sensor for fast testing of LifeCheck®-equipped arresters. Robust and easy-to-use version. Battery capacity for about 2000 tests.



Type	Part No.
DRC LC M1+	910 655

* PoE+ according to IEEE 802.3at



New safety equipment products



Safe working according to the five safety rules

Be it for live or dead working: we offer suitable equipment for work according to the five safety rules.

1. Disconnect completely

Switching stick, fuse tong



Type	Part No.
Switching stick	763 611
Fuse tong	765 041

2. Secure against re-connection

Insulating plug, insulating blade, lock-out element



Type	Part No.
Insulating plug	785 640
Insulating blade	785 642
Lock-out element	785 637

3. Verify that the installation is dead

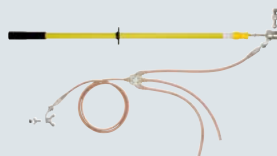
PHE III voltage detector, DEHNcap A voltage indicator



Type	Part No.
PHE III voltage detector	767 733
DEHNcap A	767 111

4. Carry out earthing and short-circuiting

Simply configure your earthing and short-circuiting device online:
www.dehn-international.com/en/euk



Type	Part No.
EKV3+1 70 R Three-pole earthing and short-circuiting device	VVYCLAF
Earthing stick	761 002

5. Provide protection against adjacent live parts

Protective shutter for providing protection against adjacent live parts



Type	Part No.
Protective shutter	763 211



Arc fault protection solutions



Arc fault protection

The DEHNcare® personal protective equipment protects people in case of an arc fault. The DEHNshort arc fault protection system additionally provides active protection.

DEHNcare® Personal protective equipment

DEHNcare® personal protective equipment combines maximum protection and unique wearing comfort. It is tested to international standards and consists of a helmet for electricians, protective gloves, protective trousers and a protective jacket or coat.



Type	Part No.
Helmet for electricians	785 740
Face shield	785 747
Long protective gloves, size 10	785 810
APT trousers, size 52	785 782
APJ jacket, size 52	785 772
APC coat, size 52 / 54	785 756

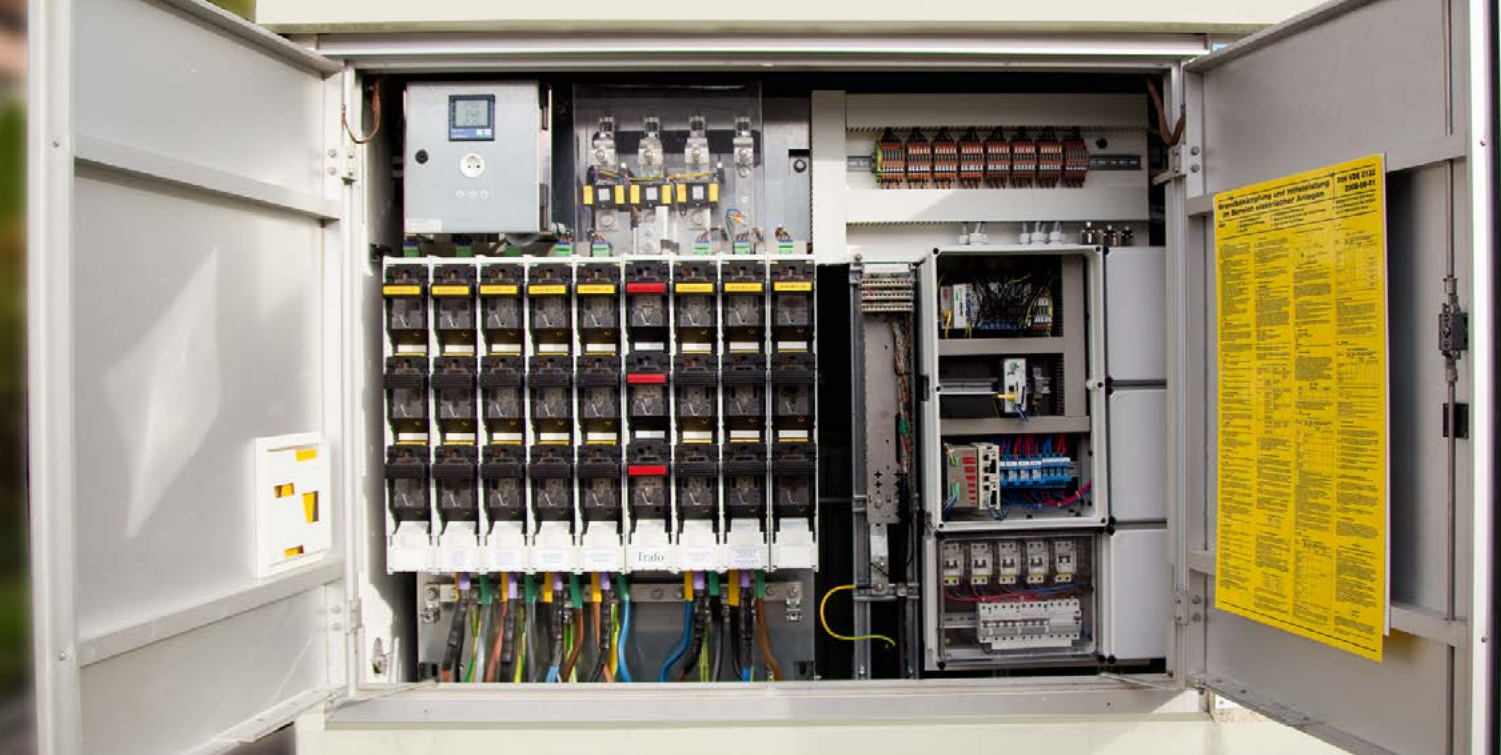
DEHNshort Arc fault protection system

By means of the detection unit, DEHNshort allows to visually detect electric arcs via point sensors or line sensors with optical fibre cables. In addition, DEHNshort can also detect currents. The short-circuiter causes a metallic short-circuit between the busbars within an extremely short period of time. This short-circuit current is disconnected by the circuit breaker. The significantly reduced arc time ensures that the installation is protected.



Type	Part No.
DEHNshort DD CPS	782 030
DEHNshort DD FS	782 050
DEHNshort DD PS	782 040

Type	Part No.
DSRT QD	782 000



DEHN products installed in telecontrol solutions

WAGO offers measuring, control and telecontrol systems protected with DEHN surge protective devices in a single solution. This innovative system allows network analysis, integration of electronic meters, short-circuit indicators and communication devices in intelligent substations.

As an international provider of connection and automation systems, WAGO sets standards for power generation and distribution with its new product ideas. To ensure the system availability required in these markets, the WAGO telecontrol solution is protected against surges by DEHN arresters.

To this end, surge arresters for power supply systems and arresters which are specifically tailored to wireless applications for device and antenna interfaces are used.



The compact WAGO telecontrol solution with DEHN arresters is installed in transformer substations.





Protection concepts for longitudinal voltage regulators

The goal of the company A. Eberle GmbH & Co. KG is to provide measuring, control and registration solutions for transformers and Petersen coils. To this end, A. Eberle relies on lightning and surge protection from DEHN.

A. Eberle developed the low-voltage regulation system LVRSys™ as a cost-effective alternative to grid expansion. It can be economically used in low-voltage systems where the short-circuit power is sufficient, but where there are voltage stability problems.

The systems are exposed to direct lightning strikes to the overhead line. To protect the sensitive semiconductor, A. Eberle uses lightning current and surge arresters from DEHN.





Source: Osram GmbH

DEHN surge protection for LED street lights

The Langmatz fuse box EK480 with integrated surge protective devices from DEHN is used in LED street light masts. Thus, luminaires with high-quality electronic systems can be effectively protected against surges caused by switching operations or nearby lightning strikes.

The Langmatz GmbH is a medium-sized manufacturer, which develops, produces and delivers high-quality infrastructure products. Companies from the power supply, telecommunication and transportation sector are among its European customers. The company's core competences range from the design through the development and production up to the marketing of innovative and customised system solutions. Langmatz offers, for example, fuse boxes with integrated surge protective devices for LED street lights. The two-pole DEHNcord surge protective device with monitoring system and disconnecter is integrated in these fuse boxes. DEHNcord stands out due to its compact design and space-saving installation.





DEHN services

DEHN is your one-stop shop: We offer solutions from one source

As a lightning and surge protection expert, we do not only offer protection solutions, but also equipment which allows to safely handle electricity. Our comprehensive product portfolio is expanded by numerous services such as:

- Test services in the DEHN test centre
- DEHNsupport Toolbox planning software
- DEHNconcept planning service
- Seminars and workshops of the DEHNacademy
- Lightning Protection Guide, brochures and catalogues

Our experience of more than 100 years with electricity as well as lightning and surge protection are reflected in our protection solutions and services.

We offer our customers in-house periodic inspections of earthing and short-circuiting devices, voltage detectors and insulating sticks.

In the DEHN test centre, we test the lightning current withstand capability of systems components. Tests show, for example, whether protection measures are effective. Over a floor space of 800 m², the DEHN test centre is equipped with the latest devices and technologies for testing power supply products, installations and systems with lightning currents. The test facility in our lightning current laboratory allows to perform tests with lightning currents up to 400 kA (10/350 μ s) and is thus one of the most powerful test facilities worldwide.



**Surge Protection
Lightning Protection
Safety Equipment
DEHN protects.**

DEHN + SÖHNE
GmbH + Co.KG.

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