Lightning protection for wind turbines

Due to their height and exposed location, wind turbines are especially susceptible to lightning strikes. A lightning protection system protects the rotor blades, bearings and gearboxes from lightning damage and prevents costly downtime caused by lightning currents and surges. DEHN is a worldwide recognised expert for customised protection concepts for wind turbines. In cooperation with the automation expert Bachmann electronic, DEHN has developed a concept for protecting the controller from surge damage.

Protection and monitoring by means of DEHN arresters

In cooperation with Bachmann electronic, a globally active provider for automation systems, DEHN has developed a complete safety package including protection for all Bachmann interfaces. Depending on the evaluation unit, the sensors situated in different lightning protection zones are monitored and protected by universal and modular BLITZDUCTOR® XT combined arresters with integrated LifeCheck® monitoring feature. Condition monitoring of these arresters allows to detect overloaded arresters at an early stage and to indicate imminent failure. Up to ten arresters can be monitored at the same time by means of the DEHNrecord DRC MCM XT module. The operating state of the arresters can be evaluated at any time via the controller.

System availability ensured

Such a protection concept for wind turbines provides maximum availability and reduces maintenance time and costs. This protection concept has already been successfully implemented for onshore and offshore wind turbines under harshest conditions.

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New version of the DEHNsupport Toolbox software

The third version of the DEHNsupport Toolbox software is now available. The updated DEHN Risk Tool module allows easier and quicker risk analyses and the selection of the necessary protection measures. All users of the DEHNsupport Toolbox software can obtain the new version at no charge.

The Toolbox includes different software modules, which facilitate planning of lightning protection systems, ranging from risk management to the calculation of the length of air-termination rods, separation distances and the length of earth electrodes.

Constantly growing scientific and technical knowledge requires that the relevant standards are quickly adapted. Therefore, the contents of the IEC 62305 edition 2 were integrated in the software.

The updated DEHN Risk Tool module allows easier and quicker risk analyses and the selection of the necessary protection measures. In addition, auxiliary tools such as an integrated questionnaire and a printout for documenting the results were redesigned and attuned to current needs. The most important changes to the new DEHNsupport Toolbox V3 are:

- Free upgrade for all users of the DEHNsupport Toolbox software
- Improved graphics and structure of the entry masks
- Integration of the current average ground flash density data for Germany
- Integration of a new questionnaire
- Improved graphics for the calculated collection areas of buildings
- NEW: Assessment of systems in hazardous areas
- Simplified use of the lightning protection zone concept in calculations

More detailed information on the software and a free demo version are available at www.dehn-international.com.

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DEHN protects storage facilities for crude oil products

The CLH Group is a leading company on the Spanish market for the transportation and storage of crude oil products with a pipeline network of more than 4,000 kilometres and 38 storage facilities.

CLH is mainly engaged in the receipt of crude oil products in the company's facilities, their transportation and storage as well as delivery to final customers via tanker vehicles. Permanent availability of the facilities is of utmost importance to ensure reliable fuel supply for petrol stations. Due to the exposed location of these facilities, it is vital to install surge protective devices.

The most important systems and devices in the facilities that must be protected are, for example, fuelling systems, CCTV cameras, measurement equipment, readers for tanker vehicles, the low-voltage system and rectifiers for cathodic corrosion protection.

The following DEHN products are most commonly used to protect these facilities:

- BLITZDUCTOR® VT KKS for cathodic protection systems
- BLITZDUCTOR® XT for protecting the communication systems of fuelling systems, readers, mixing systems, AccuLoad
- DEHNguard® M for protecting the power supply units
- DEHNventil® M for protecting the low-voltage system
- EXFS 100 KU for protecting the pipelines

DEHN products ensure that the devices that monitor the facility are protected against the effects of lightning strikes and surges, thus preventing standstill of the distribution centre as well as the resulting maintenance costs.

Benefits of the DEHN solution

- easy maintenance
- optional preventive maintenance
- reduced space requirements
- minimum cabling
- individual technical support

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2013 FSAWWA Fall Conference
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Orlando, USA

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Hardenberg, Netherlands

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8 – 12 January 2014
Bangalore, India

POLLACK EXPO
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Pécs, Hungary

AMPER 2014
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Brno, Czech Republic

light + building
30 March – 4 April 2014
Frankfurt am Main, Germany

HANNOVER MESSE
7 – 11 April 2014
Hannover, Germany

BLITZDUCTOR® SP for data, information technology and measuring and control systems

The new BLITZDUCTOR® SP from the lightning and surge protection expert DEHN is a powerful surge arrester which increases safety of data, information technology and measuring and control systems.

The pluggable, multipole BLITZDUCTOR® SP surge arrester is designed for different voltage ranges, thus ensuring protection of e.g. measuring and control circuits and bus systems.

Two universal base parts with or without signal isolation are optionally available. The DIN rail mounted BLITZDUCTOR® SP with a width of only 12 mm allows to protect up to four wires. It has a high discharge capacity up to 20 kA

(8/20 µs) and a low voltage protection level and can thus be installed in conformity with the lightning protection zone concept at the boundaries from 0_B – 2 and higher.

Designed for "hot swapping", the protection modules can be safely plugged in and removed at the push of a button. The module is secured in the base part by snapping it in (audible click), thus ensuring safe operation. The arrester is vibration and shock-tested. Since no components of the protective circuit are situated in the base part, only the protection modules must be maintained. A wide range of accessories such as elements for labelling and earthing unused lines makes BLITZDUCTOR® SP arresters particularly user-friendly.

BLITZDUCTOR® SP will be available at the beginning of 2014.

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Space-saving surge protective device for automation systems

DEHNconnect DCO SD2 is an efficient surge protective device for protecting e.g. automation systems. With a width of only 6 mm, two cores are efficiently protected against surges. A HF version of the surge protective device, which is ideally suited for high transmission rates, is now available.

The device can be easily snapped onto a DIN rail and is automatically earthed via the supporting foot. Moreover, the equipotential bonding system can be connected to terminal equipment by means of the integrated earth terminal. For maintenance work on the system, the signal circuit can be simply interrupted by removing the integrated plug-in module. Compact in design, DCO SD2 can be used wherever space is restricted.

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Pipe clamp for use in hazardous areas

DEHN offers pipe clamps which can be installed in hazardous locations without great effort. These pipe clamps are capable of discharging lightning currents up to 50 kA in potentially explosive atmospheres of zone 1 and 2 as well as 21 and 22 without sparking.

To fulfil these high requirements, lightning impulse current tests were carried out in a potentially explosive atmosphere in cooperation with an independent test institute. In these tests, DEHN proved for the first time absence of ignition sparks when lightning current flows through a pipe clamp.

Due to this ground-breaking proof, welding or the use of threaded bushings for lightning equipotential bonding at pipelines in hazardous areas will be a thing of the past soon. The special design of the spring contacts of the pipe clamp ensures electrical contact with pipes of different diameters without ignition sparks. Different connection options (e.g. cable lugs, flat strips) allow flexible use, thus eliminating the need for welding or drilling work. This considerably reduces installation time and installations or parts thereof no longer have to be put out of operation when installing the pipe clamp. If pipe clamps for hazardous areas from DEHN are used as an explosion protection measure, potential ignition sources can be prevented.

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Combined arrester with integrated backup fuse

The protection of power supply systems is an overarching topic of key concern. With its Red/Line surge protective devices, DEHN offers the ideal products for all industries.

The DEHNvenCI combined arrester with integrated backup fuse combines maximum system protection and compact dimensions in a single device. DEHNvenCI does not only allow space-saving integration of a combined arrester, but also meets the protection requirements in modern switchgear installations. In addition, DEHN offers DEHNguard® M .. CI surge arresters with

integrated backup fuse of the DEHNguard® series.

The protection module of these universal type 2 surge arresters houses both the actual surge protection components and the arrester backup fuse. This ensures the required uninterrupted supply in an easy, space-saving and practice-oriented way.

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EMC-compliant through-wiring of SPDs

STAK 25 pin-shaped terminals from DEHN which are adapted to the design of the relevant surge protective device are simple and important components for ensuring EMC-compliant through-wiring of surge protective devices (SPDs) as per IEC 60364-5-53. These terminals have a nominal load current of 100 A and a nominal voltage of 600 V.

Increasing the length of the connecting cables of surge protective devices reduces the effectiveness of these devices. In order to achieve optimum surge protection, all connecting cables of surge protective devices must be as short as possible. Therefore, conductor loops must be prevented. This is ensured by the STAK 25 pin-shaped terminals. Benefits such as connection to downstream current-operated protective devices or main circuit breakers independent of the manufacturer, separation of the protected and unprotected side, short installation time, easy installation and extremely low space requirements speak for themselves.

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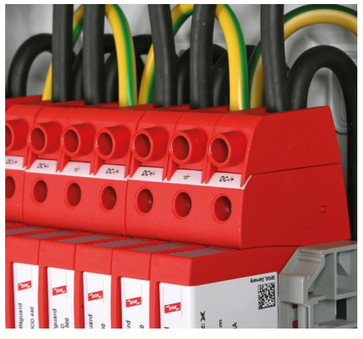

DEHNcord – flexible and space-saving surge protective device

Compact in design, the DEHNcord surge protective device (SPD), which will be available as of the first quarter 2014, can be used wherever the performance of a standard type 3 surge protective device for terminal equipment reaches its limits. It can be used, for example, for protecting outdoor LED lights.

DEHNcord ensures surge protection in line with the standard wherever space is restricted. Since according to the standard DEHNcord is a type 2 surge arrester, it can also be used at the transition from LPZ 0_B to 1 or higher.

The device meets all normative requirements. It has a short-circuit current withstand capability I_{sccr} of 25 kA_{rms} in conjunction with the specified mains-side overcurrent protection and has a total discharge current I_{total} of 20 kA (8/20 µs).

Despite the compact design, the device houses a mechanical operating state/fault indication and a tried and tested disconnector which does not disconnect the connected consumer when it is tripped.

If space is restricted in the cable duct, the installation benefits of DEHNcord resulting from its flexible terminals become evident.

DEHNcord is a surge protective device which can be ideally adapted to existing installation systems. It ensures reliable protection of terminal equipment at minimum expense, takes up little space and saves installation time.

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