Solutions for lightning current measurement

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Overview

- Wind turbines are often exposed to lightning strikes. Previously it was difficult to provide proof of lightning strikes and their intensity.
- The LM-S complete solution from Phoenix Contact allows lightning strikes to the blades of a wind turbine generator to be accurately measured and analyzed.
- Continuous remote monitoring and consolidation of the measuring data with the operating parameters of the wind turbine generator provide a better basis for making decisions regarding predictive maintenance.

Application

Time and again, lightning strikes to wind turbine generators (WTG) cause damage to the rotor blades and result in electronics failures. Generally speaking, these strikes cannot be directly detected or logged.

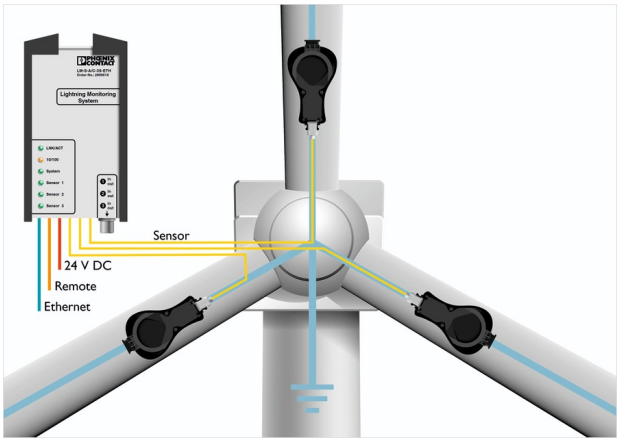
For this reason, protective devices which can only discharge a certain number of lightning strikes are replaced frequently as a preventive measure. This proves to be a time-consuming and expensive approach. A lightning monitoring system, which records the key characteristic values of lightning surge currents, offers a helping hand here. Based on the information supplied, the system determines whether any inspection or maintenance work is necessary. Insurance companies in particular are increasingly demanding proof that lightning actually struck the wind turbine generator in question.

Solution

The LM-S lightning monitoring system from Phoenix Contact detects and analyzes all the key parameters of lightning surge currents. This allows you to assess the actual system load.

The sensors of the monitoring system are mounted on the protective devices. In the event of a lightning strike, the surge current generates a magnetic field around the conductor, which is detected by the sensors. The system sends the measured results to the evaluation unit via fiber optics. Based on the values obtained, the evaluation unit determines the maximum lightning current strength with the lightning current rate of rise, charge, and specific energy.

The LM-S can be independently integrated into networks via a modem or the integrated Ethernet interface. The system can be easily integrated into an existing control system by calling IP addresses. In order to directly inform system operators of a lightning strike, the LM-S can send an SMS alarm. The staff member uses a web browser to call up detailed information on the lightning strike. As such, the operator detects the state of protective devices early and schedules and performs maintenance in good time. The objective of ensuring stable system operation can therefore be achieved.



Application of the LM-S on a wind turbine generator

Easy integration

The complete solution allows the system to be adapted to an existing design without much effort. Thanks to the integrated power supply and surge protection for communication, integration is remarkably easy. The cables for the sensors can be ordered in lengths ranging from 10 m to 100 m. The connection box only needs to be assembled and the cables only need to be fed through the prepared cable entries and connected to the device. No special tools are required for this purpose.

Turn-key solution for lightning measurement in wind turbines

Your advantages

- Informative diagnostics by means of immediate acquisition of detailed data using real-time measurements
- Helpful basis for making decisions regarding maintenance, thanks to remote monitoring
- Easy data output and configuration via integrated web server
- Integration into standard network systems, thanks to RJ45 interface

Products

Description	Type	Order No.
Power supply	QUINT-PS/1AC/24DC/ 3.5	2866747
LM-S	LM-S-A/C-3S-ETH	2800618
Sensor	LM-S-LS-H	2800616
HCS PROFINET installation cables, pre-assembled, available from 10 m - 100 m (BFOC/PPCME)	FOC-PN-HCS-1018/...	1402190

ETH surge protection	DT-LAN-CAT.6A	2908726
Type 2 surge protection, 230 V	VAL-MS 230/1+1	2804429