

Technical requirements for lightning protection of wind farm power stations

What are lightning protection concepts for wind turbine blades?

Lightning protection concepts for large modern wind turbine blades. Blade lightning environment type A classifies the rotor blade in four areas with different exposure to direct strikes, whereas type B makes use of two areas.

What are the new lightning protection standards?

The general lightning protection standards of the recently updated IEC 62305 series, EMC considerations from the IEC 61000 series, the specific standards for electrical systems on machinery and the general standards for electrical systems were relevant references for issuing the new revision.

What are the guidelines for lightning protection?

Guidance pertaining to the use of applicable lightning protection, industrial electrical and EMC standards including earthing is provided along with personal safety recommendations. Similarly, guidelines for damage statistics and reporting are provided.

How often do wind turbines get hit by lightning?

Given the frequency of lightning occurrences in the regions of the world where this new expansion is taking place, all these new wind turbines may be hit by lightning several times during its operational life time.

How does lightning stroke affect wind turbine?

In the process of lightning stroke, when the lightning current flows through the frame and tower, it will produce induced overvoltage on the sensor, communication line and even power line. These transient overvoltage will affect the normal operation of the wind turbine.

How high can a wind turbine go?

Wind turbines are integrated with complex electrical and sensitive control systems and their rotating blades can reach 60 meters or more above the tower top.

Control, Protection and Metering Specification (XDS-GFS-06-001-R2) Station Auxiliary Power Supplies Specification (XDS-GFS-08-001-R3) Earthing and Lightning Protection (XDS-GFS-12 ...

Generating Stations o 1100 Sensitive Electronics (Emerald Book) -ANSI o NFPA 780 Lightning Protection -UL o 96A Lightning Protection o 467 Grounding/Bonding Equipment - NEC, CEC, ...

other things, on the power level of a wind farm, distance to the HV substation and the number of wind farms connected to the sequencing lines. One can distinguish the following characteristic ...

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technical understanding of lightning protection of wind turbines by manufacturers, certification organizations, research institutes and universities. It presented background statistical ...

At an early stage of the manufacturing of the blade, the protection methods of the blade must be discussed with the technical engineering specialists about the lightning protection systems. Lightning protection ...

Solar photovoltaic (PV) system is one of the promising renewable energy options for substituting the conventional energy. PV systems are subject to lightning damage as they are often installed in ...

The protection of power substations against lightning overvoltages is critical for the reliable operation of the electrical network, since atmospheric surges frequently are liable ...

10-16-2. 1 INTRODUCTION . Wind turbines are the fastest growing source of electrical energy with annual growth rates of about 30 per cent in recent years and totalling 94 GW generator ...

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Owing to that, the present work introduces a new approach for a lightning protection system for wind turbine blades where preliminary investigations were done using Analysis Systems (ANSYS) Workbench.

Standard Compliance: Wind farms LPS should comply with relevant international standards such as IEC61400-24 and local regulations. Risk Assessment: Conduct a comprehensive risk ...

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