

A Proper Design of Wind Turbine Grounding Systems under Lightning

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Abstract : Lightning Protection Systems (LPS) for wind power generation is becoming an important public issue. A serious damage of blades, accidents where low-voltage and control circuit breakdowns frequently occur in many wind farms. A grounding system is one of the most important components required for appropriate LPSs in wind turbines WTs. Proper design of a wind turbine grounding system is demanding and several factors for the proper and effective implementation must be taken into account. This paper proposed procedure of proper design of grounding systems for a wind turbine was introduced. This procedure depends on measuring of ground current of simulated wind farm under lightning taking into consideration the soil ionization. The procedure also includes the Ground Potential Rise (GPR) and the voltage distributions at ground surface level and Touch potential. In particular, the contribution of mitigating techniques, such as rings, rods and the proposed design were investigated.

Keywords : WTs, Lightning Protection Systems (LPS), GPR, grounding system, mitigating techniques

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