

عنوان مقاله:

Investigating the effect of ground resistivity on off-shore wind turbines losses reduction during lightning strike via FEKO software

محل انتشار:

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خلاصه مقاله:

With the growth of wind power energy's importance throughout the world, losses caused by lightning strike to off-shore wind turbines are taken into consideration more than ever due to massive costs of installation and maintenance of the wind turbines. In this study, a new method for analyzing overcurrent created by a lightning strike to the turbines body and the distribution of magnetic and electrical fields around the wind turbine's tower is presented for two different cases of the tower with one leg, and the other case tower with three legs, using FEKO and MATLAB software. In the major part of the simulation, which is done by the comprehensive electromagnetic simulator software for analyzing magnetic and electrical fields of 3D structures called FEKO, various environmental conditions are applied and the outputs are compared on different diagrams including current, electrical fields, and magnetic fields in various environmental conditions. The results of simulations indicate that with the decrease of ground's resistivity, the peak of magnetic and electrical fields will decrease too which can be achieved by different methods and as a result of that, the losses caused by lightning strike to the turbine decreases

کلمات کلیدی:

Off-shore wind turbine, lightning protection, losses reduction, Electrical field, Ground resistivity

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