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Comparison of Radiated Emissions in Offshore and Onshore Wind Turbine Towers

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Abstract : Wind turbines are the next big answer to the emerging and ever-growing demand for electricity, and this need is increasing day by day. These high mast structures, whether on land or on the sea, has also become one of the big sources of electromagnetic interferences (EMI) in the not so distant past. With the emergence of the AC-AC converter and drawing of large power cables through the wind turbine towers has made this clean and efficient source of renewable energy to become one of the culprits in creating electromagnetic interference. This paper will present the sources of such EMIs, a comparison of radiated emissions (both electric and magnetic field) patterns in wind turbine towers for both onshore and offshore wind turbines and close look into the IEC 61400-40 (new standard for EMC design on wind turbine). At present, offshore wind turbines are tested in onshore facilities. This paper will present the anomaly in results for offshore wind turbines when tested in onshore, which the existing standards and the upcoming standards have failed to address.

Keywords : emissions, electric field, magnetic field, wind turbine, tower, standards and regulations
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