Mapping of grid faults and grid codes - DTU Orbit (03/11/2019)

Mapping of grid faults and grid codes
The present report is a part of the research project “Grid fault and designbasis for wind turbine” supported by Energinet.dk through the grant PSO F&U 6319. The objective of this project is to investigate into the consequences of the new grid connection requirements for the fatigue and extreme loads of wind turbines. The goal is also to clarify and define possible new directions in the certification process of power plant wind turbines, namely wind turbines, which participate actively in the stabilisation of power systems. Practical experience shows that there is a need for such investigations. The grid connection requirements for wind turbines have increased significantly during the last 5-10 years. Especially the requirements for wind turbines to stay connected to the grid during and after voltage sags, imply potential challenges in the design of wind turbines. These requirements pose challenges for the design of both the electrical system and the mechanical structure of wind turbines. An overview over the frequency of grid faults and the grid connection requirements in different relevant countries is done in this report. The most relevant study cases for the quantification of the loads’ impact on the wind turbines’ lifetime are defined. The goal of this report is to present a mapping of different grid fault types and their frequency in different countries. The report provides also a detailed overview of the Low Voltage Ride-Through Capabilities for wind turbines in different relevant countries. The most relevant study cases for the quantification of the loads’ impact on the wind turbines’ lifetime are defined

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