Assessment of the impact of frequency support on DFIG wind turbine loads

This study presents models and tools for the assessment of the impact that providing frequency support has on doubly-fed generator (DFIG) wind turbine structural loads and drive train. The focus is on primary frequency support, aiming at quantifying the impact on wind turbines acting as frequency containment reserve and providing inertial response. The sensitivity of wind turbine load indicators—load duration distribution and maximum load values—to inertial response control actions and different torsional models of drive train is investigated. The analysis is done by co-simulations of an aeroelastic code and electrical models. In this simulation framework, the impact that power system conditions can have on wind turbines, and vice versa the support that wind turbines can offer to the power system can be investigated.

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