Reliability of offshore wind power production under extreme wind conditions. Deliverable D 9.5. Work Package 9: Electrical grid - DTU Orbit (06/12/2018)

Reliability of offshore wind power production under extreme wind conditions was investigated in this report. The wind power variability from existing and future large offshore wind farms in Western Denmark were simulated using the Correlated Wind model developed at Risø. The analysis was done for five years, with each year simulated with five random seeds, leading to a total of 25 annual wind power time series for six large offshore wind farms, summing up to a little over 330 wind turbines. Two storm control strategies were used. The analysis involved several aspects inspired from reliability studies. The aspects investigated are storm events occurrences and durations, storm control strategy impact on the capacity factor (lost production), the loss of production (power produced from wind drops below a certain threshold due to high wind speeds and storm controller) and finally, the wind power production ramp rates and reserves requirements.

General information
State: Published
Organisations: Wind Energy Systems, Wind Energy Division, Risø National Laboratory for Sustainable Energy
Contributors: Cutululis, N. A., Zeni, L.
Number of pages: 35
Publication date: 2010

Publication information
Place of publication: Roskilde
Publisher: Danmarks Tekniske Universitet, Risø Nationalaboratoriet for Bæredygtig Energi
Original language: English
Keywords: Wind power measurement and integration, Wind Energy
Electronic versions:
Cutululis_upwind.pdf
Source: orbit
Source-ID: 268304
Research output: Research › Report – Annual report year: 2010