



Assessment of synthetic winds through spectral modelling, rainflow count analysis and statistics of increments

Hans Georg Beyer and Abhijit Chougule

University of Agder, Inst. of Engineering, Department of Engineering and Science, Grimstad, Norway
(hans-georg.beyer@uia.no)

While wind energy industry growing rapidly and siting of wind turbines onshore as well as offshore is increasing, many wind engineering model tools have been developed for the assessment of loads on wind turbines due to varying wind speeds. In order to have proper wind turbine design and performance analysis, it is important to have an accurate representation of the incoming wind field. To ease the analysis, tools for the generation of synthetic wind fields have been developed, e.g the widely used TurbSim procedure.

We analyse respective synthetic data sets on one hand in view of the similarity of the spectral characteristics of measured and synthetic sets. In addition, second order characteristics with direct relevance to load assessment as given by the statistics of increments and rainflow count results are inspected.