The Chair of Wind Power Drives at the RWTH Aachen University conducts research in the field of drivetrain technologies for wind turbines (WT). In numerous research projects throughout past decades, drivetrain technologies as well as vibration analysis of wind turbines and their drivetrain components have been continuously developed.

For the improvement of the reliability of the gearbox of a wind turbine it is very important that there is a fundamental knowledge of the prevalent loads so that it is possible to consider them in the early stages of the product development process. A new scientific project at the CWD identifies dynamic loads which are a result of failures in the electrical power grid. In addition to that there will be an investigation of the dependency of those loads in relation to the chosen drivetrain concept. In the project there will be investigations based on experiments on a WT test bench as well as a multibody simulation. One target of the project is the enhancement of the existing multibody simulation model in regard of the high speed shaft of the WT-gearbox. This location of the gearbox is chosen to be the focus of the enhancement since the significant load events resulting from the electrical grid failures are expected to occur there.

**Bachelor- / Master Thesis**
Enhancement of a multibody simulation model of a wind turbine gearbox for the analysis of dynamic bearing loads on the high speed shaft

**Tasks:**
- Familiarization with the existing multibody simulation model in SIMPACK
- Development of new multibody simulation component models (especially cylindrical and tapered roller bearings) in SIMPACK
- Integration of the component models into the existing overall model
- Analysis of the occurring bearing loads

**Requirements:**
- Motivation to work independently on technical questions in the field of drivetrain technology
- Prior knowledge of multibody simulation in SIMPACK advantageous
- Previous knowledge of the dynamics of wind turbines desirable

**We offer:**
- Immediate start and rapid progress of the thesis
- Intensive supervision
- Flexible working hours in a young and motivated team

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**In case of interest please contact:**
Julian Röder
C 202
Tel. 0241 80-90876
julian.roeder@cwd.rwth-aachen.de

Chair for Wind Power Drives
Prof. Dr. Georg Jacobs
Campus-Boulevard 61
52074 Aachen | GERMANY
www.cwd.rwth-aachen.de
11/19