The Chair for Wind Power Drives at RWTH Aachen University is involved in the field of drive systems for wind power plants (wind turbines). In numerous research projects, the drive systems as well as the vibration analysis of wind turbines and their drive components have been continuously further developed.

The development of modern wind turbines trend of increasing rotor diameter, therefore higher towers are needed. Big structure leads to enhance the effects of aero-structure interaction between the blades and tower significantly.

The research is mainly focusing on developing a Fluid Structure Interaction (FSI) solver to investigate the aerodynamic and structure interaction. The coupled solver will be extended form a basic coupled solver already exist in OpenFOAM after reducing the structure components (blades and tower) to an equivalent beam model.

**Master Thesis**

Development of Fluid Structure Interaction (FSI) solver for wind turbine application.

**Tasks:**

- Implementation of Beam Element in a structure solver for reduction of blade and tower structure model (an equivalent beam model).
- Developing of Fluid Structure Interaction solver in OpenFOAM supporting rotary machine motion from a stationary basic coupled solver.

**Requirements:**

- Self-motivated, team work capabilities as well as good English skills.
- Above-average degree in Mechanical Engineering or Mechatronics (TH / TU).
- Knowledge of CFD and FE analysis is desirable as well as programming languages C++ is an advantage.

**We offers:**

- Scientific work in a highly motivated, interdisciplinary team.
- Immediate start and fast processing possible.
- Intensive and individual support.
- Friendly working atmosphere.

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