Student Trainee/Internship: Advanced Wind Turbine Multibody Simulation

sowento is a successful spin-off of the University of Stuttgart with a profound expertise in lidar-assisted control and modeling and controller design of offshore floating wind turbines. Our aim is realizing commercial construction of floating wind projects in the future through advanced technology: We use **advanced modeling and control in order to save structural material**, approaching minimum safety factors for a most efficient use of steel and concrete. Our vision is to advance Floating Offshore Wind Turbine (FOWT) technology for sustainability and cost-efficiency through an optimization of the dynamic characteristics. (Read more: Lidar-Assisted Control / Floating Wind)

Floating foundations for offshore wind turbines are a novel technology, which makes harvesting of offshore wind energy possible at sites of large water depth, where fixed-bottom foundations are not feasible. **Numerical simulations of these complex systems** involve structural and aerodynamic models for the aero-elastic interaction and potential flow hydrodynamic models to simulate the ocean waves and the forcing on the floating system.

Engineering challenge

The objective of this work is to advance an existing in-house Multibody Systems (MBS) solver for simulation of onshore and floating wind turbines. The solver consists of a **flexible MBS framework**, which allows customized topologies of beam and Finite-Element-based topologies. In this project, the system shall be fully translated to Python and allow for a **user-defined selection of symbolic vs. numerical description** of the equations of motion.

In the course of this project, you will gain knowledge in industry-standard wind turbine simulation software, design procedures of floating wind turbines, as well as **how wind turbines are being controlled**. You will be part of a very motivated international team, working in a creative and enthusiastic environment to contribute to innovative renewable energy technology.

Candidate Profile

For a successful completion of the internship project, applicants should have an understanding of **structural dynamics** and Multibody Systems and dynamic systems in general, as well as programming and **software development (Python, C++, Matlab).** Knowledge in **control engineering** is of advantage.

We are looking for a motivated student, who is able to work regularly in our team, at least **15 hours/week for at least 6 months**.

Contact

Frank Lemmer: student-application@sowento.com (please include transcripts and elaborate your motivation)