At the research group Turbulence, Wind energy and Stochastics (TWiSt) at the Institute of Physics at the University of Oldenburg and ForWind - Center for Wind Energy Research, is a vacant for an

**Early Stage Researcher (ESR) – PhD position (m/f/d)**

(salary according to German TV-L E13, 100%)

starting between July 2020 (preferably) and October 2020 (the latest) for a period of three years.

The position is part of the **EU Horizon 2020 MSCA Innovative Training Network (ITN) project FLOAting Wind Energy netwoRk, FLOAWER.** Within this network project a total of 13 ESR positions are open at different institutes in Europe. For more details on the overall objectives and structure of this ITN, see [www.floawer-h2020.eu](http://www.floawer-h2020.eu).

The scientific work at the University of Oldenburg (ERS10) focuses on **Dynamics and interaction of floating turbines.** Floating turbines interact with the incoming wind field as well as with the water waves resulting in additional complex motions of the turbines. These additional motions and their dynamics affect the performance of the turbines itself as well as the generated wakes and their development with increasing distance to the turbine. In wind farms these wakes represent the inflow for turbines located inside the farm and result again in additional dynamics which might lead to higher loads, fatigue loads and therefore higher failure rates and down times. A better understanding of these interactions and dynamics can be used to further develop models and control strategies, respectively.

In this PhD project this problem will be addressed by means of experimental investigations with model turbines, Steward platforms and an active grid in the new big wind tunnel in the WindLab at the University of Oldenburg. The model turbines have a diameter of 0.6m and are equipped with a control system for variable pitch and variable rotational speed. These wind turbines will be placed on a so-called Steward platform, which allows moving the turbine in 6 degrees of freedom mimicking the motion of a floating turbine. Additionally, an active grid allows generating turbulent inflow conditions showing comparable characteristics of atmospheric flows. With this high-end equipment and velocity measurement techniques like hot-hire, Laser Doppler Anemometry (LDA) and stereo high-speed particle image velocimetry (PIV) the effects on the turbine dynamics and the flow characteristics can be measured. This will be done for a single turbine as well as for two turbines in a tandem configuration. Data will be used to develop a stochastic description of the overall floating wind turbine system.

The content of the PhD project is a combination of new experimental set-ups, e.g. the active grid and the motion of the Steward platform as well as stochastic data analysis, which enables the quantification of the impact of different turbulent conditions on the
wind turbine models. The PhD student will work in a research team with experienced members in the fields of active grids, model turbines, all above mentioned measurement techniques and stochastic analysis. In this environment the candidate will receive best training with state of the art equipment as well as latest developments e.g. active grid control.

In the framework of this PhD project two secondments are planned each of 3 months duration - one at Politecnico di Milano and one at the industrial partner GICON.

Prerequisite is a qualifying university degree (diploma or master) in engineering, physics or an equivalent course of studies. Practical expertise in experimental measurement techniques, model turbines, optical measurement techniques like LDA and PIV as well as experience in LabView programming is desired. Experience with stochastic analysis and the programming tools "GNU R" and/or MatLab is of interest.

Applicants should explicitly relate their qualifications to the project in the cover letter.

All interested candidates irrespective of age, gender, race, disability, religion or ethnic background are encouraged to apply. The University of Oldenburg is dedicated to increase the percentage of female employees in the field of science. Therefore, female candidates are strongly encouraged to apply. In accordance to § 21 Section 3 NHG, female candidates with equal qualifications will be preferentially considered. Applicants with disabilities will be given preference in case of equal qualification. Full-time positions can be also turned into part-time ones.

In addition, the successful candidate should satisfy the following mandatory characteristics at the time of the recruitment:
• having not more than 4 years of equivalent research experience (i.e. working as researcher after obtaining your master’s degree);
• having not been awarded a title of PhD before;
• having not resided or carried out her/his main activity in Germany for more than 12 months in the last 3 years

Applications

Please send your application via email with the reference FWESR10 until May 31st, 2020 to

Dr. Michael Hölling, email: michael.hoelling@uni-oldenburg.de

If application via email is not possible, please send all application documents via mail to:

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