
Assistant Researcher (PhD Grant) in Atmospheric Physics in the Vicinity of Offshore Wind Farms in EU Industrial Network

About AptWind

Atmospheric Physics and Turbulence for Wind Energy, or AptWind, is a new European Industrial Doctoral Network. The AptWind project aims to train a new generation of researchers proficient in innovative approaches to address current and future challenges in atmospheric flow physics and turbulence for wind energy applications.

The AptWind program includes specialised seminars, such as Trustworthy Artificial Intelligence for Environmental Systems Science at NCAR in Boulder, Colorado, in 2024 and Remote Sensing for Wind Energy PhD Summer School at the Danish Technical University in Denmark in 2025. Within the AptWind program, the candidates will gain a portfolio of transferable skills, contribute to breaking significant barriers for the transition to green energy via their research and develop a broad professional network in the wind energy industry.

PhD candidates will meet with the entire student and supervisory network at sites around Europe to present progress, discuss challenges, and learn from the AptWind community. Within the AptWind program, the candidates will gain a portfolio of transferable skills, contribute to breaking major barriers to the green energy transition via their research, and develop a broad professional network in the wind energy industry. The PhD topics cover engineering domains critical to wind energy, such as computational fluid dynamics, lidar measurements and machine learning. Candidates will split their time between a university in one country and a private-sector company in another.

<http://www.aptwind.eu>.

Offer description

The specific PhD research topic announced here focuses on building on an existing meso-microscale coupled model where the Weather Research and Forecasting (WRF) model provides the boundary conditions to drive a time-dependent Reynolds Averaged Navier Stokes (RANS) computational fluid dynamics model. The research focuses on extending the capabilities of the coupled model to include the wake effect of future wind turbines where tip heights may approach 300 m or taller. The research will investigate the conditions that prevail in the offshore marine environment where previous work considered onshore conditions and improved approaches to capture the relevant factors that impact offshore wake behaviour, considering impacts of boundary layer height, low-level jets, gravity waves, complex land-sea interactions and how these impact high fidelity wake models.

Work Locations

You will spend the first 18 months at FEUP (University of Porto, Portugal) and the second 18 months at Natural Power (France) in Nantes. At FEUP, you will be working in the VENTOS[®] CFD research team, while at Natural Power you will work in the Analytics Team, continuing the work at FEUP. Still, the focus will be on evaluating, validating, and adopting new methods into the commercial modelling chain.

Benefits

You will be compensated following local rules for Doctoral Researchers and the rules Marie Skłodowska-Curie Actions Doctoral Networks - Industrial Doctorates. The period of employment is 3 years months, the first 18 months in Portugal and the second 18 months in France.

About the University of Porto / Faculty of Engineering (FEUP)

FEUP is a leading Engineering institution focused on the creation, transmission and dissemination of knowledge, technology, and culture in engineering, and has, as a major component, the preparation of youngers to pursue the

engineering profession at an international level, supported by Research and Development of excellence, contemplating the strands scientific, technical, ethical and cultural.

FEUP's experience with atmospheric flows of interest to wind energy goes back to the early 1990s in field studies and computer simulation of wind flow. The team has pioneered the use of CFD in wind energy resource characterisation and site evaluation with the software suite VENTOS®, which is used in many wind energy studies worldwide

<https://www.up.pt/portal/en/>

About Natural Power

Creating a world powered by renewable energy is the motto of Natural Power, the world's leading independent consultancy and services company. With more than 25 years of multidisciplinary expertise, we support our customers in their solar and wind power plant projects using renewable energy, thanks to more than 400 experts in 12 countries.

<https://www.naturalpower.com/uk/about>

The requirements for this PhD position are

1. Holders of a Master's degree in Mechanical Engineering, Physics (Atmospheric Sciences), Applied Mathematics, or Computer Sciences, with a suitable scientific and professional background, regardless of nationality or statelessness.
2. To determine the profile appropriate to the activity to be developed, the following are also required:
 - (a) proficiency in Fortran77 and Python programming languages, and Linux and Windows operating systems.
 - (b) experience of use in computational fluid dynamics.
 - (c) you must be a doctoral candidate, i.e., not have obtained a doctoral degree at the time of recruitment.
3. English language level B2 or above.
4. In addition, researchers must not have resided or carried out their main activity (work, studies, etc.) in Portugal for more than 12 months in the 36 months at the contract's commencement date. Please carefully read the eligibility criteria at www.aptwind.eu/eligibility. We can only employ you if you fulfil the criteria.

Where and when to apply

At <http://www.fe.up.pt/concursos>, referencing online number AptWind, before 23:59 (local time) on 25/Jan/2024.

How to apply:

Submitting the following information:

1. Full name.
2. Identity or citizen card number or civil identification number.
3. Tax identification number.
4. Date of birth.
5. Residential address.
6. Contact details, including email and phone number.

Submitting the following documents:

1. Copy of certificate or diploma degree.
2. Curriculum Vitae with all relevant information.
3. Letter of motivation.
4. Copies of up to 5 most relevant publications.
5. Any supporting documents relevant to determining your application eligibility or assessing your qualifications.

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