# Marie Skłodowska-Curie Action Postdoctoral Fellowship 2024 (MSCA-PF-2024)

Call for Expression of Interest for a joint application under the EU MSCA-PF scheme - Thematic area: Advances in the Modelling of Offshore Renewable Energy Systems

## General and minimum requirements

We hereby invite interested experienced researchers of any nationality to apply for the EUfunded Marie Skłodowska Curie Action Postdoctoral Fellowship (call HORIZON-MSCA-PF-2024) to conduct research at the University of South-Eastern Norway, USN, for a period of two years.

The candidates must be eligible for a MSCA Postdoctoral Fellowship.

Minimum requirements are as follows. Candidate must:

- Have obtained a PhD degree successfully by 11<sup>th</sup> September 2024.
- Have not worked or studied in Norway for more than 12 months in the last three years.
- Have up to eight (8) years of research experience after completing the PhD degree.

We are seeking both young and experienced researchers who wish to use this period as an opportunity to further mature their research experiences in a dynamic academic environment.

General competences, knowledge and skills:

- Highly committed to develop a competitive MSCA-PF grant application
- Has a strong drive/ability to perform an independent academic work with a desire to cooperate with other experts in the field
- Knowledge and skills in numerical modelling and simulation within computational methods and relevant tools
- Good track record in the relevant research area
- Excellent command/highly proficient spoken and written English

# Location

Porsgrunn

# Apply by

22nd March 2024

# Position

Researchers are, in the first place, invited to submit their application as a letter of interest accompanied by a short CV (including publication list) and a one-page project description. A maximum of two candidates will be selected to develop competitive MSCA-PF proposals

according to their individual project descriptions. The MSCA-PF full proposals will be developed through regular online meetings, emails and other communication means. Upon successfully granted proposal, candidate must relocate to work in the Department of Process, Energy and Environmental Technology, University of South-Eastern Norway (USN), Kjølnes ring 56, 3918, Porsgrunn.

The MSCA-PF-2024 applications results are expected to be available by February 2025. Successful applicants, following the announcement of results, are expected to start as soon as practically possible but no later than 1<sup>st</sup> September 2025. The candidate will be recruited as a fulltime postdoctoral researcher through a temporary employment within USN for a period of 2 years.

Number of positions: 1-2

# **Research area of interest**

Offshore Renewable Energy Systems and, in particular, offshore wind turbines (OWTs) have seen rapid growth in the past couple of years. However, to be commercially viable, still further development of these systems to reduce the levelized cost of energy (LCOE) are urgently needed. Research-driven developments to explore new concepts/structures, testing methodologies, numerical modelling tools and simulation methods are required.

Offshore wind turbines are subject to complicated loads and load effects, which demand a comprehensive numerical modelling representation of the physics. Important factors affecting the design, functionality, structural integrity and performance of offshore wind turbines include-but are not limited to-fluid-structure interaction, controller actions, intense dynamic effects, non-linear loadings, extreme and harsh weather conditions, and impact pressure loads. The interdependence between loads, load effects and structural strength requires more advanced numerical tools, nonlinear modelling and innovative testing procedures.

The project aims to fill the knowledge gap in numerical and experimental works on advanced modelling and simulation of offshore renewable energy systems, including but not limited to:

- Probabilistic modelling of offshore wind turbine structures and structural reliabilitybased design including development of AI-based surrogate models for response surfaces
- Verification and validation, code-to-code comparison, as well as statistical methods and environmental resource assessment
- Comprehensive numerical methods for high-fidelity simulation of behaviour and functionality
- Nonlinearities in physical systems and numerical models considering the effect of wind, wave and current interactions, higher order wave loads and responses and Soil– structure interaction
- o Aero-hydro-servo-geo-elastic models for fixed and floating offshore wind turbines
- Coupled effects between floater and mooring system
- Numerical methods for structural and fluid dynamics, such as Computational fluid dynamics (CFD), Finite element methods (FEM), Fluid–structure interaction (FSI)
- Automatic control methods applied for OWTs engineering problems

Applicants, as a part of their application, are invited to propose more detailed and focused topics within the scope of this research area. Other offshore renewable energy systems can be considered relevant.

## **Responsibilities and duties**

The successful candidate will primarily work on the MSCA fellowship funded project, but will be integrated in the Department, taking part in regular meetings and discussion groups. The candidate will specifically be introduced with the supervisor's national and international network of researchers. In agreement with the candidate, he/she would be included in other ongoing projects and/or in the development of grant applications processes.

## **Evaluation and selection process**

Evaluation will be performed based on criteria set for the general requirements, technical qualifications and project idea. A maximum of five candidates will be invited for a virtual interview. After an internal review, two candidates will then be invited to develop the full MSCA-PF application under the supervision of Associate professor Hadi Amlashi. The outcome of pre-selection process will be announced by 1<sup>st</sup> April 2024.

Original documents about your qualifications must be presented upon invitation to the first interview. USN will perform proper document inspections to ensure validity. The USN will strictly follow GDPR regulations including full confidentiality of your handed-in documents.

## **About USN**

The University of South-Eastern Norway, USN, is one of Norway's largest higher education institutions, with around 18,000 students and 1,900 employees across eight different campuses.

We offer studies, research and knowledge dissemination, all targeting various professions and working life and with a high level of quality internationally. Our goal as a university is to create value both for the individual student and for business and commerce, the public sector and society in general. We achieve this by utilising the best tools we have, i.e., education and research.

USN is a university with a strong social commitment where studies and working life are integrated. At USN, we focus on practice-relevant, profession-oriented and applied research and education.

The students shall benefit from innovative educational methods and challenging studies closely associated with society's requirements and needs. They will learn how to adapt to a society and working life that is constantly changing. The University shall meet major social challenges with knowledge and expertise, helping to promote practical solutions, structural changes and new ways of thinking. USN's academic activities shall be embodied by a clear dedication to the UN's sustainable development goals. The University aims to realise this main profile in close cooperation with society and working life.

For more information on USN, please go to www.usn.no

# We offer

- A professionally stimulating working environment
- o Good opportunities to develop your career and your academic skills
- A good social environment
- Attractive welfare benefits in the State Pension Plan
- Opportunity for physical activities within working hours.

# Salary

Postdoctoral Fellow (postdoktor) salary will be according to USN guidelines depending on seniority. A statutory contribution to the state pension plan will be deducted from the empolyee's salary.

# **Contact information**

For more information about the position, please contact:

Associate professor Hadi Amlashi, email/phone: hadi.amlashi@usn.no / +47 31 00 91 68