Call for proposals: MSCA Postdoctoral Fellowship (H/F)
Function level: Post-doc R1/R2
Département: LS2N – Codex

Willing to experience intersectoral, interdisciplinary and/or international research? Apply with Centrale Nantes to the MSCA Postdoctoral fellowship 2025 call for proposals and join us!

Candidate profile

We are seeking a highly motivated Postdoctoral researcher with a background in automatic control with good knowledge on the aerodynamic systems ideally fixed and/or floating wind turbines. Knowledge about data-based control would be highly appreciated.

Project description

Supervisor: Mohamed HAMIDA/Franck PLESTAN

Keywords: floating wind turbine, wind far, automatic control

Topic open:

Over the past ten years, wind energy has grown significantly, forcing renewable energy sources to directly compete with conventional fuel-based energy sources. It is anticipated that the output of clean energy will continue to rise over the coming years, almost reaching 50% of the electricity consumption by 2050. Wind energy is one of the renewable energy sources that attracts the most market attention because of its availability, abundance, and technological readiness of wind turbines. Over the past ten years, the total installed capacity has grown multiple times, reaching 591 GW in 2019 and with plans to add further capacity until it reaches 1787 GW in 2030, with 111 GW coming from offshore wind energy. Installing wind turbines offshore has several benefits, including a higher and more consistent wind resource that enables offshore wind farms to generate power with more reliability than onshore wind plants. Additionally, the installation's distance from the land removes societal concerns like visual impact as well as other limitations like wind turbine flicker and noise impact. Depending on the water depth, offshore wind turbines (OWT) can be divided into two categories: fixed (FWT) and floating (FOWT). Despite the fact that it offers more advantages than the fixed wind turbine, FOWT is an intricate electromechanical system made up of linked parts that are exposed to a hostile environment and several loading sources where combining stability with high-performance power generation is the primary FOWT difficulty. The control plays an important role to operate the wind turbine near its optimal efficiency level, ensuring its dependability through fatigue load reduction. Most research on the control of wind turbines has focused on the single-turbine setting. Because of the aerodynamic interactions between the turbines, controlling an array of turbines in a wind farm is more difficult than controlling a single turbine. As a result, the majority of single-turbine control algorithms are very ineffective for maximizing power capture in wind farms. New research efforts in coordinating the control of wind turbine arrays have been prompted by the possibility of boosting performance, both in terms of reducing loads throughout the wind farm and increasing power capture.

The aim of this project is to develop new control approaches that allow to maximize the total production in a wind farm given fixed exogenous wind and waves conditions. The challenge with such an objective is dealing with the facts that: 1) the aerodynamic interaction between the turbines is not well characterized and 2) the information available to each of the wind turbines may be limited.

Call information

Organisation	Ecole Centrale Nantes
Research field(s)	Automatic control/Wind energy systems
Researcher Profile	R1 – First stage researcher OR

	R2 – Recognised researcher
Country	France
Application deadline	31 March 2025
Type of contract	Temporary
Job status	Full-time
Hours per week	39
Offer starting date (estimated)	1 Apr 2026
Is the job funded through the EU Research Framework Programme?	Horizon Europe – MSCA European Postdoctoral Fellowship

Research environment

Centrale Nantes is a top-ranked institution recognized internationally for its excellence in research and education, particularly in engineering and technology. It is known for its leadership in fields such as **marine engineering**, **civil engineering**, and **mechanical engineering**, frequently appearing in the upper echelons of global rankings. For example, it ranks **125th worldwide in Mechanical Engineering** according to the **QS World University Rankings by Subject 2024**, reflecting its prominence in this area.

Additionally, Centrale Nantes is positioned in the **top 300 globally for Engineering,** and in the **top 500 for Physical and Computer Sciences** in the **Times Higher Education World University Rankings by Subject 2024**, highlighting its multidisciplinary strength.

Notably, Centrale Nantes was named **the top institution in France in the "Engineering Schools to Change the World"** ranking, compiled by **Les Echos START and ChangeNOW**, which evaluates schools based on their contributions to social and ecological transitions. This ranking showcases its dedication to sustainability and innovative solutions to global challenges.

Centrale Nantes' research extends beyond traditional engineering disciplines. It is recognized for pioneering work in **artificial intelligence** and **robotics**, often ranking among the **top 100 worldwide** in these fields. Its **computational mechanics** and **hydrodynamics** research centers are considered among the best in Europe, further cementing its status as a leader in cutting-edge scientific research.

Through strong global partnerships and innovative initiatives, Centrale Nantes continues to enhance its reputation as a world-class institution in scientific and technological research, with a strong focus on sustainability and impactful solutions for societal challenges. Please take look at our institution before submitting your application: https://www.ec-nantes.fr/

Profile required

Eligibility criteria - Specific Requirements

- **You are a First-stage or an Experienced Researcher** eg. in possession of a doctoral degree at the time of the call deadline (10th Sept 2025) and a maximum of 8 years full-time equivalent experience in research (self-assessment tool here).
- **You comply with the mobility rule**: eg. you must not have resided or carried out your main activity (work, studies, etc.) in France for more than 12 months in the 36 months immediately before the call deadline (September 10th, 2025). All nationalities welcome!
- **You want to carry out an innovative research:** only the best proposals will be selected by the European Commission. All domains of research are eligible!
- **You already have great achievements in research:** Curriculum Vitae is an important criterion of MSCA application.

Conditions of employment

Duration	12 to 24 months
Salary	Around €6 000 (fully loaded cost of employment) per month Exact salary to be published in the MSCA PF call in April 2025.
Support to mobility and family	mobility allowance (€ 710 per month) + family allowance (€ 660 per month) if applicable - both allowances are fully loaded cost of employment
Secondment	An interdisciplinary and/or intersectoral mobility (3 months up to 1/3 of fellowship) is possible **when relevant**
Additional benefits:	- Teleworking possible - 75% transport reimbursement - Sustainable mobility bonus (if cycling or car-pooling)

Selection process

How to apply to MSCA Postdoctoral Fellowship with Centrale Nantes:

Step 1: Find a supervisor at Centrale Nantes (application before March 31st, 2025)

- *Select a pre-determined topic*: You apply **in English** to one or two research subject(s) provided by supervisors (please see table 2 below) :
    - Detailed Curriculum Vitae (including list of publications);
    - A concise statement of research's relevance to the selected topic/duration, along with a detailed proposal outlining your project idea for the MSCA Postdoctoral Fellowship;
    - Link and/or information about your doctoral thesis;
    - Contact information of two references (not mandatory, recommended).

Please apply by sending your application to pauline.rouaud@ec-nantes.fr and yolaine.lebeau@ec-nantes.fr before **March 31st, 2025**. Please always include both contacts so that your request can be processed as quickly as possible.

If your application is retained (feedback at the latest: end of April 2025), then, the next step is to apply jointly to the MSCA PF (call launched by the European Commission - HORIZON-MSCA-2025-PF-01-01).

Step 2: Prepare the application to the MSCA PF

April-May 2025

- You receive an informative MSCA-PF starter package via an online meeting with advice on institutional aspects and horizontal issues (open science, gender, ethics and research data management…) - fellow + supervisors + EU project managers
- You elaborate jointly the research approach with your supervisor(s) (April 2025)

June 2025

- One joint meeting in Nantes. You receive a dedicated training session "Preparing for an Horizon Europe MSCA Postdoctoral Fellowship" advice on how to write your proposal - fellow + supervisors + EU project managers

July-August 2025

- Online meeting for proofreading - fellow + supervisors + EU project managers

September 2025

- Online meeting for administrative support for your MSCA PF application - fellow + supervisors + EU project managers
- We apply for you (deadline for the application: September 10th, 2025)

Please read this page to understand how MSCA PF works: https://marie-sklodowska-curie-actions.ec.europa.eu/actions/postdoctoral-fellowships/6-steps-to-prepare-your-application

Centrale Nantes is committed to equality and diversity. In line with our CSR commitments, this call is open to all.