Job Offer:

Post-doctoral position in
Marine and offshore structures (renewable energy)
at ANAST – University of Liege (ULiège), Belgium

General Context at ULiège (FSA)

Following the upcoming retirement of the ULiège’s towing tank manager, who is also deeply involved in the EMSHIP master's degree education (with 18 course credits), the Faculty of Applied Sciences will no longer be able to satisfy its formal agreements with regard to the international “Advanced Design of Ships and Offshore Structures” EMSHIP program (www.emship.eu) from October 2021.

In order to ensure a smooth continuation of the EMSHIP program, enabling ULiège to be recognized at an international level, as an active player in the field of marine and offshore structures, the University of Liège would like to propose the engagement for a period of 3 years (2021-2024) - contract at fixed term – of a postdoctoral researcher. This researcher will have to collaborate with the Faculty of Applied Sciences of Liège (A&M and ARGENCO departments), and particularly with the ANAST research unit, chaired by Prof. Ph. Rigo. Within ANAST, the selected candidate will be responsible for few courses of the EMSHIP Master (www.emship.eu and https://www.programmes.uliege.be/cocoon/20202021/formations/descr/A2UMEC02.html).

The postdoctoral fellow will contribute to the field of Marine and Offshore Structures at the level of education, but also in terms of scientific research.

Context: Education

In terms of education, the doctrine of ship and offshore structures constitutes an essential and characteristic asset of the Faculty of Applied Sciences (Engineering) at the University of Liège. In fact, ULiège is the main coordinator of the ERASMUS MUNDUS “EMSHIP - Advanced Design of Ships and Offshore Structures” Master (www.emship.eu). This excellent academic program is organized in a joint partnership with leading European universities in France (École Centrale de Nantes), Germany (University of Rostock) and Spain (Universidad Politécnica de Madrid), … but also with strong international collaborations such as the University of Michigan (USA), Universidade Federal do Rio de Janeiro (Brazil), University of New South Wales (Australia), University of Osaka (Japan) and Pusan National University (South Korea). The EMSHIP program has been funded by the European Union (EACEA) for over ten years and recently has received funding to grant 22 additional scholarships per year until 2024. EMSHIP has demonstrated its potential, sustainability and attractiveness. Since its creation, it has graduated more than 200 specialists in shipbuilding and offshore structures from all over the world, increasing ULiège visibility and influence over more than 50 different countries. Furthermore, ULiège features a large towing tank facility (100 x 6 meters), supporting both research and academic developments from an experimental perspective.

Context: Research

In terms of research, ULiège is an active player at a regional (Greenwin “COLL-FOWT” project), national (SPF projects granted by the Energy Transition Fund “PHAIRYWIND”, “MAXWIND”), and international levels (H2020 “HOLISHIP” project).

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Offshore renewable energy supports the energy transition from fossil fuels to green energy. In Belgium, offshore wind energy remains a main priority within the national strategy for the development of renewable energy, as described by the Belgian National Integrated Energy Climate Plan (2021-2030), and in particular, through the 200 M€ Federal Transition Fund (2019-2029). In addition to promoting offshore wind power, the energy transition momentum is driving a renewed interest in other devices able to harness the energy from tides, waves or marine currents (ocean energy).

From an industrial perspective, offshore wind energy, and especially floating wind power, are however, not yet mature. Besides environmental and societal concerns raised by the further development of offshore wind farms, remaining scientific challenges still demand innovative solutions in order to reduce investment and operational costs, decreasing the levelized cost of energy to fossil fuel levels. By addressing the aforementioned challenges, the European Commission is leading a smooth transition from a fossil fuel market to a clean and sustainable energy market.

**Candidate profile and mission**

The candidate should hold a PhD in Engineering (or equivalent) along with extensive expertise and research experience at an international level in one or more of the following fields:

- mechanics and analysis of structures;
- design of offshore wind turbines;
- multi-physics simulations of marine and offshore structures;
- experimental analysis of marine and offshore structures;
- estimation of hydrodynamic loads (wave, swell, current, etc.).

The postdoctoral fellow will also contribute to the ongoing research at the ULiège towing tank.

The lectures assigned to the selected candidate are the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Lecture Percentage</th>
<th>Collaborators</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNAV0021-1</td>
<td>Ship Theory: Statics and Dynamics (5 credits)</td>
<td></td>
<td>50%</td>
<td>Prof P Rigo, scholars appointed by EMSHIP consortium, E. Lataire (Ugent), J-C Nahon, etc.</td>
</tr>
<tr>
<td>CNAV0022-1</td>
<td>Ship Equipment and Propulsion Systems 3 credits</td>
<td></td>
<td>100%</td>
<td>Prof B. Boumedienne (USTO) et Professors of HSZ (Antwerp), scholars appointed by EMSHIP consortium</td>
</tr>
<tr>
<td>APRI0009 - 1</td>
<td>Integrated Design Project of Ships, Small Crafts &amp; High Speed vessels; 15 credits</td>
<td></td>
<td>60%</td>
<td>Prof P Rigo, scholars appointed by EMSHIP consortium, as G Barklay (Solent), J-C Nahon, etc.</td>
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</tbody>
</table>


In terms of scientific research, the selected candidate will conduct research and supervise PhD investigations in the field of marine and offshore structures and more specifically on Offshore Wind Structures. In addition, he/she may have the relevant expertise to supervise PhDs in the domain of Structure Reliability and Risk-Based Inspection and Maintenance Planning for Offshore Wind Turbines.

The selected post-doc candidate will have specifically to:
- Supervise the on-going research being performed by ULiège researchers in the MAXWIND project (https://www.owi-lab.be/maxwind) and the PhairyWIND project (https://www.phairywind.be/),
- Be the contact person, representing the ANAST/Uliège research unit inside working groups and commissions within the EERA-JPWIND (SP7) https://www.eerajpwind.eu/subprogrammes/ and the BERA-WIND (https://energyresearchbelgium.be/en/work-programmes);
- Supervise (with prof. P Rigo) the following PhDs:
  o N Hlaing: “O&M optimization of offshore wind turbine support structures using digital twins”;
  o F Giro: “Optimal inspection and maintenance planning of offshore wind substructures subjected to corrosion-fatigue”;
  o R Jasic : “Real-time hybrid modelling for floating offshore wind turbines”;
- Publish papers in peer-reviewed international journal (1 paper/year);
- Submit research projects in collaboration with the ANAST group at ETF/SPF, EU H2020, plan Marshall (RW), ...

Eligibility Conditions:
- Hold a PhD in Engineering (or equivalent) before the contract starts (in principle Sept 1st, 2021 or latest Oct 1st, 2021).
- The PhD thesis must be submitted before June 30th, 2021.
- Be fluent in English as all the lectures (see above) are taught in English.

Application Assessment:
ULiège institutional policy is based on diversity and equal opportunities. We select candidates based on their qualifications regardless of age, sexual orientation, gender, age, origin, beliefs, disability or nationality.
Based on a first assessment of the applicants (eligibility conditions and adequacy to the expected profile) a short list will be issued.
Then, the final assessment of these short-listed candidates will include an analysis of the applicant’s documents (see list below) and an interview of about 30-45 minutes (done remotely if the candidate is not able to travel to ULiège).
The interview (in English) will cover:
- A brief presentation of his/her PhD; which has to enhance his teaching ability to deliver lectures for master students (10 min);
- A presentation of the research the candidate proposes to develop during his 3 years post-doc. (10 min)
- A free discussion with the jury.

Application procedure and application documents
The candidature must be submitted (by email) to Professor Philippe RIGO, Head of ANAST, ph.rigo@uliege.be, before May 31st, 2021 (and a copy to doyen.fsa@uliege.be).

The application must include (as pdf documents):
- A detailed curriculum vitae, including, in annex, an exhaustive list of publications and a list of research projects (with explanations of his/her task in the research);
- A motivation letter;
- A proposal of his/her project research to be performed at ULiège (3 pages max);
- A copy or an attestation of the PhD diploma, or an attestation that the thesis has been submitted (deadline for this attestation is June 30th, 2021);
- A copy of the BSc/MSc (or equivalent) diploma and the transcripts of records;
- A link to a pdf version of the PhD thesis.

Conditions of employment
Starting date of the post-doct position: September 2021

The candidate will be fully funded for up to three years. The indicative gross salary will be around 4500 €/month, subjected to taxes and health security; this means a tax-free amount of approx. 2500 €/month, net in accordance with university standards. For information, that corresponds to 89k€/year, all included, for the employer (ULiège).

The University of Liège may also provide support through the administrative procedures when preparing the arrival (VISA application, accommodation, residence permit, registration to the local authorities, …).

Further information
Additional information can be obtained from Prof. Philippe RIGO, Director of ANAST Research Unit –ULiège, ph.rigo@uliege.be.