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The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Faculty of Engineering
Department of Energy and Process Engineering

PhD position in urban wind energy (SO IV-124/18)

Description
A PhD position is available at the Department of Energy and Process Engineering, in the Renewable Energy research group. The position is financed by the Faculty of Engineering.

Sustainable development of urban areas is a topic that is increasingly more relevant. One of the main subjects is local energy production from renewable energy sources, hence contributing to the reduction of CO2 emissions in urban areas. On-site wind energy production reduces electricity transport losses, and construction and maintenance of massive transmission infrastructure. Small scale wind turbines have great potential in urban areas. However, public awareness of this potential is low. One of the challenges in the development of urban wind is the complexity of wind conditions in the urban environment, making it difficult to understand the complicated urban flows a priori. The use of Computation Fluid Dynamics (CFD) could be a solution for predicting the wind conditions in urban areas. At the same time CFD needs verification of the accuracy of the results, hence it should be supported by field measurements and experiments.

The present project will address the above in the scope of the feasibility of use of small scale wind turbines in an urban environment. The project will include both computational and experimental components, including:

• Mapping of wind fields in urban areas based on a synergy between different methodologies, i.e. CFD simulations, on-site wind speed measurements and experiments.
• Analysis of the performance and characteristics of different types small-scale wind turbines, with both simulations and experiments.
• Design, production and testing of small-scale wind turbines, optimized for the urban environment.
• Verification of predictions by placing small-scale wind turbines on a selected site.

Qualifications
The successful applicant should be enthusiastic and highly motivated as well as be able to work effectively by themselves and in a team. Specific qualifications are listed below:

Required qualifications:
• A Masters degree in engineering, applied mathematics, physics or equivalent, with a minimum average of B (ECTS).
• Strong background in fundamental or applied fluid mechanics.
• Programming skills in MATLAB, Python, or similar packages.
• Experience with state-of-the-art experimental fluid mechanics measurements (e.g., hot-wire, particle image velocimetry, laser-Doppler anemometry).

Desired qualifications:
• A demonstrable track record of interest in renewable energy (e.g., previous courses in renewable energy, seminars attended, outreach activities).
• Knowledge and experience with a CFD package (e.g., ANSYS, OpenFoam).
• Experience with CAD software packages (e.g., SolidWorks, Fusion360).

Conditions
PhD Candidates are remunerated in code 1017, and are normally remunerated at gross NOK 436 900 before tax. There will be a 2 % deduction to the Norwegian Public Service Pension Fund from gross wage.

Engagement as a PhD Candidate is done in accordance with “Regulation concerning terms and conditions of employment for the posts of post-doctoral research fellow, research fellow, research assistant and resident”, given by the Ministry of Education and Research of 19.07.2010. The goal of the positions is to obtain a PhD degree. Applicants will engage in an organized PhD training program, and appointment requires approval of the applicants plan for a PhD study within three months from the date of commencement.

The appointment has a duration of 3 years as a researcher towards the degree of PhD. Depending on the candidate's preferences and qualifications, the position duration could be changed to 4 years with a 25% teaching duty for the Department throughout the employment period.

The primary supervisor for this project will be Associate Professor Tania Bracchi, Department of Energy and Process Engineering, NTNU, Trondheim. Associate Professor Jason Hearst will co-supervise the project. For further information on the position, please contact Associate Professor Jason Hearst, Department of Energy and Process Engineering, NTNU, Trondheim. Email: jason.hearst@ntnu.no.

See https://www.ntnu.edu/iv/doctoral-programme for more information.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants. The positions adhere to the Norwegian Government's policy of balanced ethnicity, age and gender. Women are encouraged to apply.

The application
The application must contain information of educational background and work experience. Certified copies of transcripts and reference letters should be enclosed. Applications with CV, grade transcripts and other enclosures should be submitted via this webpage at www.jobbnorge.no.

Transcripts of grades are required for all candidates. If you are applying from outside Norway, please include a document detailing the grading/credit equivalencies to the Norwegian or ECTS systems. If this is not available, then please include a document describing the grading system at your university and the requirements for degree completion. This can be a print-out from your university's webpage or in some cases is included on your actual transcript. If your transcript does not include an average grade for the last two years of your education, please calculate it and include it in your application.

In addition to the required fields on the Jobbnorge website, please include a "research statement" with your application. The research statement should briefly describe your Masters or previous research project and include a statement about how you would plan to complete the proposed project of this posting. The research statement should not exceed 2 pages, although 1 page is preferred. Furthermore, please include a "qualifications" document explicitly detailing how you meet each of the required and some (or all) of the desired qualifications listed above. An application missing these two documents may be considered incomplete by the selection committee.

Mark the application with SO IV-124/18.

Start-up date may be discussed, but tentatively 10.08. 2018.

Application deadline is 26 April 2018.

According to the new Freedom of Information Act, information concerning the applicant may be made public even if the applicant has requested not to be included in the list of applicants.

Jobbnorge-ID: 150213, Søknadsfrist: Avsluttet