NTNU

Kunnskap for en bedre verden

Jobbnorge-ID: 138852
Søknadsfrist: Avsluttet
Nettside:
Omfang:
Varighet:

PhD position in Computational fluid dynamics (CFD) modeling of biomass and waste to energy plants (IV-140/17)

Description
A PhD position is available at the Department of Energy and Process Engineering. Further information about the Department of Energy and Process Engineering may be obtained from http://www.ntnu.edu/ept .

Topic: Biomass, including the biogenic fraction of wastes, is an important renewable energy source and important as a part of security of supply in Norway. Biomass to energy (BtE) and waste to energy (WtE) plants in Norway need to comply with stricter emission limits and/or adjust to tighter profit margins, and EU have implemented a further reduction of emission limits from medium (scale) combustion plants. NOx, particulate and CO emissions are special concerns, as well as the operational challenges following particle deposition on heat transfer surfaces. The majority of the operational BtE and WtE plants in Norway are grate fired plants, and even though different grate technologies have been developed, they suffer from both variations in fuel quality and changing operating conditions, resulting in non-optimum operating conditions. To address those issues, computational fluid dynamics (CFD) is used to gain insight of the complex processes of fuel bed conversion and pollutant formation inside the grate fired furnace. The PhD scholarships is part of the Knowledge-Building Project for Industry, GrateCFD, funded by the Norwegian Research Council and industrial stakeholders.

About the position: The objective of the PhD work is to develop CFD tools for numerical studies of the emission and combustion performance of grate fired furnaces using OpenFOAM. Special emphasis will be on development of a novel bed model, which combines the advantages of the porous bed methodology (low computational cost and robust) with that of 1-dimensional layered particle model (transient and high accuracy). The work furthermore involves studies of the complex coupling between fuel bed and freeboard as well as transient effects, such as bed collapse and bed blow-through, for optimum operation of grate fired BtE and WtE plants. Matching experimental data and plant measurement campaigns with results from CFD simulations will be an important part of the PhD project. In this part, close collaboration with industrial partners within GrateCFD will be crucial.

Qualifications
Applicants for this position must have an MSc in chemical or mechanical engineering sciences and qualify for enrollment in the PhD program of NTNU. Motivation for fundamental scientific research of practical relevance is essential. Genuine interest in mathematical modelling and good knowledge of programming is a prerequisite, but direct experience with CFD, multiphase reacting flow simulation, and combustion modelling will be prioritized.

Conditions
PhD candidates are remunerated in code 1017, and are normally remunerated at gross NOK 432,300 before tax. There will be a 2 % deduction to the Norwegian Public Service Pension Fund from gross wage.

Engagement as a PhD candidate is 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 position 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 position is of 3-year duration.

For further information about the position, please contact Prof. Terese Løvås, Department of Energy and Process Engineering, NTNU, Trondheim. Email: terese.lovas@ntnu.no

See http://www.ivt.ntnu.no/studier/doktorgrad/english/ for more information.

The engagement is 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. **Mark the application with IV-140/17**, and which position you apply for. Preferably, we want the attachments in one file.

Start-up date as soon as possible, within August/September 2017

Application deadline: June 15th 2017.

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.

Tilleggsinformasjon

Arbeidssted: