

NTNU - knowledge for a better world

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 gas turbine combustion of ammonia/H₂ mixtures IV-56/18

Description

PhD position in gas turbine combustion of ammonia/H₂ mixtures is available at the Department of Energy and Process Engineering (EPT) within the Fluid Mechanics and Thermal Energy research groups. The position is funded by the Norwegian Research Council through the Climit program, as well as industrial partner Statoil and Siemens Industrial Turbomachinery AB in Sweden. The work will be conducted as part of the BIGH2 III project lead by Sintef Energy.

State-of-the-art gas turbine power plants and off-shore installations are efficient, complex machines optimised to burn natural gas usually at constant load. However, they have the potential to be both fuel flexible and operationally flexible. The effects of carbon free fuels relevant to CCS applications, such as ammonia-hydrogen mixtures or pure hydrogen, on the combustion characteristics and operational stability has not yet been thoroughly explored. You will join an active group in gas turbine combustion and combustion modelling. Research into stability and thermoacoustics will be conducted under supervision of Professors Nicholas Worth, Jonas Moeck and James Dawson, whereas the combustion modelling including kinetic studies will be supervised by Professor Terese Løvås. The work will be carried out in close collaborate with Drs Andrea Gruber and Mario Diteranto of Sintef energy.

One of the most serious challenges facing fuel flexible operation are thermoacoustic instabilities which limit the operating range and can lead to mechanical failure. The PhD research will focus on investigating the thermoacoustic stability of ammonia/hydrogen mixtures as well as the operational (blow-off) limits. You will also work closely with a post-doctoral researcher on the effects of pressure on ammonia/hydrogen flames where possible. The combustion lab has state-of-the-art facilities equipped with data acquisition systems, instrumentation, high-speed PIV and high-speed laser induced fluorescence systems.

Our group aims to be a world leader in combustion instabilities and we are looking for people who share this vision and want to be involved in world leading research.

Qualifications

- Enthusiastic and highly motivated
- Interest in learning to conduct high-speed imaging and advanced laser diagnostic measurements to characterise ammonia/hydrogen blends.
- Understanding of numerical and theoretical work
- Master's degree (or equivalent) in Physics, Engineering or Applied Mathematics.
- Ability to work independently and with other researchers in the group.
- A strong proficiency in computing languages and Matlab (or Maple) is essential.
- Excellent English skills, spoken and written, are required.

Applicants from non-English-speaking countries outside Europe must document English skills by an approved test. Approved tests are TOEFL, IELTS, Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE).

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 position is of 3 years

For further information about the position, please contact Professor James Dawson, james.r.dawson@ntnu.no or Associate Professor. Nicholas Worth nicholas.a.worth@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

Mark the application with **IV-56/18**.

Start-up date as soon as possible

Application deadline is 28th February 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: 146931, Søknadsfrist: Avsluttet