



Large Engines
Competence Center

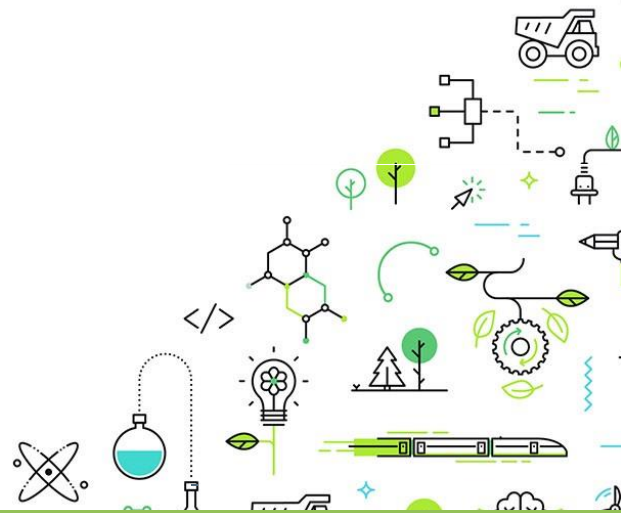
Become part of our team!

We search for a

PhD Student (m/f/d)

Research focus:

Exhaust Gas Aftertreatment for Large Ammonia Engines



Task description

Ammonia is currently the subject of increased interest as potential renewable energy carrier and alternative fuel for large internal combustion engines. However, the use of ammonia as a fuel brings new challenges not only regarding the combustion concept but also for the exhaust gas aftertreatment. In order to meet the increasingly demanding requirements for minimum pollutant and greenhouse gas emissions (e.g., NH_3 , NO_x , N_2O), it is necessary to develop advanced exhaust gas aftertreatment systems (EAS). Of particular importance in this context is N_2O , as it is a highly potent greenhouse gas. For this reason, it is necessary to obtain a detailed understanding of the N_2O formation and reduction processes in the exhaust path.

For the research area "Integrated Systems", we are therefore seeking a motivated and innovative PhD student to investigate, analyze and validate EAS concepts for spark ignited and pilot-diesel ignited ammonia engines based on experiments with a flexible EAS test system on the single-cylinder engine test bed and to identify key influencing parameters of N_2O formation in ammonia combustion environments by developing and applying an appropriate simulation model.

Responsibility

- Get familiar with combustion and EAS concepts for ammonia engines
- Develop and analyze possible EAS concepts for a holistic emission minimization
- Experimentally investigate, analyze and validate selected EAS concepts with a flexible EAS test system
- Perform a literature review of reaction mechanisms in ammonia engine exhaust gas conditions
- Develop a model to predict N_2O formation and reduction under the respective conditions
- Find a suitable method for model calibration and validation
- Perform sensitivity analyses to understand the impact of different parameters
- Interact closely within the LEC's research team and with key persons from industry project partners
- Communicate the project results in regular internal meetings and to project partners
- Disseminate the project results in the form of scientific publications and elaborate a doctoral thesis

The LEC supports equal opportunities and diversity.

We are looking for dedicated and motivated individuals with research talent.

Your profile

- Qualified degree (MSc) in chemistry, physics, mechanical engineering or similar
- Good analytical and problem-solving skills
- Experience in test bed experiments and chemical reaction modeling preferred
- Strong interpersonal skills with initiative, creativity and perseverance
- Willingness to work in a multidisciplinary team
- Profound technical writing skills
- Fluent in German or English

Our offer

- Possibility to elaborate a PhD thesis within an exciting research project
- Availability of outstanding research infrastructure at the Graz University of Technology campus
- Excellent possibilities for further personal and professional development
- Full-time position with a monthly gross salary of € 3,714.80 (14x p.a.)
- Option to work part-time from home
- Earliest starting date: As soon as possible



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Become part of our
LEC team!

We look forward to
receiving your
application.

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