

## Shaping the Future of Sustainable Technologies

The Large Engines Competence Center (LEC) is one of the world's leading research institutions in the field of sustainable transportation and energy systems and offers excellent career prospects in a scientific environment of the highest quality. Cooperation with world-leading industrial partners and renowned research institutions facilitates top-level application-oriented research that aims to preserve the environment for future generations.

Our team in Graz is looking for a

## Research Engineer (PhD Student)

Advanced Methan Exhaust Aftertreatment  
for Large Gas Engines

### Job description

We are looking for a motivated and innovative research engineer to investigate and develop advanced exhaust aftertreatment solutions for large gas engines to comply with methane emission standards in the long term. The goal is to minimize methane emissions from these engines in all operating modes with preturbocharger catalyst technology. You will perform experimental investigations on a single cylinder research engine to evaluate advanced catalysts, examine catalyst aging and poisoning effects and develop catalyst reactivation strategies. Furthermore, you will apply simulation tools to optimize engine system layouts and operating strategies to find the most suitable system solution with regard to efficiency and emissions.

### Major responsibilities

- **Modify** an existing catalyst test system to investigate catalysts on a single cylinder research engine
- **Plan, prepare and execute** experimental tests on a single cylinder research engine
- **Investigate and evaluate** new and aged methane catalysts under different conditions, catalyst aging effects and poisoning effects and reactivation strategies
- **Create** a knowledge base of the possibilities and limits of methane conversion with advanced aftertreatment technology
- **Develop and apply** 1D simulation tools to optimize the overall engine system layout and operating strategies in steady state and transient modes (e.g., cold start, emergency stop)
- **Analyze** the results of simulation and experimental testing and deduce the most suitable system solution
- **Communicate** the project results in regular internal meetings and to project partners
- **Disseminate** the project results in the form of scientific publications and develop a doctoral thesis

### Your profile

- Qualified degree (Dipl.-Ing, MSc) in mechanical engineering or related field
- Analytical skills and technical writing skills
- Strong interpersonal skills, initiative, creativity and perseverance
- Fluent in German and/or English
- Experience working with 1D simulation tools (e.g., GT Power) and engine test bed operation preferred
- Valid work permit in Austria required

### Our offer

- Doctoral thesis related to an exciting research project
- Outstanding research infrastructure
- Independent work in an excellent team and with international partners
- Personal and professional development opportunities
- Full-time position with an annual gross salary of € 40.000
- Earliest starting date: February 2019

The LEC supports equal opportunity and diversity. We are looking for committed and motivated individuals with a talent for research.

### Contact:

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Inffeldgasse 19/11  
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Become part of our successful LEC team! We look forward to your application.



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## Research Engineer (PhD Student)

Advanced NO<sub>x</sub> Exhaust Aftertreatment for  
Large Gas Engines

### Job description

We are looking for a motivated and innovative research engineer to investigate and develop advanced exhaust aftertreatment solutions for large gas engines to comply with NO<sub>x</sub> emission standards in the long term. The goal is to optimally integrate latest SCR catalyst technology into the overall engine system. You will apply simulation tools and perform experimental investigations on a single cylinder research engine to determine promising engine system layouts and operating strategies. Furthermore, you will validate and optimize the most effective system solution on a multicylinder gas engine.

### Major responsibilities

- **Develop and apply** 1D simulation tools to investigate different overall engine system layouts and operating strategies
- **Design and prepare** an SCR catalyst test system for a single cylinder research engine
- **Plan, prepare and execute** experimental tests on a single cylinder research engine
- **Investigate and evaluate** the latest SCR catalyst technologies, engine operating strategies and reducing agent supply strategies
- **Analyze** the results of simulation and experimental testing and deduce the most promising solution for validation on a multicylinder engine
- **Support** concept validation on a multicylinder engine
- **Communicate** the project results in regular internal meetings and to project partners
- **Disseminate** the project results in the form of scientific publications and develop a doctoral thesis

### Your profile

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## Research Engineer (PhD Student)

Alternative Combustion for  
Large Gas Engines

### Job description

The focus of the work is the development of an alternative combustion concept for large bore gas engines for power generation. The combustion concept shall be highly controllable and achieve very high engine efficiency combined with lowest possible emissions. The development will include measurements on test-rigs and single-cylinder research engines as well as different simulation tools.

### Major responsibilities

- **Research and understand** the influencing parameters of a partially premixed assisted auto-ignition concept, such as exhaust gas recirculation, fuel properties,...
- **Analyze** fuel properties and their influence on ignition and flame propagation
- **Plan, supervise and analyze** measurements on test-rigs and single-cylinder research engines
- **Define** control strategies based on SCE measurement results and 1D simulation
- **Analyze** mixture formation based on 3D CFD simulation
- **Communicate** the project results in regular internal meetings and to project partners
- **Disseminate** the project results in the form of scientific publications and develop a doctoral thesis

### Your profile

- Qualified degree (Dipl.-Ing, MSc) in Mechanical Engineering, Chemical Engineering or Controls Engineering
- Analytical skills
- Strong interpersonal skills, initiative, creativity and perseverance
- Fluent in German and/or English
- Valid work permit in Austria required

### Our offer

- Doctoral thesis related to an exciting research project
- Outstanding research infrastructure
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