

Experimental Hydrogen Combustion Research

Type: Student Research Assistant (m/f/d)
Content: Experimental
Start: As soon as possible

Assistant Professorship for Sustainable Future Mobility (SFM)

The professorship of Sustainable Future Mobility is part of the School of Engineering and Design and the Department of Aerospace and Geodesy at the Technical University of Munich. The focus of the professorship is computational and experimental research into advanced aircraft engines using alternative fuels as well as their impact on people and the environment. Findings in technical thermodynamics, from molecular pathways of pollutant formation to acoustics, form the basis for our contribution towards a more sustainable mobility.

Project Description

To reduce the climate impact of aviation, decarbonization is a major challenge. Current combustion chambers are burning hydrocarbon fuels, such as kerosene or more recently emerging SAF products. Hydrogen is also considered today as a promising energy carrier, but burning hydrogen creates radically new challenges that need to be understood and anticipated. The HESTIA project focuses on advancing the scientific understanding of hydrogen-fuelled aero-engines through fundamental experimental research. Experiments are conducted at atmospheric pressure under lean hydrogen–air operating conditions and investigate key aspects of combustion stability, emissions, and flame dynamics.

As a student assistant, you will actively support experimental combustion research and gain hands-on experience with modern combustion diagnostics, measurement techniques, and data analysis in the field of hydrogen combustion research for aeroengines.

Your Tasks

The position is primarily associated with the HESTIA Project. Depending on project needs, experimental support may also be provided for the H2-LoNOCS Project.

- Active participation in experimental measurement campaigns on a hydrogen combustion test rig
- Acquisition of combustion diagnostics, including flame imaging, NO_x emissions measurements, and Flame Transfer Function (FTF) measurements
- Support in the preparation, execution, and post-processing of combustion experiments
- Evaluation and analysis of experimental data using MATLAB and other software tools
- Support the modification, assembly, and maintenance of the test rig

Detailed descriptions of the underlying research projects can be found on the institute's website.

Our Requirements

- Strong interest in combustion and experimental research
- Practical experience with MATLAB and preferably LabVIEW and CAD software (CATIA or SolidWorks).
- Fluent written and spoken communication skills in German or English
- Ability to work independently with strong organizational and planning skills

Contact

If you have questions or are interested in working with our team, please send your application to Katharina Donner (katharina.donner@tum.de) and Adrian Hochmuth (adrian.hochmuth@tum.de).