Assistant Professorship of Sustainable Future Mobility
TUM School of Engineering and Design
Technical University of Munich

Experimental investigation of the multi-fuel flame behavior of a future aero engine combustion chamber

Type: Semesterthesis / Masterthesis
Content: experimental
Possible start: 01.10.2025

Assistant Professorship for Sustainable Future Mobility

Our group carries out research in the areas of novel concepts in aviation, propulsion, and Hyperloop technology as well as safety technology. We use the principles of technical thermodynamics as a focus in research supported by elements of fluid mechanics, heat and mass transfer, acoustics, chemical reaction kinetics and systems dynamics.

Job Description

You will have the opportunity to participate in research to hydrogen combustion for the next generation of aero engines. Unlike stationary gas turbine technology, hydrogen combustion in aero engines lacks a comprehensive understanding of its combustion behavior. In the *H2-LoNOCS* project, a novel test-rig is designed to facilitate measurements of the stationary and dynamic behaviors, as well as emissions of pure hydrogen and fuel-blend flames in aero engine combustion.

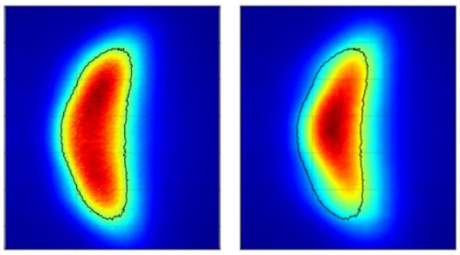

Figure 1 – Flame structure visualized with data from OH-Chemiluminescence. Image taken from Kaufmann et al. 2022.*

Your Tasks

- Design a hardware expansion for the test rig and integrate it into the measurement and control software
- Conduct measurements of emissions and the flame behavior of multi-fuel combustion (hydrogen & natural gas)
- Visualize and analyze the resulting data and compare them to alternative technologies in research

Our Requirements

- Manual skillfulness and affinity for practical tasks
- Independent and structured way of working
- Good knowledge of thermodynamics, measurement techniques and data analysis
- Ideally very good knowledge of German and English

Contact

If you are interested in working in our team, please send your application together with a motivation and a record of performance to Adrian Hochmuth (adrian.hochmuth@tum.de). If you have any questions, do not hesitate to contact us.