

# Advanced Design Project

## Development of test rig control software in LabView and first spray visualization

### Motivation & Background

Maritime shipping transports around 80 % of global trade and is responsible for 2-3 % of the total greenhouse gas emissions. The International Maritime Organization (IMO) is calling for a 40% reduction in greenhouse gas emissions by 2030 compared to 2008 levels, which cannot be achieved with the current state of technology on using alternative fuels such as hydrogen or ammonia in combustion engines. As a result, e-methanol is being investigated for retrofitting of the currently existing shipping fleets.

At RSM a new flow bench test rig is being designed to investigate the methanol spray and wall wetting in a scaled cylinder head. The mechanical setup is almost completed, so the next steps are the implementation of a LabView-software for injections and datalogging with the aim of having first visualizations of the spray in the geometry.

### Tasks

- Creating a LabView-code for triggering injections and automating datalogging
- Experimental spray visualization to determine interesting operating conditions for future investigations
- Concept and implementation of a solution for reproducible dewarping of images
- Creating and implementing a safety concept for the testrig

### Focus areas

Experiment



Construction



Coding



Data analysis



### Date

17.05.2024

### Start from

immediately

### Contact

Sandra Schary

+49 6151 16-28908

[schary@rsm.tu-darmstadt.de](mailto:schary@rsm.tu-darmstadt.de)