



Shell Technology Center Hamburg

Model-based Optimization of Low-Carbon Fuel Blends – Translating Single Cylinder Measurements to Real-World Driving Scenarios

Master Thesis in the field of energy and vehicle engineering

Who we are

As part of Shell's global technology development network, our scientists and employees are actively working to reduce society's carbon footprint, reduce emissions from our energy products and find competitive solutions for our customers.

Our Shell Technology Centre Hamburg (STCHa) cooperates with Shell centres in the Netherlands, USA, China, India, UK and Japan. As part of this community of more than 3000 scientists, researchers and engineers, we focus on further differentiating products for mobility and industrial customer requirements. The Mobility Application Testing department at the STCHa conducts fuel R&D testing of internal combustion engines while the Energy Application Testing department evaluates real-world behavior using a road test vehicle fleet.

What you will do

The goal of the project is to help develop a physics-based vehicle model of a hybrid electric vehicle (HEV) developed in the GT-Suite software. Secondly, a detailed DISI engine model is to be developed in GT-Power to accurately replicate burn rate and knock behavior from existing single cylinder engine tests with low-carbon fuels. Thirdly, the GT-Power model needs to be integrated into the multi-cylinder vehicle model of the HEV in GT-Suite, to replicate the vehicle performance/behavior gathered from existing fleet vehicle trial tests. After successful commissioning, the system should be used to conduct a case study to predict the comparative performance of low-carbon fuels under real-world vehicle drive scenarios using GT-RealDrive.

What you bring to the table

- You are studying towards a postgraduate technical degree
- Independence and willingness to learn new topics
- Interest in interdisciplinary issues in the field of internal combustion engines and vehicle system modelling
- Some experience and interest in modelling and programming, ideally in GT-Suite, Python/Matlab.

What you can expect

- As part of a dynamic experimental team, you will be actively developing advanced analysis and model simulation tools.
- Clearly defined goals and responsibilities, as well as mentorship from senior staff members.
- We offer a creative and flexible working schedule.
- Ideal environment to gain practical experience.

Contact

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