

Partners

- LUH: Leibniz University Hannover (Hannover)
- DTU: Technical University of Denmark (Copenhagen)
- MDT-CPH: MAN Diesel & Turbo, Marine Two-Stroke (Copenhagen)
- MDT-AUG: MAN Diesel & Turbo, Marine Four-Stroke (Augsburg)

Roles

- MDT-CPH: Integrated SCR design, NH_3 -slip investigation, compact SCR mixer
- MDT-AUG: Catalyst coating and filter test bed & selection, design of SCR on DPF prototype , along with modelling of urea injection and decomposition
- LUH: Test rig for investigation of urea injection and decomposition
- DTU: Test bed development of measurement technology and test engine investigations of SCR mixing and flow distribution

Subprojects

- 8.1: Engine integrated SCR for two-stroke diesel engines
- 8.2: Combined SCR and DPF (four-stroke)

Activities

- 8.1.1: Emission control set-up for NH_3 slip
- 8.1.2: Measurement equipment for mixing and flow distribution
- 8.1.3: Compact SCR mixer with injection
- 8.1.4: Design and test of integrated SCR

- 8.2.1: Combined SCR and DPF screening on test bed
- 8.2.2: Design and test of combined DPF and SCR on four-stroke diesel engine

Activity 8.1.1 + 8.1.2: Emission control set-up for NH₃ slip & Measurement equipment for mixing and flow distribution

Primary partner

- MDT-CPH

Progress update

- Activities on track for emission control set-up for NH₃ slip:
 - Initial tests with NH₃ slip measurements
 - Initial tests for adjustment of NH₃ slip control methodology
- Activities on track for mixing and flow distribution:
 - Basic simulation of CH₄ mixing established
 - First comparisons between experimentally determined CH₄ mixing and CFD simulations

Future tasks:

- Adjustments of CFD simulations
- Improve modelling ability
- More mixing experimental data
- Evaluation of NH₃ slip control methodology



Neo Monitors LaserGas

Activity 8.1.2 + 8.1.3: Measurement equipment for mixing and flow distribution & Compact SCR mixer with injection

Primary partner:

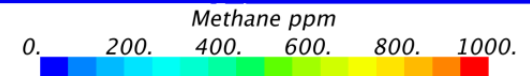
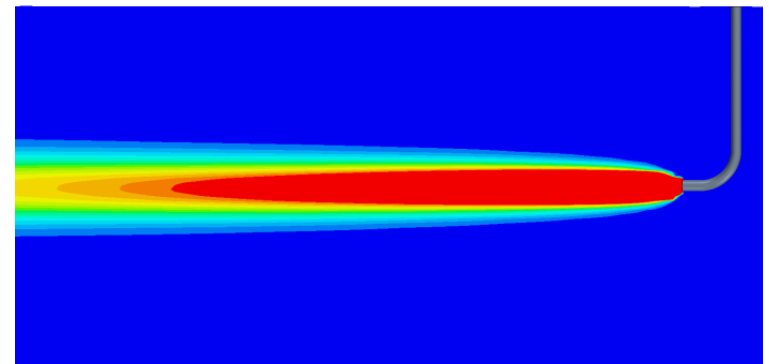
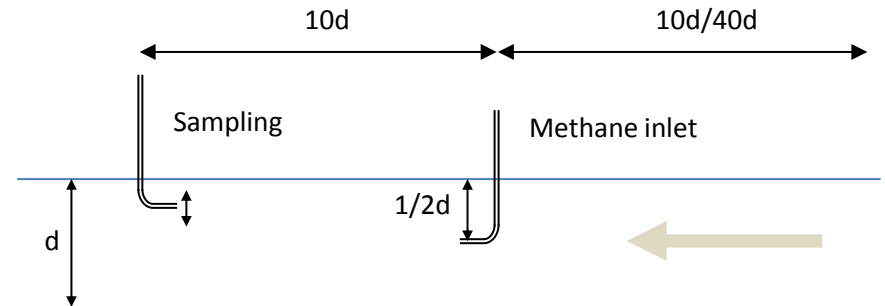
- MDT-CPH

Progress update

- Mixing tests at DTU test-rig for CFD validation

Future tasks

- Spray characterization at pre-turbine conditions for CFD input.
- Design of Compact SCR evaporator and mixer for T50ME-X using CFD
- Urea evaporation and deposit tests at pre-turbine SCR conditions for CFD validation



Activity 8.1.4: Design and test of integrated SCR

Primary partner

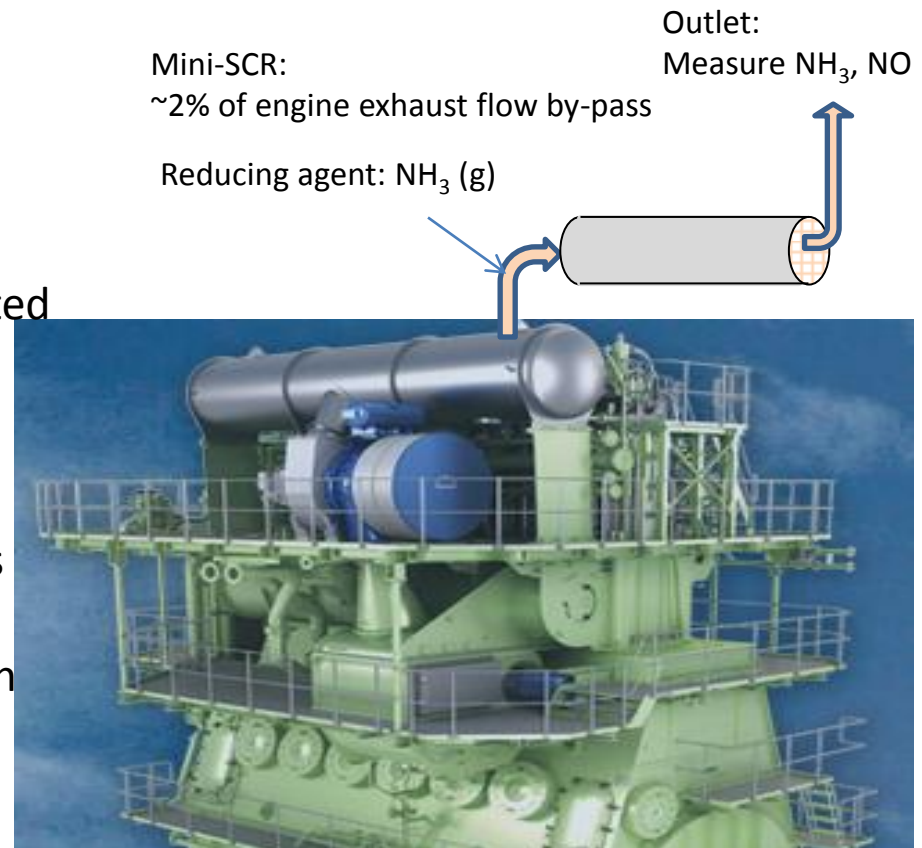
- MDT-CPH

Progress update

- Activity 8.1.4 on track:
 - Design for mini-reactor initiated
 - Design of test set-up for mini-SCR initiated

Future tasks

- Final design of mini-SCR (Q4-15-Q1-16)
- Manufacturing of mini-SCR components (Q1-16-Q2-16)
- Tests of various limitations to integration of SCR technology (Q2-Q3 2016)



Activity 8.2.1: Combined SCR and DPF screening tests on synthetic gas test bed

Primary partner

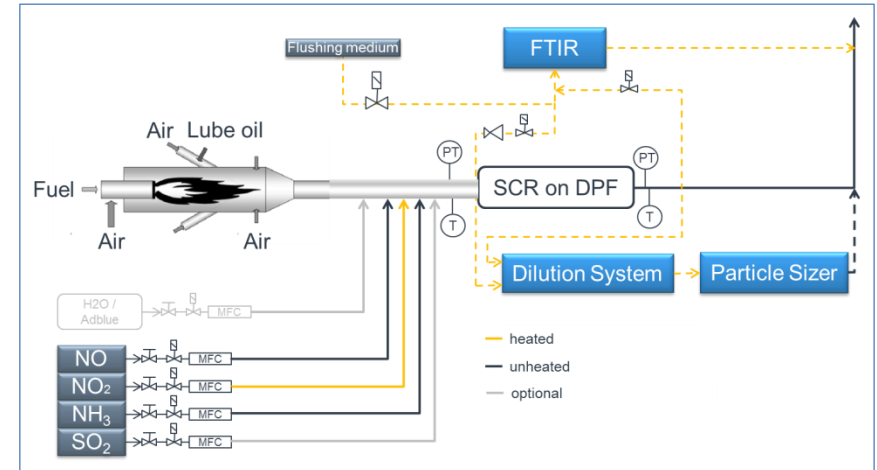
- MDT-AUG

Progress update

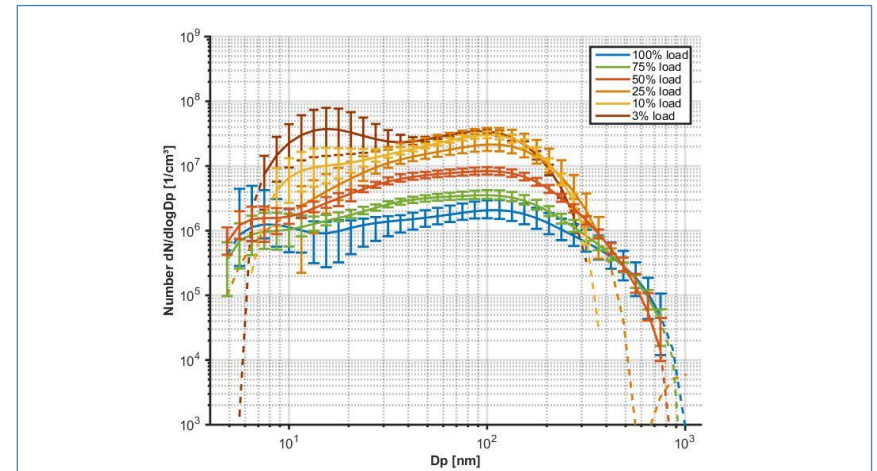
- Design of synthetic gas test bed in progress
- Procurement of first DPF substrates
- Procurement of measurement equipment

Future tasks

- Built-up of the synthetic gas test bed
- Characterisation of the test program
- Particulate measurement data base



Synthetic gas test bed for filter testing



Particle number emissions of a medium speed engine

Activity 8.2.2: Design and test of combined SCR and DPF on four-stroke diesel engine

Primary partner

- LUH and MDT-AUG

Progress update

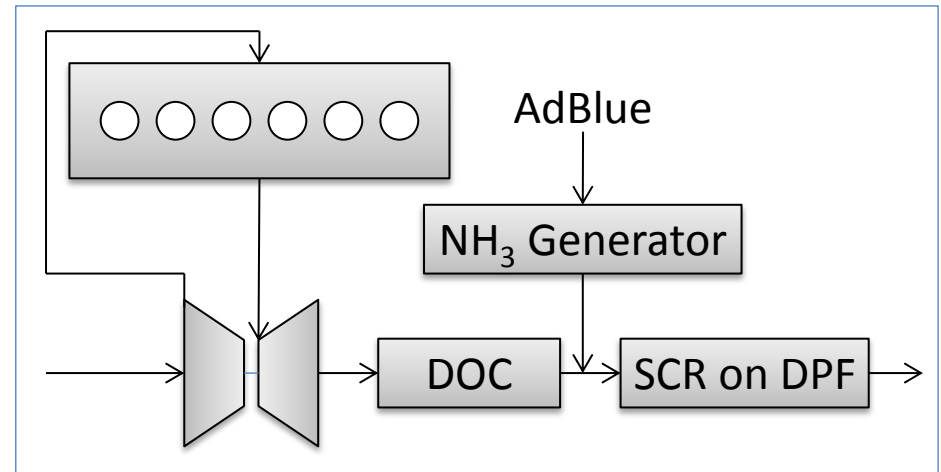
- Set-up of the hot exhaust gas flow test rig in progress
- Development and verification of the measurement equipment



Hot exhaust gas flow test rig

Future tasks

- Parameter study
- Basic tests at elevated pressure and temperature for urea decomposition
- Model validation of the basic process reactions and flows



High speed engine with SCR on DPF after-treatment system