



LERF Large Engine Research Facility

Investment Project
(in connection with the
CELaDE project)

Scope of project

To investigate emission reductions or efficiency improvement potentials of large engines, simulation and laboratory scale experiments (single cylinder engine and high pressure/high temperature combustions chambers) show significant limits. Therefore a test rig for a 1.2 MW mechanical output diesel engine will be realized to test concepts for future NO_x-emission standards on a full scale engine. The test facility is equipped with a dynamic generator set to allow transient operation.

Goals and activities

Project planning took place on the level of the building infrastructure as well as on the engine and engine auxiliaries.

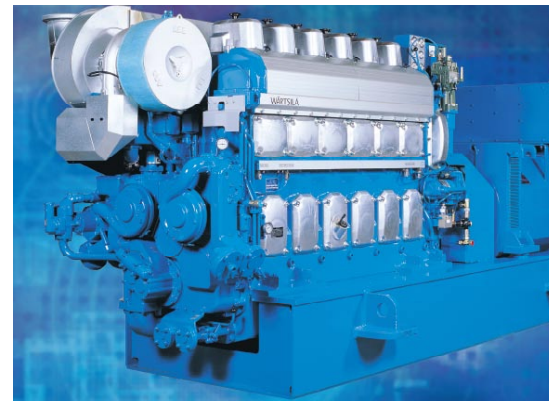
Building

The planning of the building was conducted at PSI. The new building for the test facility will be attached to an existing building.

The layout is designed for most convenient access to the engine for experiments and to minimize the noise, vibration and emission interaction with the environment in the neighbourhood of the facility. The building is also prepared to include the auxiliaries for heavy fuel oil operation in the future.

Equipment

The engine-test facility will be equipped with a 1.2 MW Wärtsilä six cylinder engine (6L20) with common rail injection. The engine-brake is realised as electrical generator which feeds back the braking power to the electrical grid at PSI. The auxiliaries for cooling, fuel and lubrication are planned for controllable conditions in a wide range of test conditions.



1.2 MW Wärtsilä six cylinder engine (6L20) with common rail injection.

An automation system will be installed at the state of the art. On the exhaust gas side a selective catalytic reduction (SCR-system) is installed to minimize the NO_x-emission of the test facility. As emission measurement system a FTIR-system is used, which is also co-financed from CCEM for other projects.

The test facility will be up and running mid 2008. The facility will be used by the CELADE project.

Together with industry several projects are prepared to use the test facility within European research project (FP7) and for further bilateral research questions.

Main Investigator

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Project Partners

ETHZ
PSI

