WP5: Lifetime Performance Control

Objectives

- Develop methods, systems and processes allowing a continuous optimized performance of the power plant throughout its lifetime

WP Leader: Jonatan Rösgren
WP Deputy: Matthias Stark

How

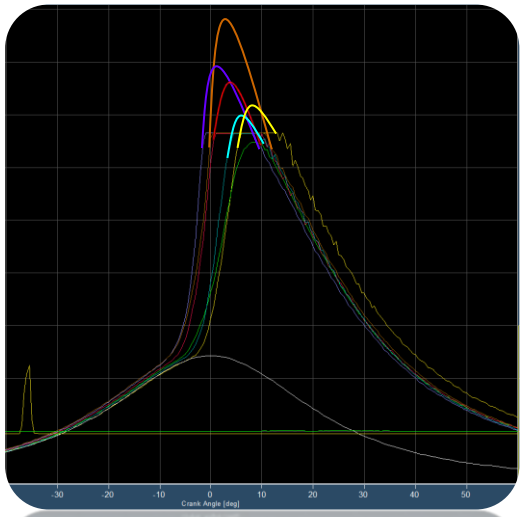
- Optimized control methods
- Adaptive lubrication system

Partners:

Expected Results

- Technology demonstrators at TRL 6
- Max 5% divergence of any performance parameter from “as-new” state
- Advanved lubrication control system
- Optimized lube oil feed rates
- 10% lube oil consumption reduction

Structure: Subprojects, Activities



- 5.1 Engine control optimization
- 5.2 Offline engine control parametrization tool
- 5.3 Development and simulation of a fully flexible lube oil injection system
- 5.4 Development of an advanced real time tribosystem performance monitoring system

Structure: Subprojects, Activities: 5.1, 5.2

Sub-project 5.1: Engine control optimization

- Optimized control study, algorithm development, simulation, testing

Sub-project 5.2: Offline engine control parametrization tool

- Parametrization study, concept, prototype tool development, prototyping, testing

WÄRTSILÄ

ETH Eidgenössische Technische Hochschule Zürich Swiss Federal Institute of Technology Zurich

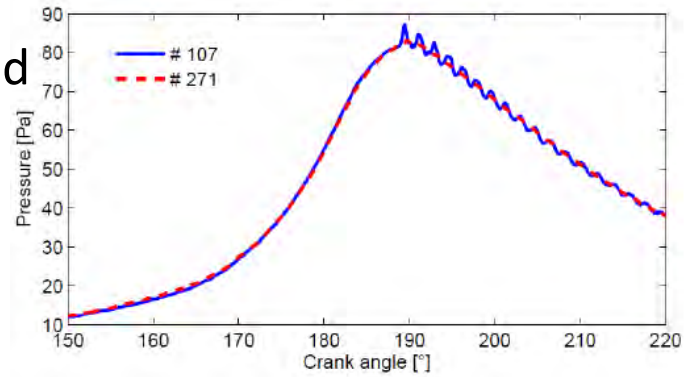
Vaasan yliopisto UNIVERSITY OF VAASA

Aalto-yliopisto

Progress (5.1, 5.2)

- 5.1 Engine control optimization
  - Optimized control algorithm methods study and testing
  - Knock control development & testing on engine
  - Plant modelling of hybrid system & controller design

- 5.2 Offline engine control parametrization tool
  - Engine parametrization conceptualization and modelling



Structure: Subprojects, Activities

DWP Leader: Matthias Stark

Sub-project 5.3:
Development and simulation of a fully flexible lubrication system

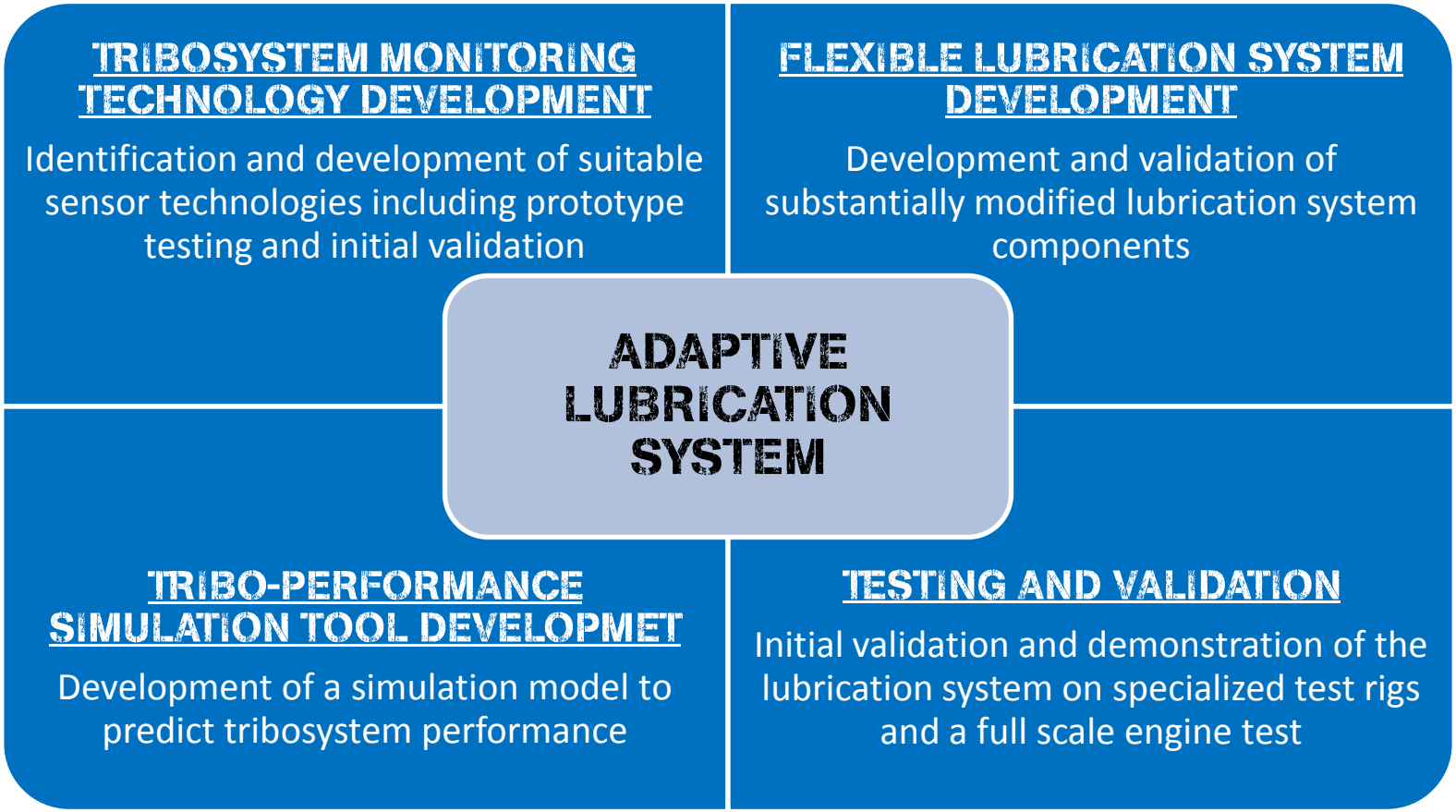
Sub-project 5.4:
Development of an advanced real time tribosystem performance monitoring system

WIN GD
Winterthur Gas & Diesel

UNIVERSITÀ DEL SALENTO

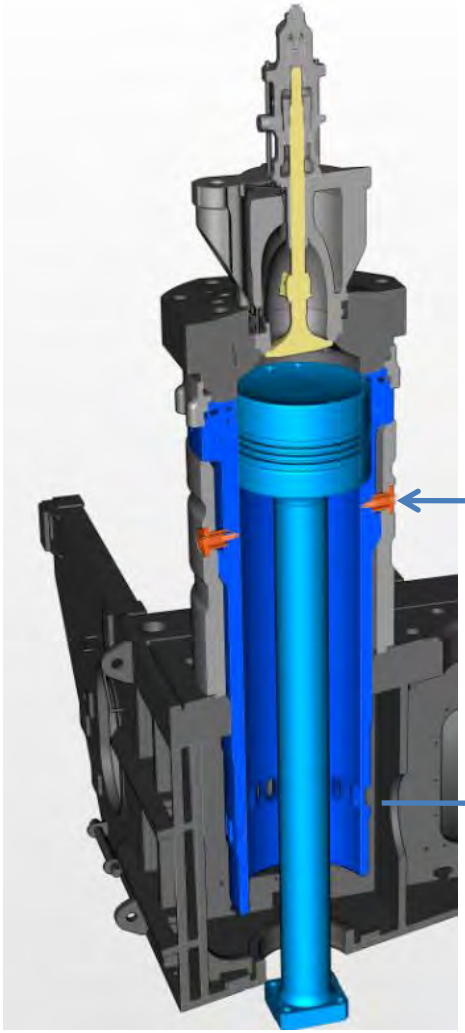
The University Of Sheffield.

Objectives / Expected Results

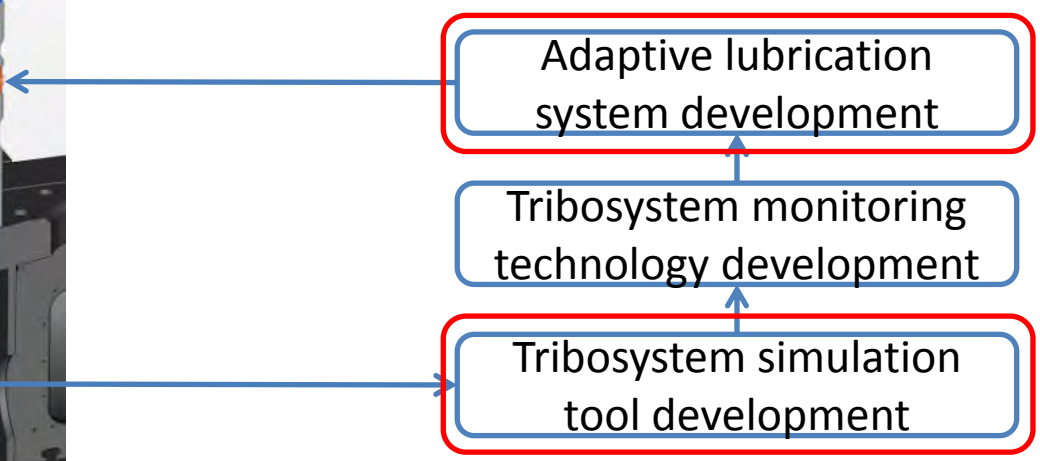


Partners: WIN GD Winterthur Gas & Diesel; Università del Salento; The University Of Sheffield.

Sub-project 5.3: Development and simulation of a fully flexible lubrication system



- Design studies on adaptive lubrication system approaches
- Simulation and pre-sizing of a flexible lubrication system
- Experimental set up and validation



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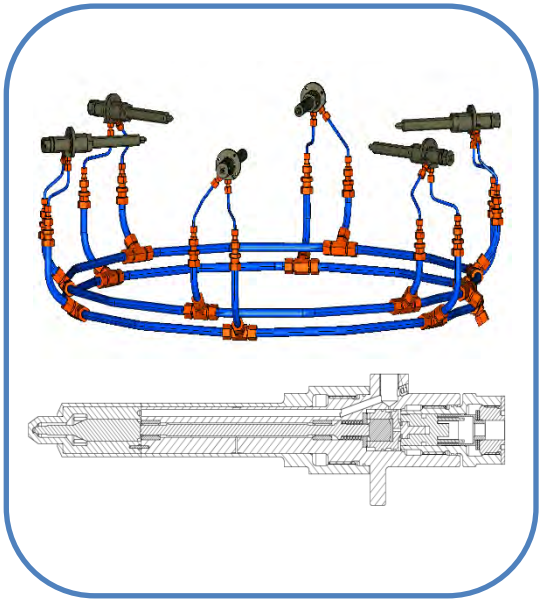
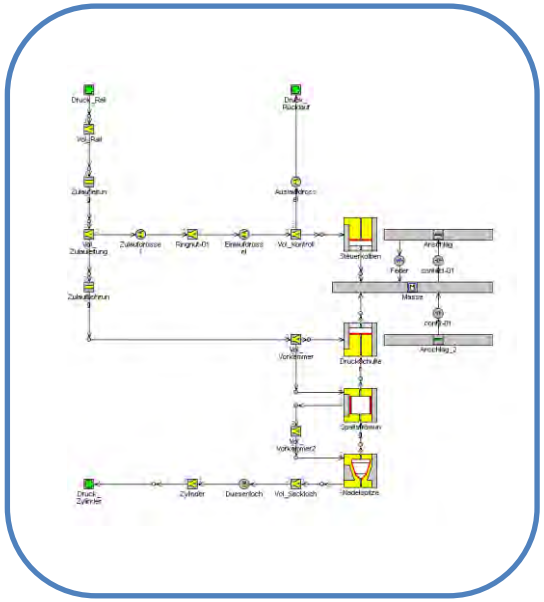
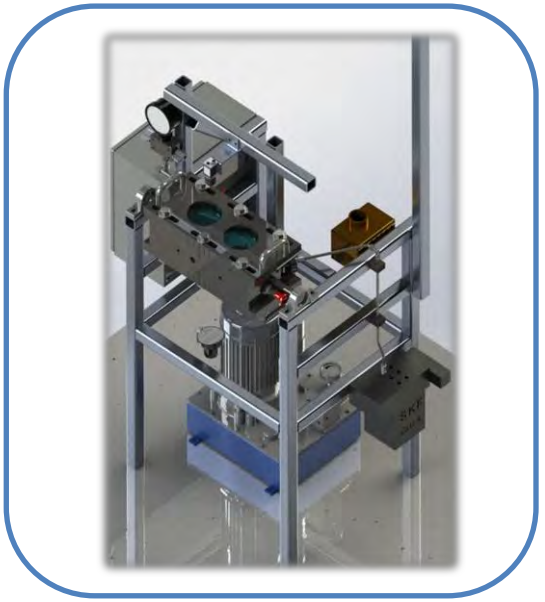
Sub-project 5.3: Development and simulation of a fully flexible lubrication system



Concept studies on lubrication systems



Pre-sizing of a flexible lubrication system



Experimental set up and validation

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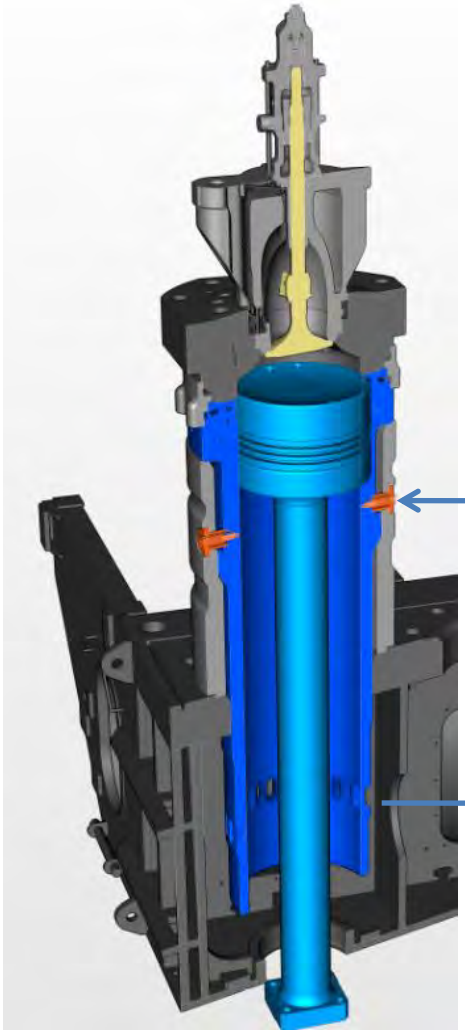
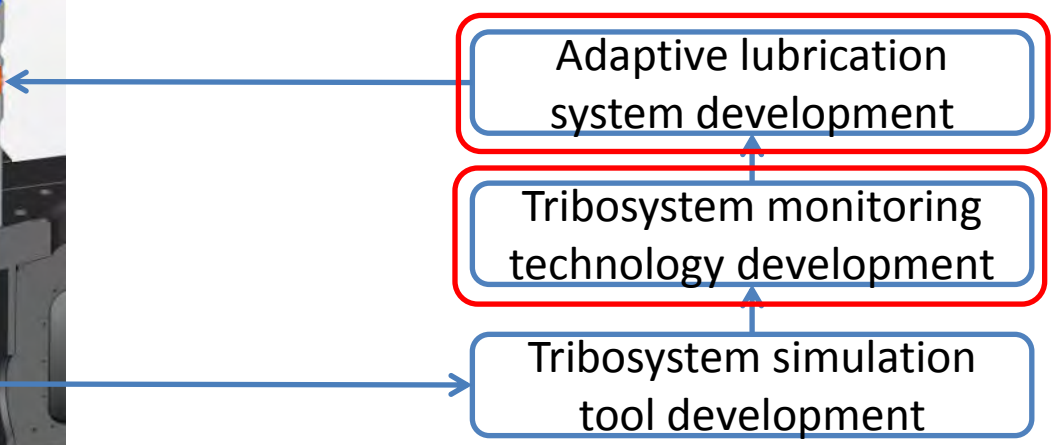
Sub-project 5.4: Development of an advanced real time tribosystem performance monitoring system



Definition of suitable sensor approaches to detect relevant tribosystem parameters in real time including:

- Properties of surface films
- Wear / Scuffing detection



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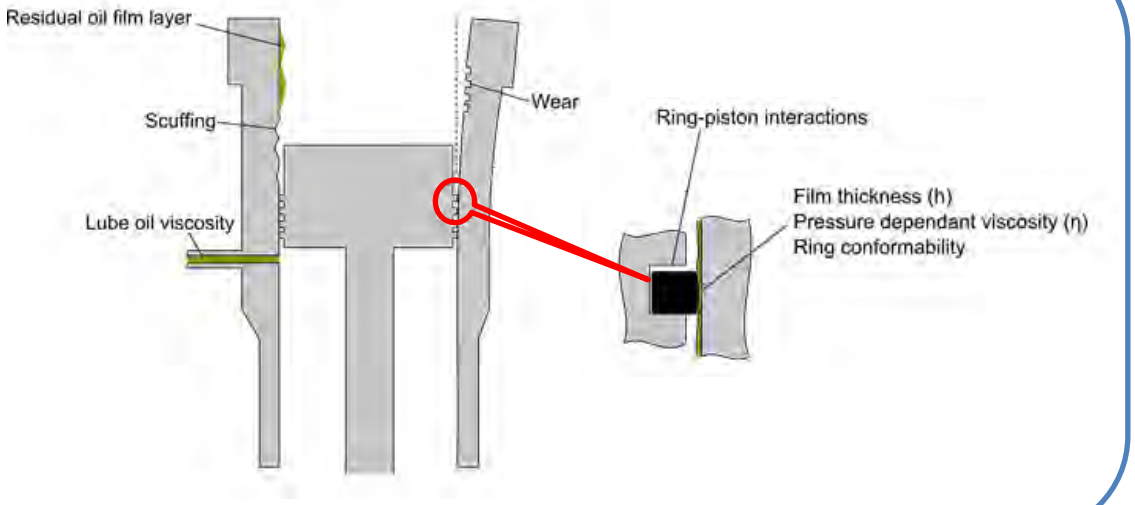
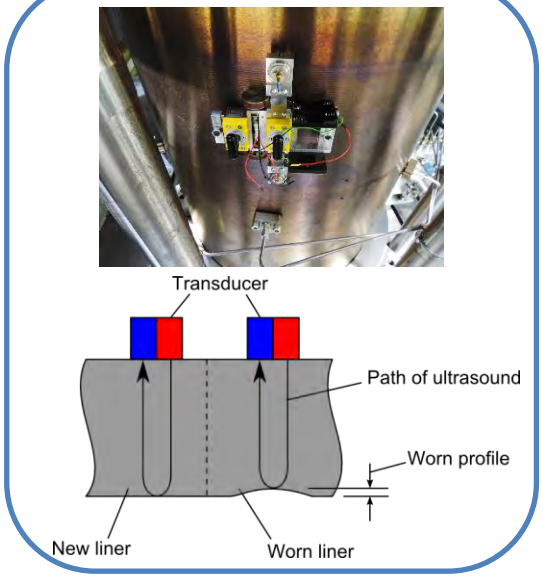
Sub-project 5.4: Development of an advanced real time tribosystem performance monitoring system





Investigation on possibilities to detect relevant tribosystem parameters in real time

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