

# WP6 Model-based Control and Operation Optimization



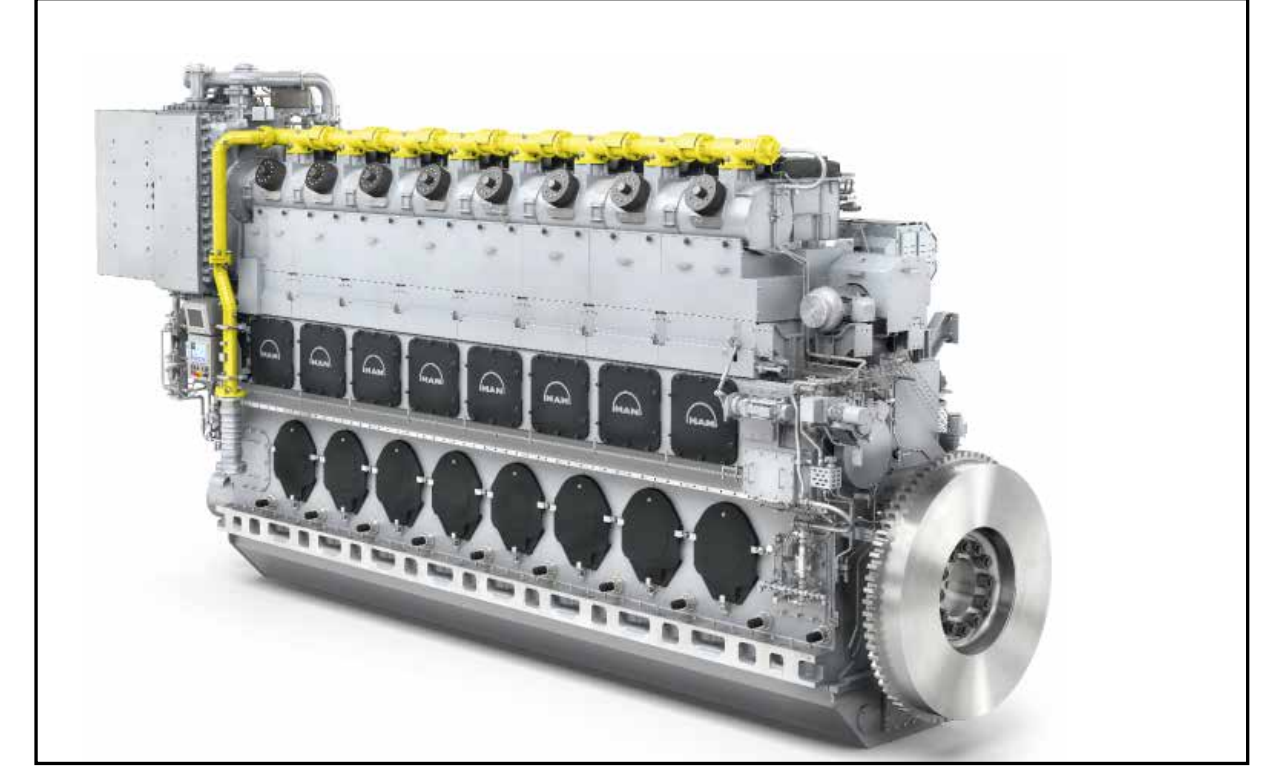
## WP OBJECTIVES

**Cut operating, maintenance and deployment costs:** Develop systems, methods and processes for improved engine lifetime performance

**Reduction of emission:**  $\text{NO}_x$  - expanding operation range emission reduction technologies; Particle - novel lubrication injection system

**Enhance dynamic performance:** Model-based control

**Increased part load efficiency:** Cylinder cut-out



## EXPECTED OUTCOME

**WP 6.1:** Evaluation of different multiple-in, multiple-out controllers

**WP 6.2:** Cylinder cut-out implemented in the engine control and tested

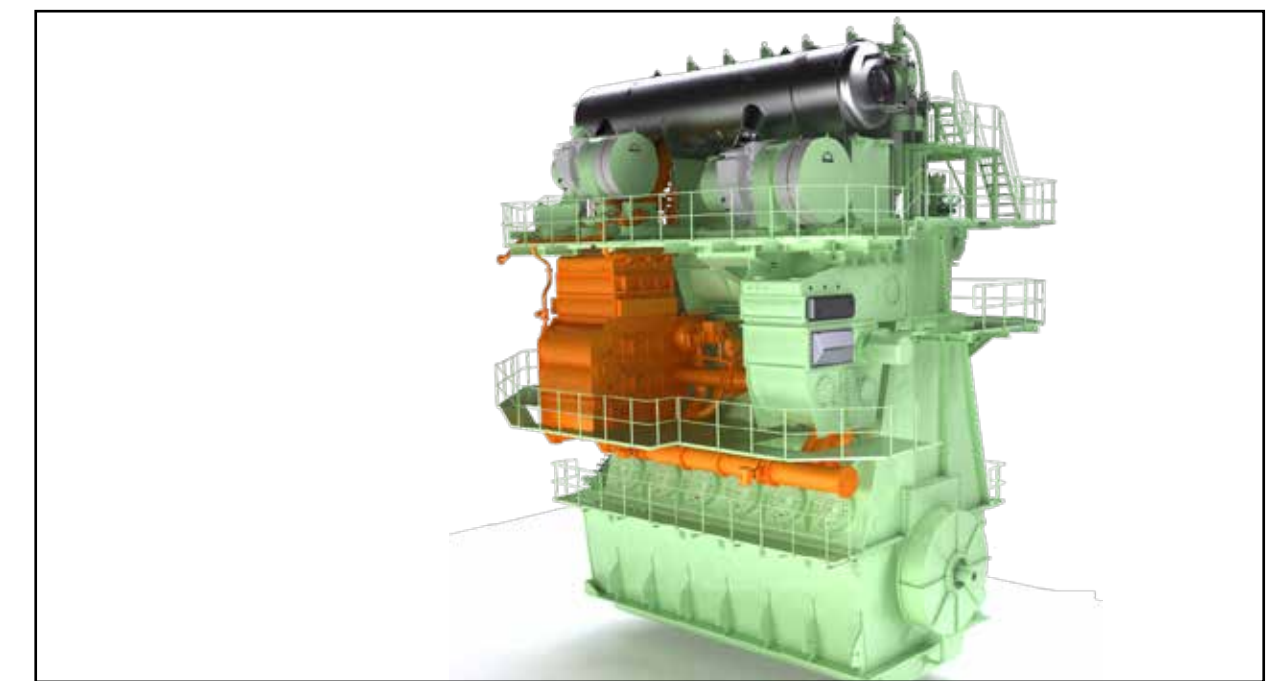
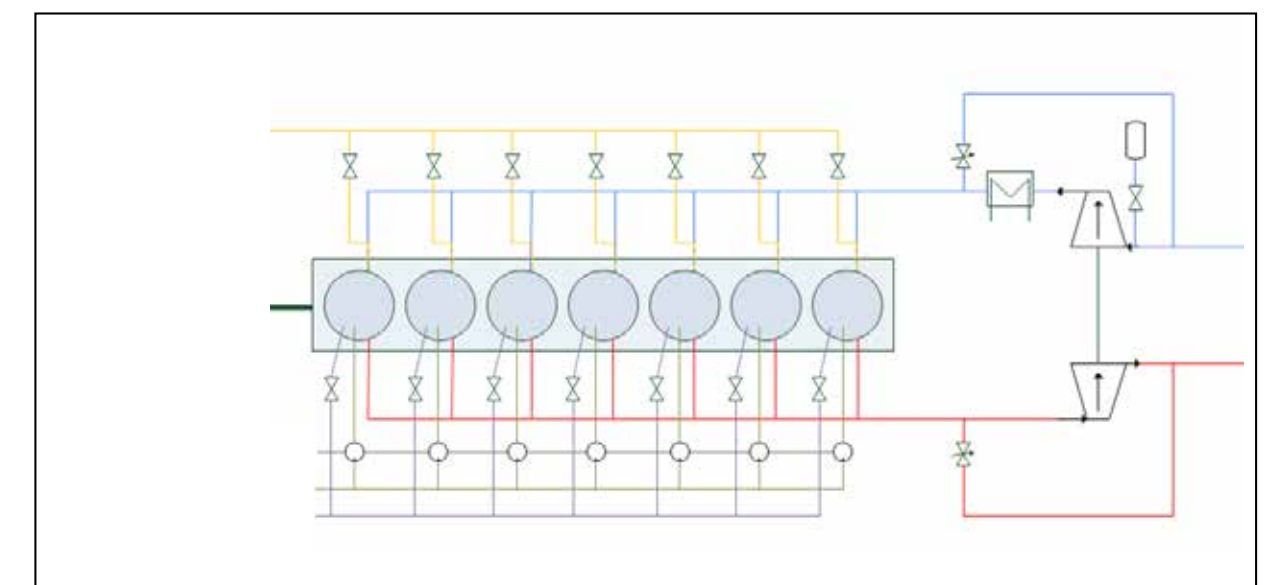
**WP 6.3:** Tailored outlier- and subspace search methods for compressed data

**WP 6.4:** Component models, full simulations and EGR-control for non-normative engine operation

**WP 6.5:** Retrofit solution for continuous engine performance optimization

**WP 6.6:** Fleet solution for unattended and secure engine software management

**WP 6.7:** Novel lube oil injection strategy to improve engine lifetime performance



## PROGRESS AND PLANS

**WP 6.1:** Build-up of mathematical engine model in progress, next step: Validation

**WP 6.2:** Match thermodynamic model, next step: Predictive combustion model

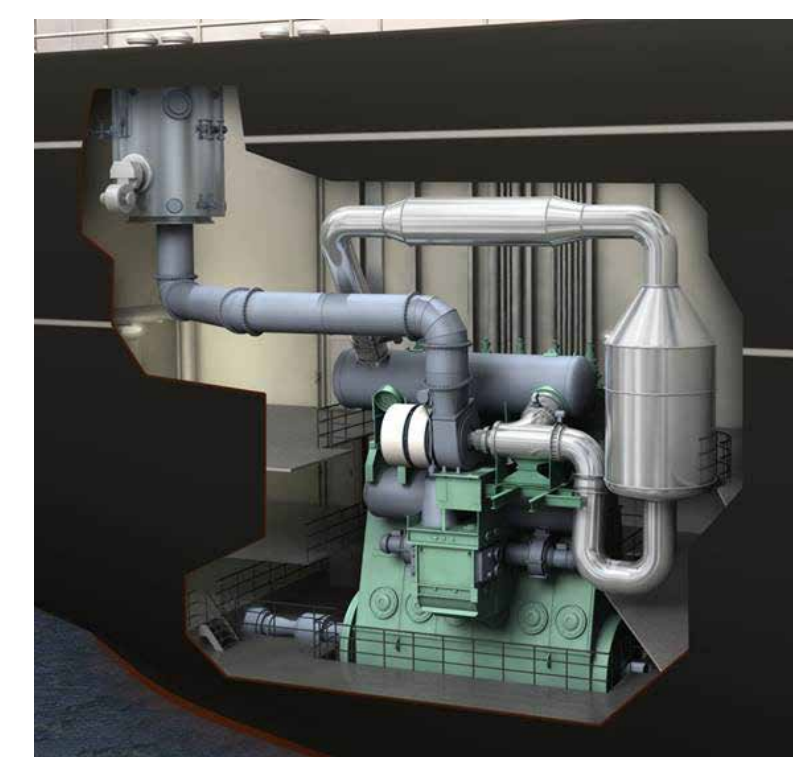
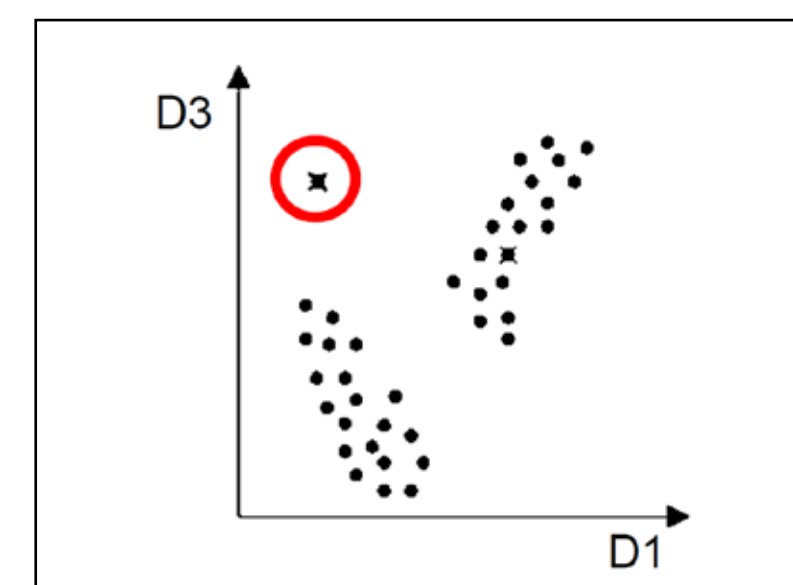
**WP 6.3:** Subspace search with HiCS, next step: Validation of detection quality

**WP 6.4:** Data collection and SCR model, next step: Establish transient cycle

**WP 6.5:** Actuator development, next step: Integration with online control

**WP 6.6:** Single source configuration, next step: Safe data distribution mechanisms

**WP 6.7:** Initial mathematical modelling of lube oil distribution system, next step:  
Experimental investigation of simple system



## WP PARTICIPANTS

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