

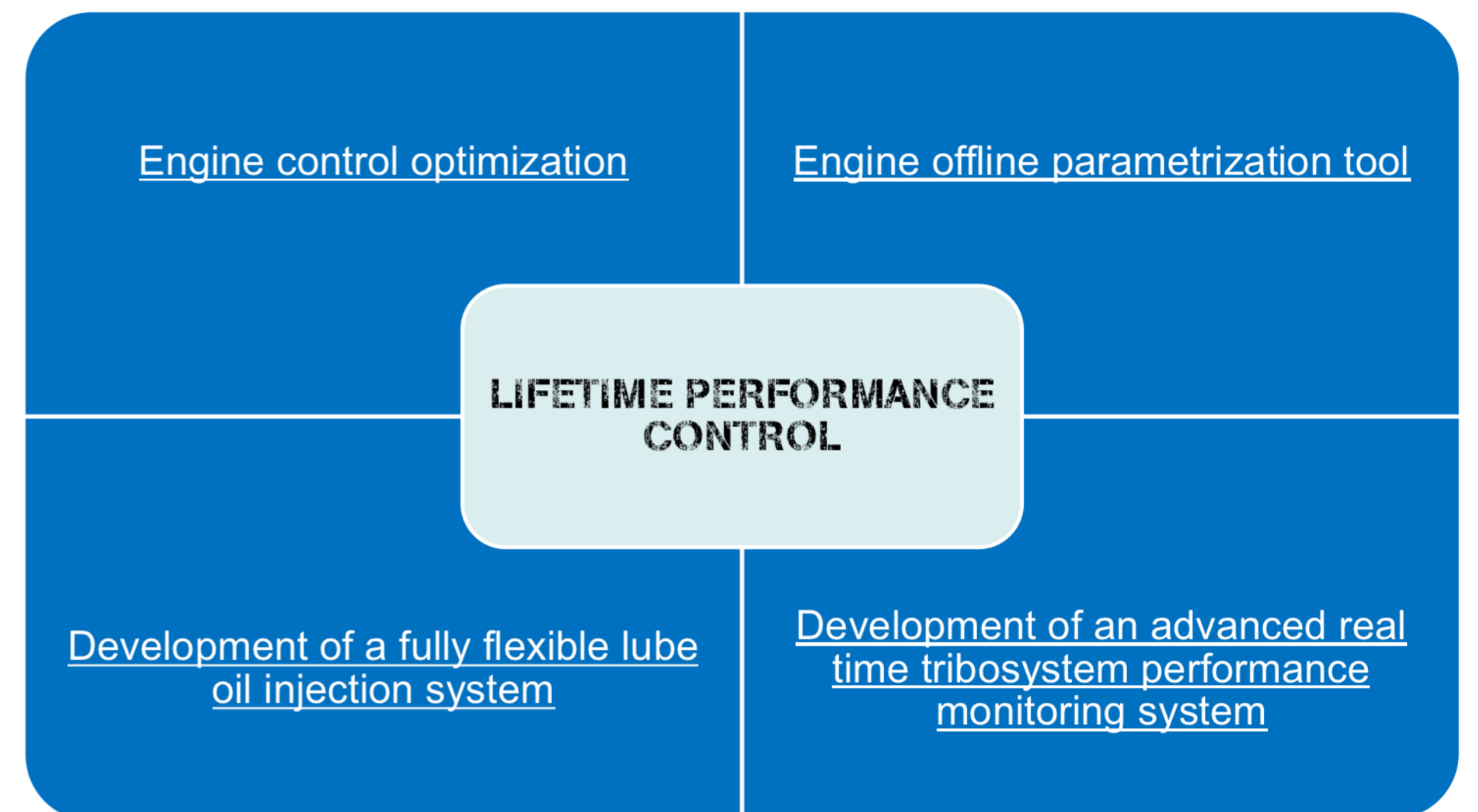
WP 5

Lifetime Performance Control



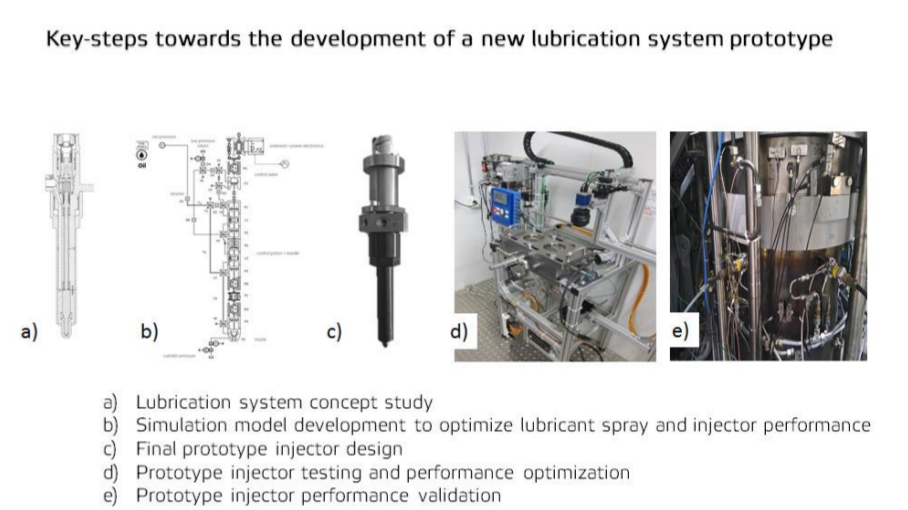
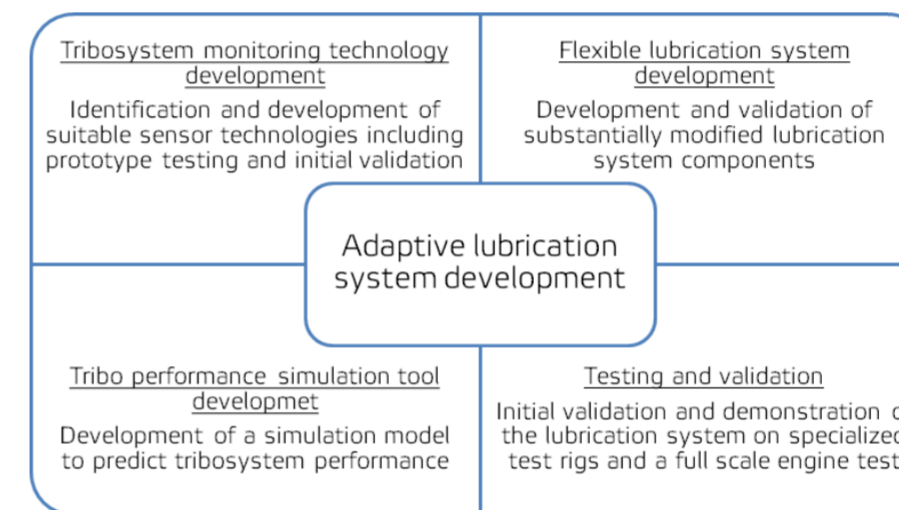
WP OBJECTIVES

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

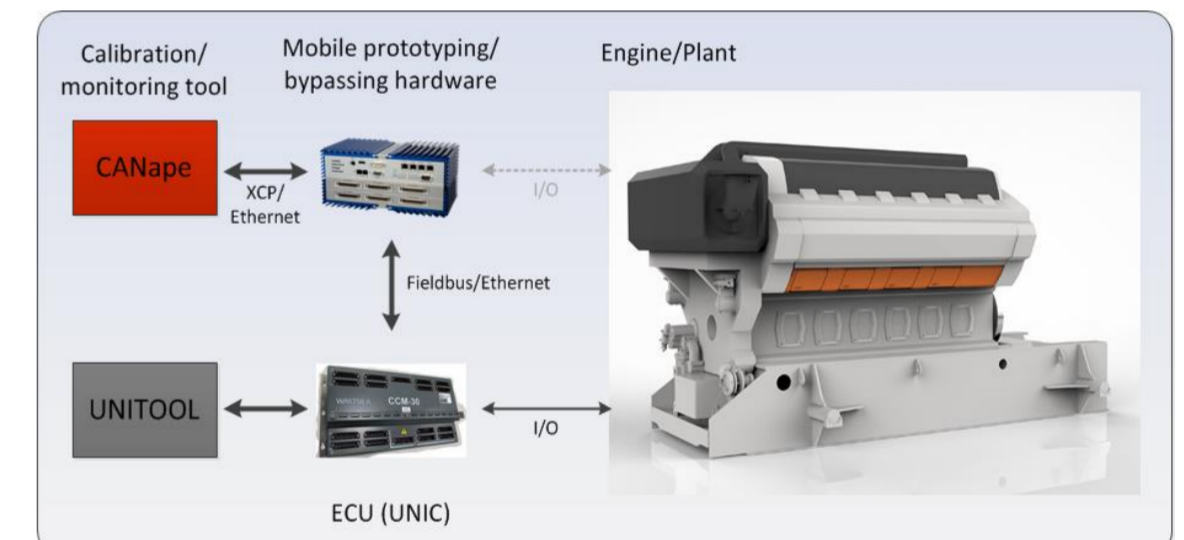
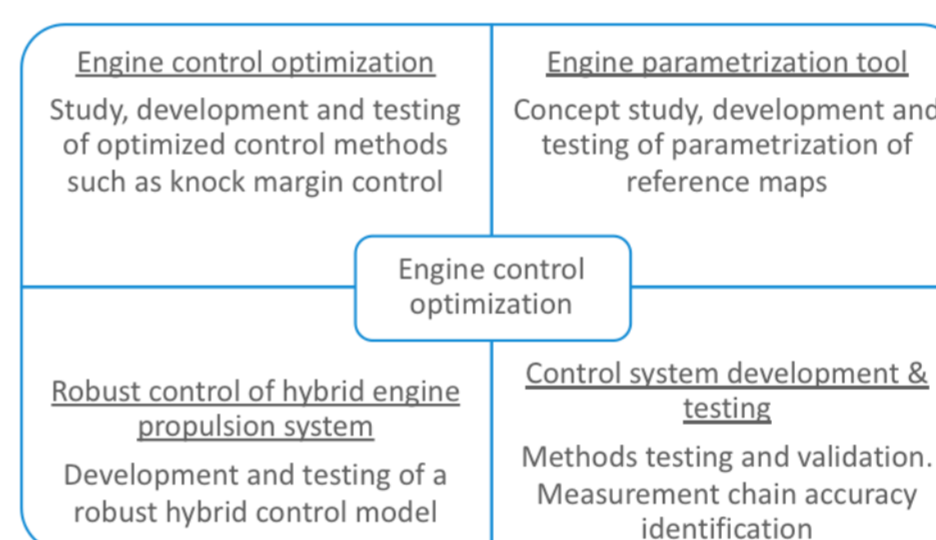


ACHIEVEMENTS & FINAL RESULTS

- Advanced lubrication control system
- Optimized lube oil feed rates
- Optimized control & parametrization algorithms for optimal performance throughout lifetime
- Technology demonstrators at TRL 6
- 15% potential lube oil consumption reduction



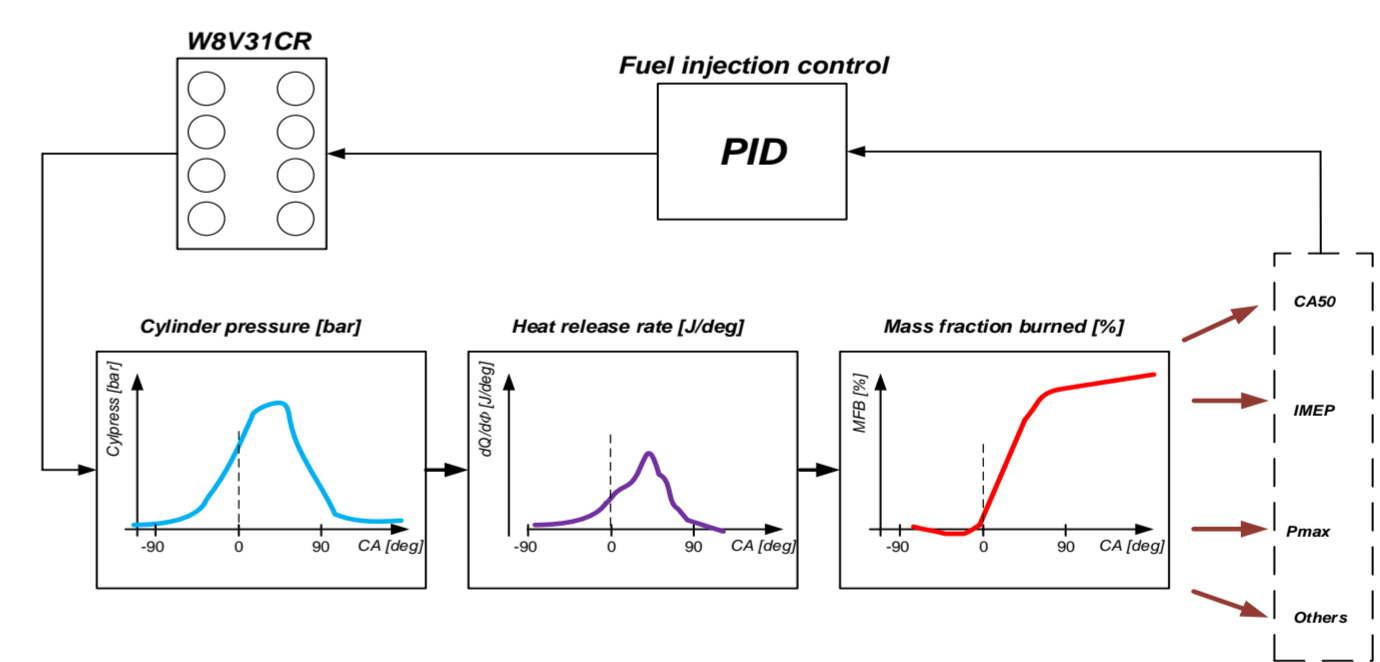
5.3, 5.4: Development steps towards an adaptive lubrication system



5.1, 5.2: Engine control optimization & parametrization

Conclusions: Sub-project 5.1, 5.2:

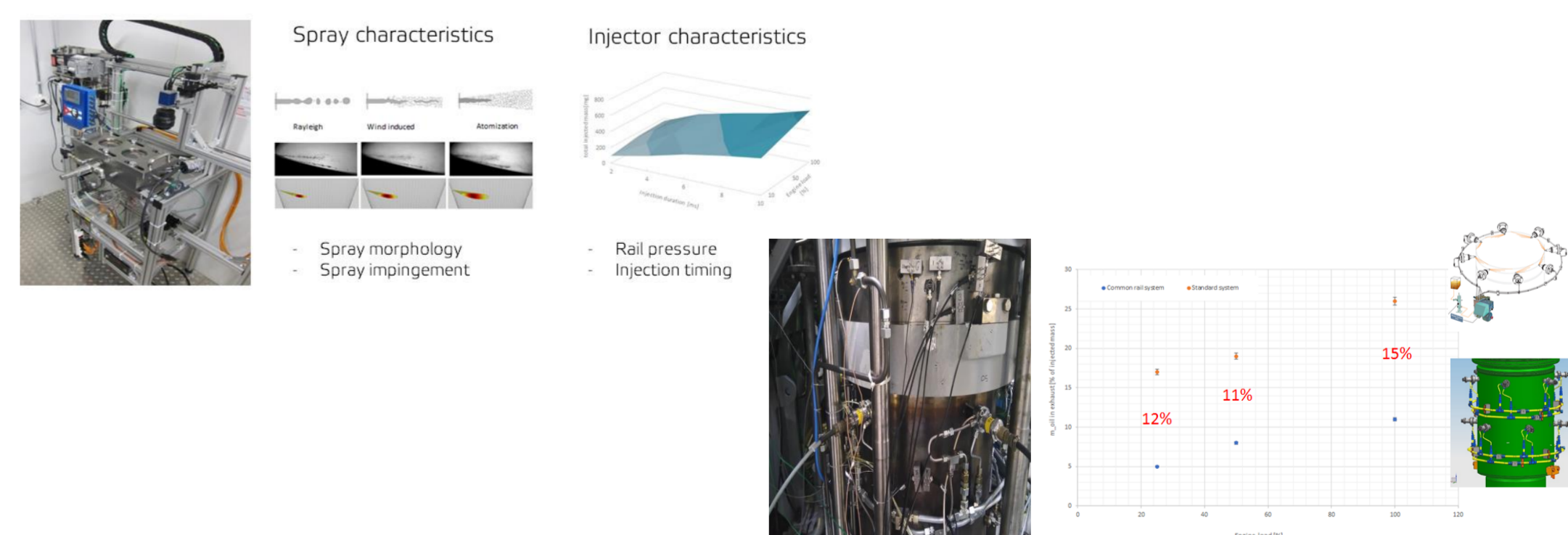
- Successful demonstration of optimized control methods throughout engine lifetime with potential to minimize divergence from "as-new" performance
- Injector trimming, NOx estimation
- Knock margin control
- Predictive control for hybrid-electric propulsion
- Parametrization of controller parameters



Sub-project 5.1: Engine control optimization – hybrid electric controller

Conclusions: Sub-project 5.3, 5.4

- The new common rail type lubrication strategy demonstrates enhanced functionality compared to the standard lubrication system
- Shaping the lubricant jet pattern by adjusting relevant lubrication system parameters inhibits lubricant atomization and therewith supports enhanced lubricant admission
- The new lubrication strategy leads to a more than satisfying lubrication performance and reveals a potential saving of up to 15% of total lube oil consumption related to total injected mass



Sub-project 5.4: Full-scale lubrication system performance validation

WP PARTICIPANTS

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