

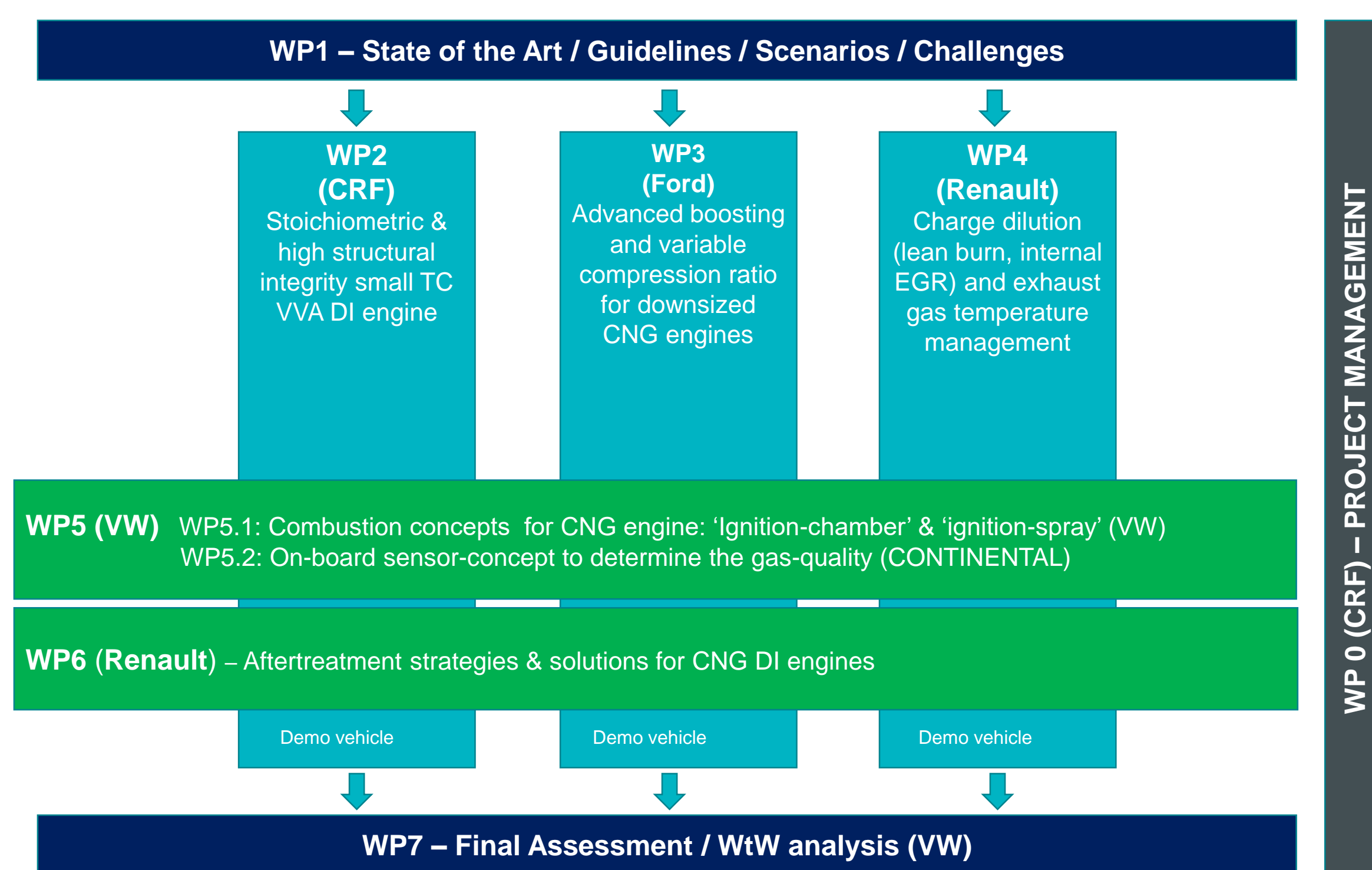
GasOn – Gas-Only internal combustion engines

WP5: Non-DI CNG lean burn combustion process utilising an ignition-chamber

WP5 Coordinator: Michael Weißner

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Overall Project Structure



Project Targets

Overall Project Targets

- 20% CO₂ reduction (vs. Best-in-Class CNG Vehicle MY 2014)
- EU6+ emission level
- 600 km range

WP5 Engine Targets

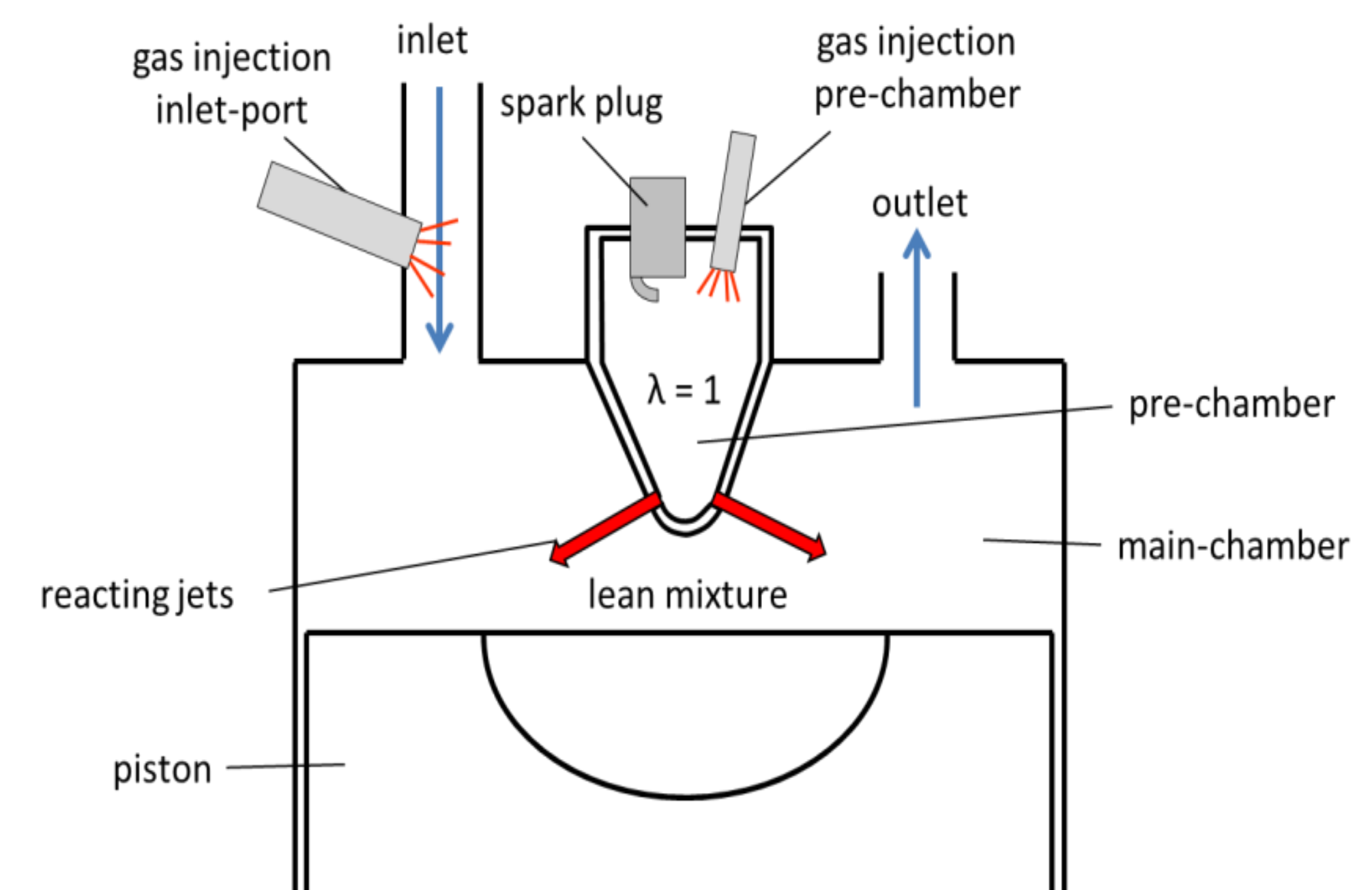
- Max. efficiency by lean combustion $\lambda=2$
- $\eta > 42\%$
- Introduction of a prechamber combustion system

WP5 – Technology Scope

Monovalent CNG-Combustion to exploit fuel advantages and reach maximum efficiency

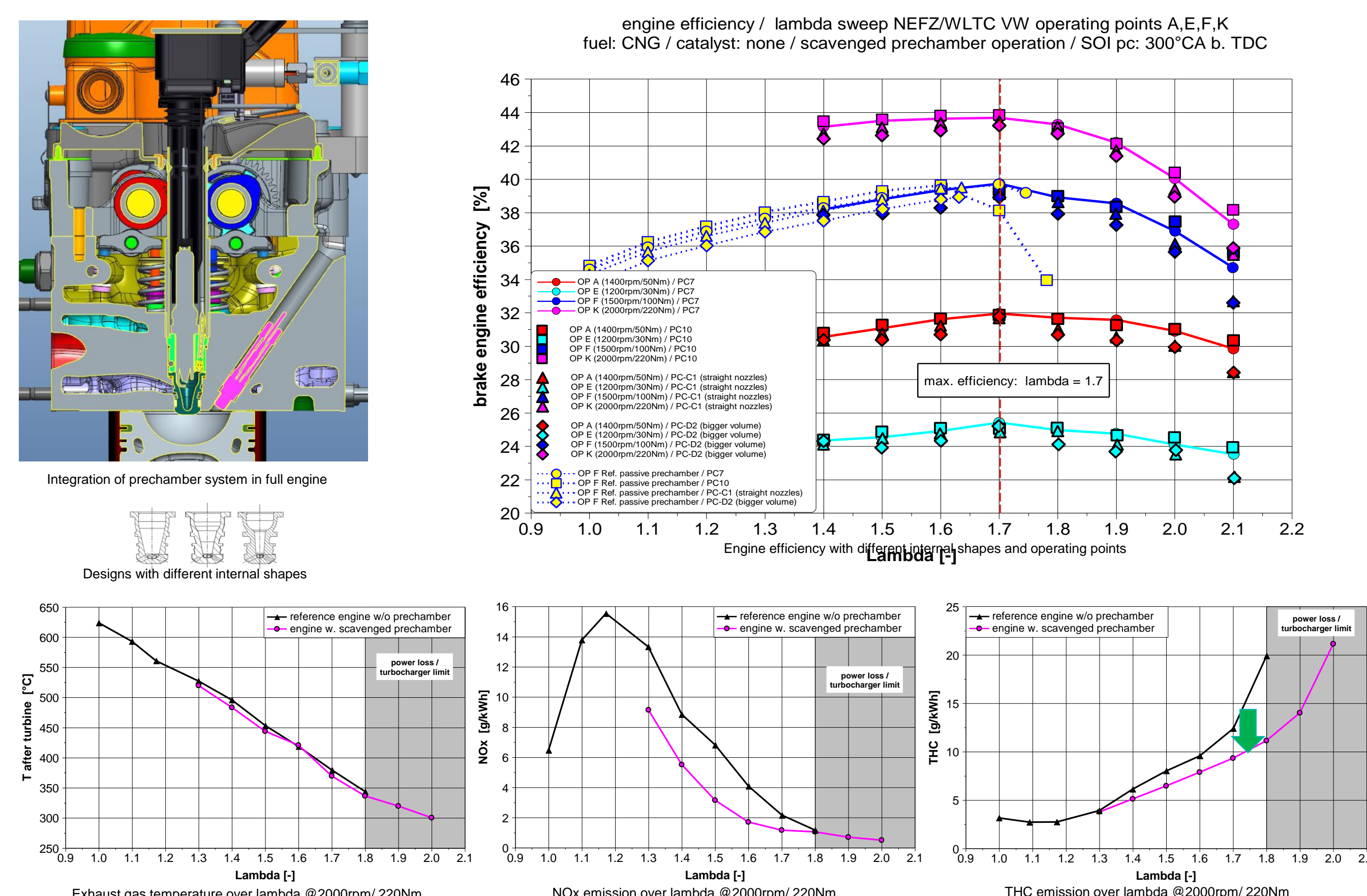
- CNG allows gain in efficiency by using high compressed lean combustion with $\lambda > 1$
- Target is $\lambda > 2$ to avoid inherent NOx-raw-emissions
- New combustion system imposes elevated requirements to the ignition system (mixture, pressure, charge motion)
- Demonstrated Prechamber (PC) Ignition Concept as appropriate solution creates a suitable distribution of NG in the air locally (PC) and globally

Combustion Process



Results Achieved So Far – WP5

- engine efficiency: up to ~44%
- $\lambda > 2$ achieved
- tests of latest piston-chamber combinations out of CFD-based optimisation ongoing



Basic Project Data

Status: Ongoing
Start: 01. May 2015
Finish: 30. April 2019
EU Funding: ~ 2.72 Mio. €

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Materials Science & Technology



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