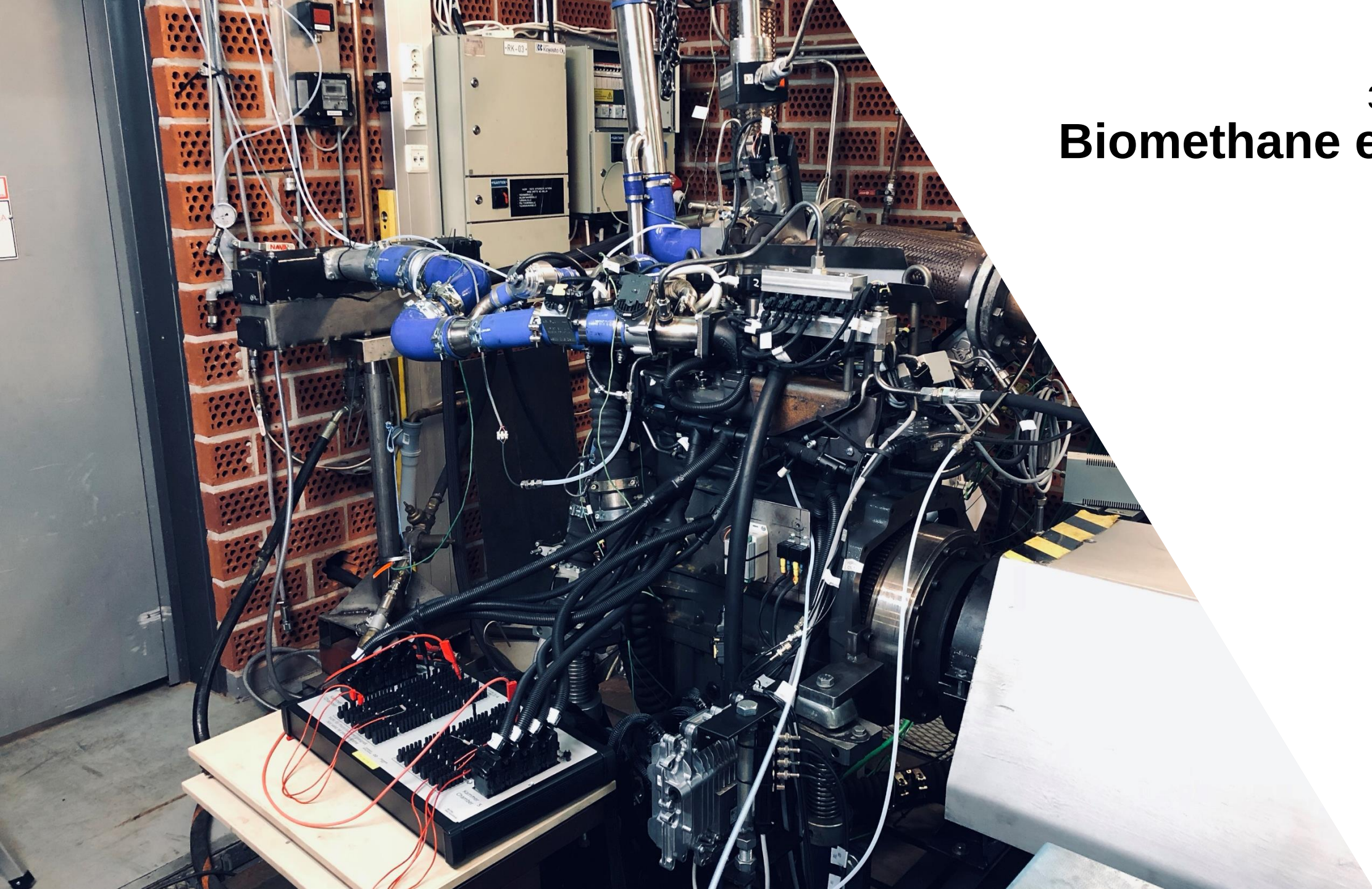
METER project – final summary

AGCO Power R&AE

05.2020



3. Results

Biomethane engine

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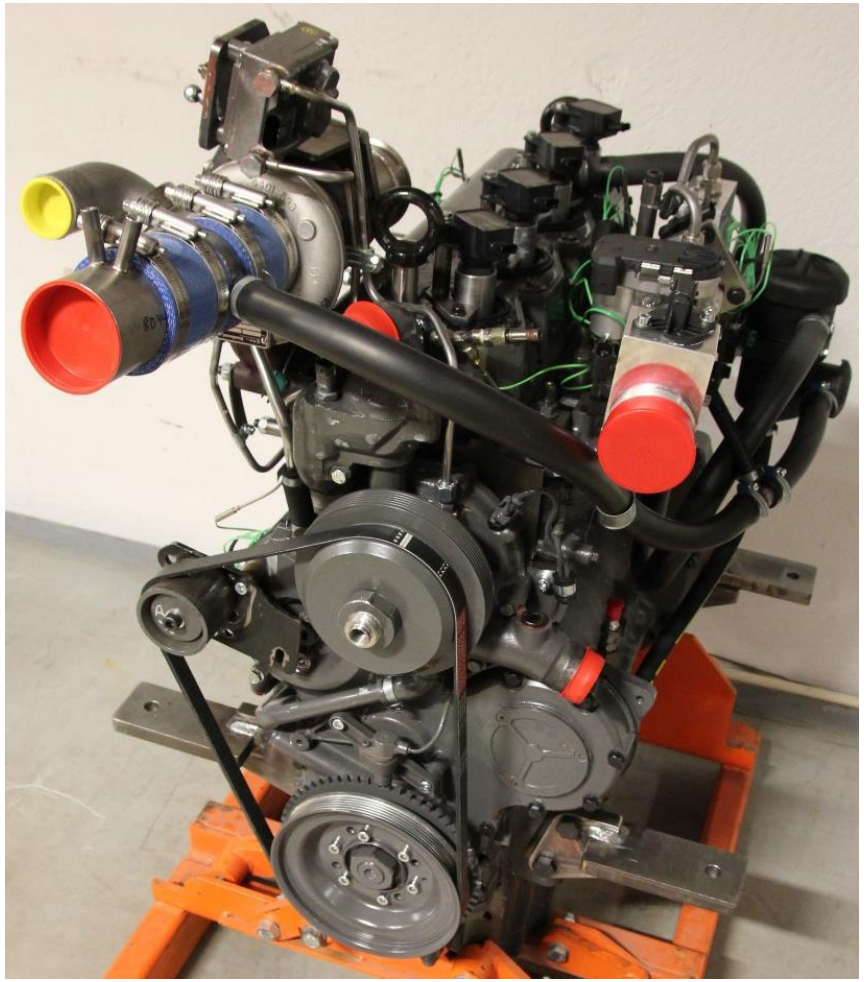
3. RESULTS

3.1 SI biomethane engine ”Gasotto” main specification

- 4 cylinder 4.4 litre engine
- Power 80 kW at 2200 1/min
- Torque 450 Nm at 1400 1/min
- Pistons CR 10:1 and 12:1 were tested, design by AP
- Standard diesel valve timing
- Injection and ignition system by Bosch
- Control SW based on torque request
- Single point gas injection, gas mixer design by AP
- Waste gate turbocharger (CZ), max boost 0.5 bar
- Charge air cooling
- Air system calibration by Bosch
- Knock calibration by Bosch
- EAT (TWC) by Dinex Ecocat

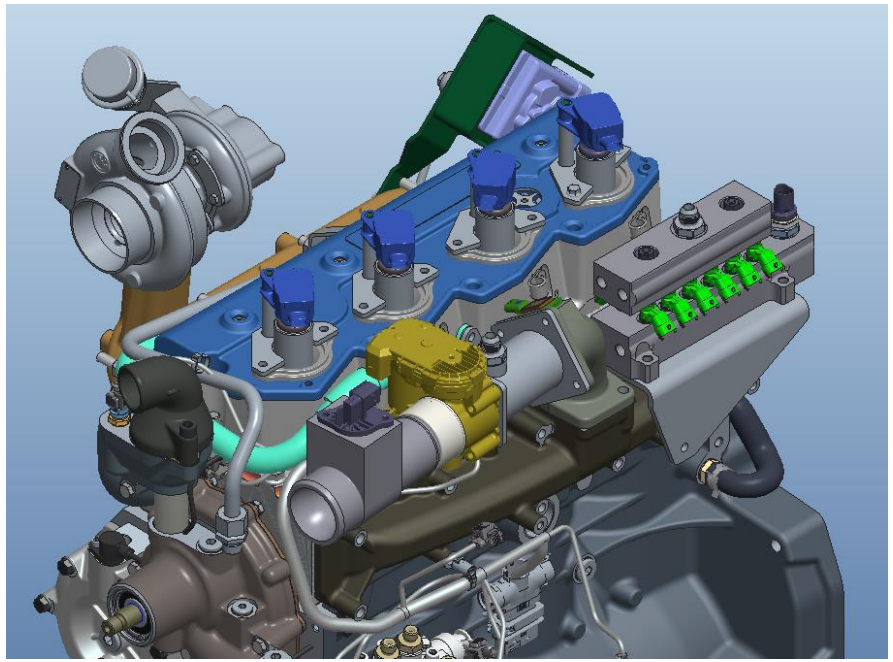


<u>Engine testing:</u>

- Research laboratory : VTT, Otaniemi

3. RESULTS

3.1 SI biomethane engine ”Gasotto”



Performance & Emissions

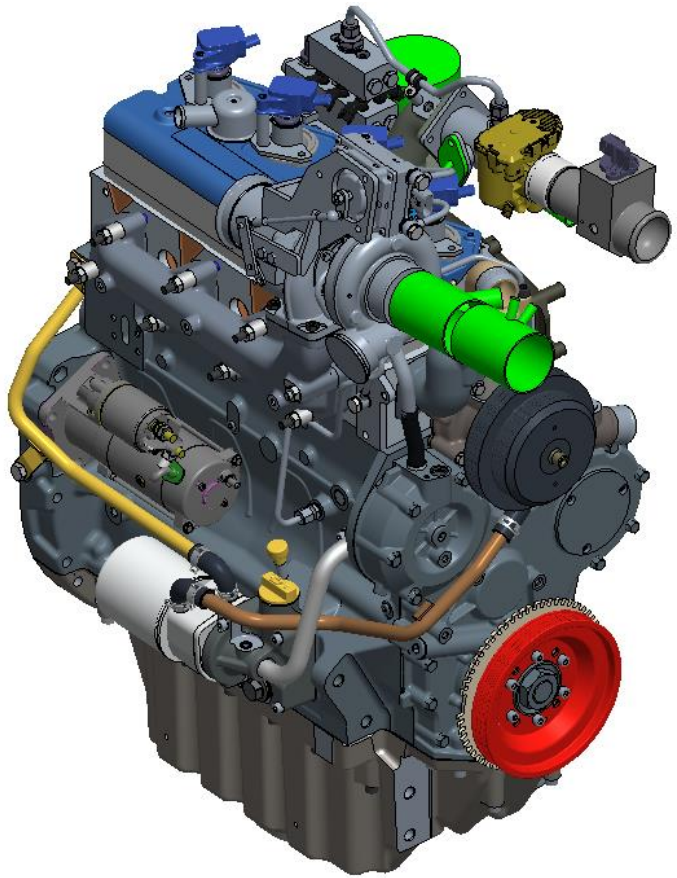
- Torque curve target reached within exhaust gas temperature limit
- Stage V emissions reached
- Engine efficiency comparable with commercial truck & bus gas engines
- Governor of truck-based SW not suitable for tractor application => new one developed for field testing

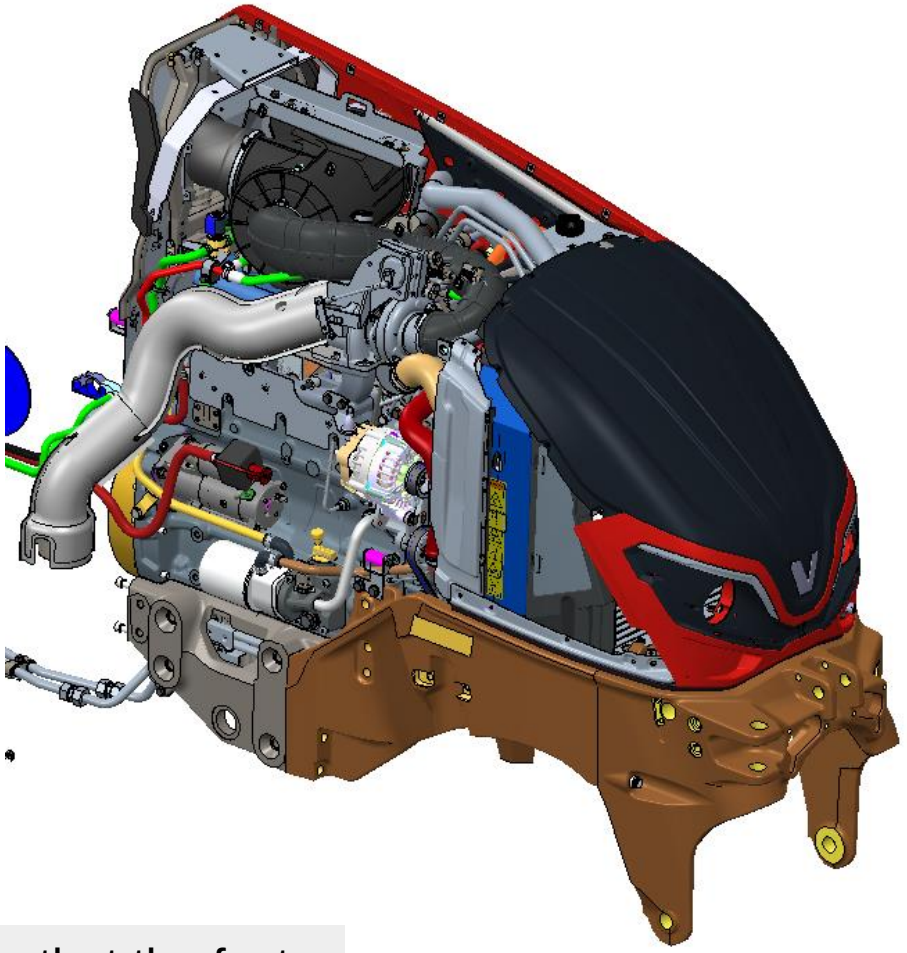
Control software & EAT operation

- Lambda variation not critical for performance & economy, but…
- Lambda = 1 => very poor NOx reduction
- Lambda = 0.99 => complete NOx reduction but too much methane & CO emission
- Programmed lambda fluctuation useful for emission control
- Transient performance needs development but not critical for emissions

PN = Particulate Number

Next steps: Test engine fit for tractor and vehicle tests





The project results were so promising that the fast desicion for 1st vehicle concept build up was made

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