D3.2 – Report on high efficient combustion system

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Publishable summary

This report describes the development of a new combustion concept for Diesel on a Single Cylinder Engine (SCE) which was operated at the premises of MTC in Gothenburg. This work is based on thermodynamic investigations which started prior to this experimental work and partly overlapped during an initial test phase early 2021.

The objective of the combustion system development was to achieve a fast heat release and rising the compression ratio. Advantages from an improved thermodynamic cycle were emulated on the single cylinder engine by adjusting the according boundaries (intake- and exhaust conditions, mass flows, EGR).

The thermodynamic investigation predicted a fuel consumption reduction of 6,3% compared to the baseline engine at an engine-out NOx level of 10 g/kWh. The applied measures rose the peak firing pressure from 180 bar to 260 bar.

The combustion development work described in this report defined the relevant combustion concept and confirmed the achievements predicted by the thermodynamic investigations.

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Project partners:

#	Partner	Partner Full Name
1	FEV	FEV EUROPE GMBH
2	DAF	DAF TRUCKS NV
3	FPT	FPT INDUSTRIAL SPA
4	FORD	FORD OTOMOTIV SANAYI ANONIM SIRKETI
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