

# LONG RUN

## D3.2 – Report on high efficient combustion system

Research Innovation Action

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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 NO<sub>x</sub> 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
5	IRIZAR	IRIZAR S COOP
6	IVECO	IVECO S.p.A.
7	VOLVO	VOLVO TECHNOLOGY AB
8	VDL	VDL ENABLING TRANSPORT SOLUTIONS BV
9	ABEE	AVESTA BATTERY & ENERGY ENGINEERING
10	AVL	AVL LIST GMBH
11	EATON	EATON ELEKTROTECHNIKA SRO
12	GARR	GARRETT MOTION CZECH REPUBLIC SRO
13	IDIADA	IDIADA AUTOMOTIVE TECHNOLOGY SA
14	IFP	IFP Enegeies Nouvelles
15	AVL	AVL MTC MOTORTTESTCENTER AB
16	NESTE	NESTE OYJ
17	PRIMA	PRIMAFRIO SL
18	SHELL	SHELL GLOBAL SOLUTIONS (DEUTSCHLAND) GMBH
19	SIE	SIEMENS INDUSTRY SOFTWARE SAS
20	TECHNA	FUNDACION TECHNIALIA RESEARCH & INNOVATION
21	TOTAL	TOTAL MARKETING SERVICES
22	UMIC	UMICORE AG & CO KG
23	UNR	UNIRESEARCH BH
24	JRC	JRC -JOINT RESEARCH CENTRE – EUROPEAN COMMISSION
25	CHALM	CHALMERS TEKNISKA HOEGSKOLA AB
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