

LONG RUN

D5.1 – SCE adaption to DAF HD application

Research Innovation Action

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Publishable summary

The three objectives of WP5 are engine optimization with a target of up to 50 % brake thermal efficiency (BTE), engine robustness testing for advanced bio-fuels and vehicle optimization by 10 % energy saving. To demonstrate a BTE of 50 % as well as a robustness of advanced bio-fuels, a heavy-duty research single cylinder engine (SCE) has been built-up and will be used for the investigation. The FEV HD SCE used in the study is derived from a six-cylinder heavy-duty commercial vehicle engine of N1 class compliant to Euro VI stage C. The SCE uses a redesigned cylinder head concept for maximum cylinder filling with a non-swirl in-cylinder charge motion reached by intake port layout. Furthermore, the cylinder head allows a maximum peak cylinder pressure (PCP) of up to 300 bar to research engine compression ratios above 21:1. The advanced HD fuel injection system of the SCE considers a maximum rail pressure of 2700 bar and together with a fast reacting injector, is capable of digital injection rate shaping. Additionally, the SCE has been extended by a variable intake valve timing system. The VVT system is used to investigate the further benefits of an extended expansion stroke by Miller cycle.

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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
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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 TECHNALIA 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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