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
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