



REWARD

REal World Advanced Technologies for Diesel Engines

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Project partners:

- 1 - AVL - AVL List GmbH - AT
- 2 - REN - Renault SAS - FR
- 3 - VCC - Volvo Car Corporation - SE
- 4 - CRF - CRF SCpA - IT
- 5 - CNRIM - Istituto Motori – Consiglio Nazionale delle Ricerche (CNR) - IT
- 6 - JM - Johnson Matthey Plc - UK
- 7 - RIC - Ricardo Plc - UK
- 8 - SCF - Schaeffler Technologies AG & Co. KG - DE
- 9 - LMM - Le Moteur Moderne - FR
- 10 - DELPHI - Delphi Automotive Systems Luxembourg S.A. - LU
- 11 - UNR - Uniresearch BV - NL
- 12 - IFPEN - IFP Energies Nouvelles - FR
- 13 - VIF - Virtual Vehicle Research Center - AT
- 14 - CTH - Chalmers Tekniska Högskola - SE
- 15 - CTU - Czech Technical University - CZ
- 16 - UPVLC - Universitat Politècnica de València – Motores Termicos - ES

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Publishable Executive Summary

WP 6 develops new combustion, charging, EGR and after treatment concepts for a light duty diesel engine. This report summarizes the layout and specification of the combustion concept which was carried out until month 18 of the project. The combustion concept is defined by: Compression ratio, Combustion bowl shape, Charging characteristics (boost pressure and swirl), Injector nozzle configuration (nozzle flow, number of holes, spray angle). The specifications of the engine cycle and the EGR concept were mainly carried out in parallel to the combustion development work and are reported in deliverables D6.1 and 6.2.

This report is split into two parts:

Part 1 describes the specification of the combustion concept with CFD. Extensive calculation work was carried out to optimize the air/ fuel mixture formation in the combustion chamber and the combustion process (rate of heat release, Soot and NO formation).

Part 2 describes the experimental work with a single cylinder research engine. With this engine the performance and emission characteristics of the proposed combustion concept was experimentally surveyed.

The result of this work is a completely new, quiescent combustion concept. This concept will be implemented in the multi cylinder engine for further development, adaptation of the aftertreatment system, calibration and final preparation for vehicle integration.