



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
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Publishable Executive summary

Task 4.4 Scavenging optimization

This task objective focuses on the definition of the optimum air management in terms of engine hardware (intake port geometries and exhaust camshaft definitions) and settings (exhaust VVT timing, intake/exhaust pressures, EGR rates...), starting from the base configuration defined in Task 4.1. This task has been carried out combining the design of the scavenging related hardware by means of 3-D simulations using the model developed in Task 4.1 together with experimental activities performed in the SC engine manufactured and delivered in Task 4.

As a result of this Task 4,4, a total of four optimum intake port definitions and two exhaust valve lift profiles have been defined and the most promising combination has been experimentally assessed at different operating conditions. The experimental results confirm how the scavenge performance of this newly designed uniflow engine architecture is suitable for controlling the power demanded by the supercharger required to boost the engine, which results in a direct ISFC-BSFC trade-off benefit.