



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 AG - 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 Valencia – Motores Termicos - ES

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Publishable Executive Summary

This deliverable report documents the characterization and the calibration of the aftertreatment system in the demonstrator vehicle Renault Kadjar/ REWARD. This vehicle contains the revised engine with the new low NOx combustion concept developed by AVL and Renault in one work package of the project. The development target of the new combustion concept was to considerably reduce the engine out NOx emissions and to increase the thermal efficiency. Thus, it was initially considered to apply a non-urea aftertreatment system concept.

However, at mid-term of the project this concept was changed because the layout of the aftertreatment system, which was carried out by Ricardo and JM in the first period of the project, showed that LNT only systems severely struggled over aggressive RDE cycles. Recommended alternatives were PNA+SCRF and LNT+SCRF. The benefit of a PNA+SCRF system over the LNT+SCRF is the reduced cost. As the approach pursued a cost competitive system and due to the novelty of the PNA (respectively the dCSC by JM) the development was continued with the PNA+SCRF concept (with active urea dosing). This was announced and agreed at mid-term of the project.

The aftertreatment system consists of: PNA (1.6 lit) + SCR (1 lit) + SDPF (4 lit). The characterization and calibration of this system was carried out in the vehicle by a successive matching of the urea dosing and engine related measures such as heating and keep warm strategies. It can be concluded, that the aftertreatment system concept and its specification depicts the potential to reach the project targets of REWARD.