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 - Instituto 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 Politecnica de Valencia – Motores Termicos - ES

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Publishable Executive summary

This document details the activities within subtask 2.1.1 of work package 2 (WP2) for the REWARD project. The main activity of this task was to develop new advanced catalyst formulation for DOC/LNT/SCR technologies and to supply selected solutions to vertical WP (catalyst samples).

Johnson Matthey supplied synthetic test rig catalyst characterisation data to Ricardo to enable aftertreatment modelling to be performed over various RDE drive cycle scenarios for subtask 2.1.3. Johnson Matthey also used computer modelling to estimate the backpressure of the different components. There was a high level of interaction between the members within each Workpackage WP2, WP5 and WP6 as there were regular audios and face to face meetings to review the results of the simulation work performed by Ricardo and discuss the next steps and conclusions.

Details are given on the improvements in the performance of the technologies compared to the reference catalysts for each component of the aftertreatment systems considered. The main challenges in all cases are to extend the activity windows of the catalysts, to ensure that they are effective under the most challenging RDE conditions, in particular those linked to city driving. Extensive screening on synthetic gas bench and engine test bed was performed in order to select catalyst formulations that give improvements compared to the reference catalysts. The advanced catalysts show:

- Improved CO, HC and NO oxidation for the DOC
- Improved NOx storage capacity, CO and HC light off for the PNA
- Improved low temperature storage and light-off for the LNT
- Improved activity window for the SCR and SCRF

Parts were supplied or are currently planned to be supplied to WP2, WP5 and WP6 in accordance with the requirements from each Workpackage.