Particle Reduced, Efficient Gasoline Engines

EUROPEAN COMMISSION
Horizon 2020 | GV-2-2016 | Technologies for low emission light duty powertrains
GA # 723954

Deliverable No.	PaREGEn D2.	
Deliverable Title	Final Lean NOx, low PN aftertreatment system	
Deliverable Date	2019-01-31	
Deliverable Type	REPORT	
Dissemination level	Confidential – member only (CO)	
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Status	Final	

Publishable Summary

The initial objective of this Work Package 2 (WP2) is to improve the design of gasoline particulate filters (GPF) to address sub 23nm emissions. Using current vehicle technology and test bench equipment, improved filters will be devised. As part of this process the substrate material, characteristics and geometry will be considered alongside the catalyst coating properties. In parallel with the filter development, there will be an interactive collaboration with WP's 3 and 4 to determine the aftertreatment system for the respective demonstrator vehicles. This is particularly the case for WP4, where a lean NOx system is required and the engine exhaust temperature and composition characteristics will be critical for its design. Ultimately, for both applications, the particulate filter improvements will be integrated into the final exhaust systems supplied.

Deliverable 2.4, 'Final lean NOx/low PN aftertreatment system', is aimed at identifying the proposed combination of upstream catalyst, gasoline particulate filter (GPF) and downstream NOx aftertreatment technology and to suit the combined stoichiometric/lean application in Work Package 4. The system has evolved following initial design and testing at Johnson Matthey and testing on the lean burn WP4 engine at the University of Brighton for Ricardo. Initial test results from a lean single-cylinder engine provided by Jaguar Land Rover were used as a guide to the design of the system. Work is still in progress to refine the design, using feedback from the engine testing. However, there is sufficient information available to define the final components of the aftertreatment system and review the data used to reach this position.

At Johnson Matthey, a combination of test rig and chassis dynamometer vehicle testing has been employed. At the University of Brighton, the lean application engine has been operated at steady conditions.

Appendix A – Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

Project partners:

#	Partner	Partner Full Name
1	RIC	RICARDO UK LIMITED
2	DAI	DAIMLER AG
3	JLR	JAGUAR LAND ROVER LIMITED
4	BOSCH	ROBERT BOSCH GMBH
5	FEV	FEV EUROPE GMBH
6	JM	JOHNSON MATTHEY PLC
7	HON	HONEYWELL, SPOL. S.R.O
8	JRC	JOINT RESEARCH CENTRE – EUROPEAN COMMISSION
9	UNR	UNIRESEARCH BV
10	IDIADA	IDIADA AUTOMOTIVE TECHNOLOGY SA
11	SIEMENS	SIEMENS INDUSTRY SOFTWARE SAS
12	LOGE	LUND COMBUSTION ENGINEERING LOGE AB
13	ETH	EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH
14	UDE	UNIVERSITAET DUISBURG-ESSEN
15	RWTH	RWTH AACHEN UNIVERSITY
16	UFI	UFI FILTERS SPA
17	UoB	UNIVERSITY OF BRIGHTON
18	GARR	GARRETT MOTION CZECH REPUBLIC SRO