PaREGEn

Particle Reduced, Efficient Gasoline Engines

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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 2.2, 'Coated GPF with Excellent sub-23nm Filtration', is aimed at identifying the best gasoline particulate filter (GPF) technology to suit the applications in Work Packages 3 and 4.

A combination of test rig, test bed engine and chassis dynamometer vehicle evaluation has been used. For the latter, both standard and harsh 'real world' drive cycled have been employed.   As there is no regulated method for measuring sub-23nm particles, the equipment and approach used in this activity is explained.

Substrates supplied by NGK have been used in the latter part of this study. There is still some work to be performed, but a point has been reached where it is believed the optimal coating and substrate design has been identified.

Summary

Appendix A – Acknowledgement

The author 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