



D3.4 – Full size catalysts optimized according to the hybrid engine concept

Innovation Action

EUROPEAN COMMISSION

Grant Agreement No. 874972

HORIZON 2020 PROGRAMME

Topic LC-GV-04-2019

Low-emissions propulsion for long-distance trucks and coaches

Deliverable No.	LONGRUN D3.4	
Related WP	3	
Deliverable Title	Full size catalysts optimised according to the hybrid engine concept	
Deliverable Date	2022-03-31	
Deliverable Type	Demonstrator	
Dissemination level	Confidential – member only (CO)	CO
Written By	Joachim Kreuz, Dr. Andreas Geisselmann (all UMICORE)	2022-04-28
Reviewed by (if applicable)	Georg Kaufmann (AVL)	2022-05-04
Reviewed by (if applicable)	Louise Olsson (Chalmers)	2022-05-20
Approved by	Lukas Virnich (FEV)	2022-05-31
Status	Final	2022-05-28



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 874972.

Publishable summary

This report describes the development of catalysts and filters optimized according to the hybrid engine concept for engines operated with Diesel fuel and optionally with blends of Hydrogenated Vegetable Oil (HVO) by Umicore.

It includes the definition of coating formulation and catalyst design according to the catalytic performance needed to enable the defined system architecture.

The investigation of the optimum aftertreatment system architecture started with an experience-based assessment of 26 system configurations together with AVL and VOLVO who are partners of WP2, Sub-Task ST2.3.2. Here five architectures were selected for detailed investigations. The simulation results leading to the final EAS architecture to lowest NO_x and N₂O emissions with two SCR-stages using an electrical heater for improved system heat-up. Vanadium-based SCR technology was selected and delivered in view of best N₂O emission compliance.

The selected catalysts consider the proposed optimum system by simulation, the outcome of D2.7 in WP2.

Finally, UMICORE prepared the full-size catalysts and delivered them to VOLVO for engine bench testing.

7 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	FEV	FEV EUROPE GMBH
2	DAF	DAF TRUCKS NV
3	FPT	FPT INDUSTRIAL SPA
4	FORD	FORD OTOMOTIV SANAYI ANONIM SIRKETI
5	IRIZAR	IRIZAR S COOP
6	IVECO	IVECO S.p.A.
7	VOLVO	VOLVO TECHNOLOGY AB
8	VDL	VDL ENABLING TRANSPORT SOLUTIONS BV
9	ABEE	AVESTA BATTERY & ENERGY ENGINEERING
10	AVL	AVL LIST GMBH
11	EATON	EATON ELEKTROTECHNIKA SRO
12	GARR	GARRETT MOTION CZECH REPUBLIC SRO
13	IDIADA	IDIADA AUTOMOTIVE TECHNOLOGY SA
14	IFP	IFP Energies Nouvelles
15	AVL	AVL MTC MOTORTTESTCENTER AB
16	NESTE	NESTE OYJ
17	PRIMA	PRIMAFRIO SL
18	SHELL	SHELL GLOBAL SOLUTIONS (DEUTSCHLAND) GMBH
19	SIE	SIEMENS INDUSTRY SOFTWARE SAS
20	TECHNA	FUNDACION TECHNIALIA RESEARCH & INNOVATION
21	TOTAL	TOTAL MARKETING SERVICES
22	UMIC	UMICORE AG & CO KG
23	UNR	UNIRESEARCH BH
24	JRC	JRC -JOINT RESEARCH CENTRE – EUROPEAN COMMISSION
25	CHALM	CHALMERS TEKNISKA HOEGSKOLA AB
26	RWTH	RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN
27	TU/e	TECHNISCHE UNIVERSITEI EINDHOVEN
28	TUG	TECHNISCHE UNIVERSITAET GRAZ
29	UNIAQ	UNIVERSITA DEGLI STUDI DELL'AQUILA
30	VUB	VRIJE UNIVERSITEIT BRUSSEL

7.1 Disclaimer

Copyright ©, all rights reserved. This document or any part thereof may not be made public or disclosed, copied or otherwise reproduced or used in any form or by any means, without prior permission in writing from the LONGRUN Consortium. Neither the LONGRUN Consortium nor any of its members, their officers, employees or agents shall be liable or responsible, in negligence or otherwise, for any loss, damage or expense whatever sustained by any person as a result of the use, in any manner or form, of any knowledge, information or data contained in this document, or due to any inaccuracy, omission or error therein contained.

All Intellectual Property Rights, know-how and information provided by and/or arising from this document, such as designs, documentation, as well as preparatory material in that regard, is and shall remain the exclusive property of the LONGRUN Consortium and any of its members or its licensors. Nothing contained in this document shall give, or shall be construed as giving, any right, title, ownership, interest, license or any other right in or to any IP, know-how and information.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 874972. The information and views set out in this publication does not necessarily reflect the official opinion of the European Commission. Neither the European Union institutions and bodies nor any person acting on their behalf, may be held responsible for the use which may be made of the information contained therein.