



AEROFLEX

Aerodynamic and Flexible Trucks for Next Generation of Long Distance Road Transport

**EUROPEAN COMMISSION
Horizon 2020 | GV-09-2017 | Aerodynamic and Flexible Trucks
GA - 769658**

Deliverable No.	AEROFLEX D3.1	
Deliverable Title	Report on selection of concepts	
Deliverable Date	2018/04/30	
Deliverable Type	REPORT	
Dissemination level	Confidential – members only (CO)	
Written By	Per Elofsson (Scania)	2018/04/26
Checked by	Magnus Olbäck (Volvo) Michiel van Nesselrooij (DAF)	2018/04/26 2018/04/26
Approved by	Cor van der Zweep (Uniresearch) Ben Kraaijenhagen (MAN) - Coordinator	2018/04/27
Status	FINAL	2018/04/27



Publishable Executive Summary

This document is Deliverable D3.1 of the AEROFLEX project. It describes different concepts, with the aim of reducing the aerodynamic drag for heavy trucks, and provides initial estimates of the drag reduction potential of the concepts. Based on the work performed in the Task 3.1 , both a set of concepts that should be investigated further within the Work Package and a set of concepts for which no further work will be performed within the project have been identified. Recommendations for further work on the selected concepts, and motivations for not promoting some concepts are also described in the report.

As a result of the work conducted in this Task, it has been decided to proceed with most of the initially defined concepts for reduced aerodynamic drag. For the concepts adjustable underbody fairing, adjustable air dam, rotating cylinders and porous surfaces, no further development will be made within the current project. The decision to stop the development work on these concepts was based on a combination of low or uncertain drag reduction potential, high complexity and redundant functionality (identical functionality achieved with a different concept).

The drag reduction potential from the selected concepts have different level of confidence. Some estimates are based on detailed CFD simulations or wind tunnel tests on truck geometries, whereas others are based on published research results on other vehicles types or bluff bodies. This is in line with the plan for the Work package, where detailed performance estimates will be available once the concepts have been developed further in the Tasks that follow. A summary of the initial performance estimates and a comparison with the targets for Work package 3 (WP3) are shown in table 0-1 below. The uncertainty of the estimates are higher at this initial phase of the AEROFLEX project, but based on the preliminary drag reduction numbers, it is expected that all KPI's for WP3 will be met during the project.

Case	Estimated $\Delta C_D A$ [m ²]	Estimated $\Delta C_D A$ [%]	Targeted $\Delta C_D A$ [%]
Tractor semi-trailer (16.5m)	1.38-2.39	22-39	25
EMS truck trailer (25.25m)	1.38-2.43	17-30	17
Demonstrator (EMS 25.25m)	1.34-2.25	16-27	15

Table 0-1 Estimated and targeted drag reduction for the considered vehicle combinations in WP3.

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	MAN	MAN TRUCK & BUS AG
2	DAF	DAF Trucks NV
3	IVECO	IVECO S.p.A
4	SCANIA	SCANIA CV AB
5	VOLVO	VOLVO TECHNOLOGY AB
6	CRF	CENTRO RICERCHE FIAT SCPA
7	UNR	UNIRESEARCH BV
8	SCB	SCHMITZ CARGOBULL AG
9	VEG	VAN ECK BEESD BV
10	TIRSAN	TIRSAN TREYLER SANAYI VE TICARET A.S.
11	CREO	CREO DYNAMICS AB
12	MICH	MANUFACTURE FRANCAISE DES PNEUMATIQUES MICHELIN
13	WABCO	WABCO Europe BVBA-SPRL
14	CHALM	CHALMERS TEKNISKA HOEGSKOLA AB
15	DLR	DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV
16	FHG	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
17	HAN	STICHTING HOGESCHOOL VAN ARNHEM ENNIJMEGEN HAN
18	IDIADA	IDIADA AUTOMOTIVE TECHNOLOGY SA
19	NLR	STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM
20	TML	TRANSPORT & MOBILITY LEUVEN NV
21	TNO	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO
22	MHH	MEDIZINISCHE HOCHSCHULE HANNOVER
23	UIRR	UNION INTERNATIONALE DES SOCIETES DE TRANSPORT COMBINE RAIL-ROUTE SCRL
24	WABCO-NL	WABCO AUTOMOTIVE BV
25	WABCO-DE	WABCO GMBH



This project has received funding from the European Union's Horizon2020 research and innovation programme under Grant Agreement no. **769658**.

Disclaimer

This document reflects the views of the author(s) and does not necessarily reflect the views or policy of the European Commission. Whilst efforts have been made to ensure the accuracy and completeness of this document, the AEROFLEX consortium shall not be liable for any errors or omissions, however caused.