



AEROFLEX

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

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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
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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.