

## Aerodynamic Analysis of a Frontal Deflector for Vehicles

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**Abstract :** This work was one of the tasks of the Manufacturing2Client project, whose objective was to develop a frontal deflector to be commercialized in the automotive industry, using new project and manufacturing methods. In this task, in particular, it was proposed to develop the ability to predict computationally the aerodynamic influence of flow in vehicles, in an effort to reduce fuel consumption in vehicles from class 3 to 8. With this aim, two deflector models were developed and their aerodynamic performance analyzed. The aerodynamic study was done using the Computational Fluid Dynamics (CFD) software Ansys CFX and allowed the calculation of the drag coefficient caused by the vehicle motion for the different configurations considered. Moreover, the reduction of diesel consumption and carbon dioxide (CO<sub>2</sub>) emissions associated with the optimized deflector geometry could be assessed.

**Keywords :** erodynamic analysis, CFD, CO<sub>2</sub> emissions, drag coefficient, frontal deflector, fuel consumption

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