

A Development of Aerodynamic Drag Reduction Technology for 2Box Shape Vehicle

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Abstract

In fiscal year 2010, this project tried to clarify the vortex structure behind the 2Box vehicle using highly accurate Large Eddy Simulation (LES) on the Earth Simulator. The result showed that there is a relationship between a ring shape vortex and aerodynamic drag on vehicle backward face.

In fiscal year 2011, this project tried to reduce aerodynamic drag of the 2Box vehicle with decreasing tilt angle of back window which is generally known to lead to aerodynamic drag increase. Vortex structure formed liner shape instead of ring shape in the wake of 2Box vehicle with decreasing tilt angle of back window. Large scale simulations, which were constructed of number of 400 million grids, were implemented because vortex structure differed from that of fiscal year 2010. It is estimated that aerodynamic drag of linear shape vortex structure is higher than that of ring shape vortex structure.

Keywords: Car, Aerodynamic, Unsteady Flow, LES, Aerodynamics Drag, Vortex