The focus of this paper is presenting a concept survey done for lowering the aerodynamic coefficient of heavy road vehicles. There were two target vehicles, a long distance bus and a vehicle combination of 25.25 meters and 60 ton. This combination is allowed on road in Finland and some other countries like Sweden.

The main objectives were to raise discussion about the potential of aerodynamics in the case of heavy road vehicles in Finland and to test one technical solution to improve the aerodynamic performance of the end of the trailer. This solution is called virtual boat end and it is based on flow of pressurized air from the trailing edges of the trailer.

It was agreed, at the beginning of the project that the goal was to cut the aerodynamic coefficient in half. Because of such a target, it was agreed not to follow normal technical and economical characteristics of today’s truck engineering. In Finland there has been over last 18 years a coordinated research consortium dealing with traffic energy matters rising from various aspects. In the sub-projects of research programs, there has been regular discussion of the possibilities of aerodynamics in heavy vehicle engineering. In this paper also a chapter is reserved for presenting other results having effect towards lower fuel consumption of heavy road vehicles arising from these projects.

Better aerodynamics has benefits in various sectors like fuel consumption, driving performance and demanded engine torque, water spray, fouling and noise emission. These aspects and their magnitude are not discussed in this paper. The focus is in the aerodynamics.

Most of the solutions and principles to lower the aerodynamic coefficient of vehicles have been known for decades. However they have not found favour among industry and operators. There have been challenges to adapt them with everyday operation, fear of compatibility between tractors and trailer as well as insufficient payback assumptions.

It was found that, as expected, the aerodynamic coefficients of the modified models are significantly lower than the reference.