ABSTRACT

Due to the continuous increase in fuel costs, there is a growing reward for an increase in fuel efficiency, especially for vehicles that travel great distances such as tractor-trailers. If one were able to reduce the aerodynamic drag of these vehicles, less power would be required to sustain the same speeds, which in turn would require less fuel usage. One way to reduce the drag is to modify the geometry between the cab and the trailer. Wind tunnel tests were conducted at yaw angles between 0º and 9º to test the effect of different modifications on the overall aerodynamic drag. Devices with varying number of sides, percentage of gap filled, and device-cab seals were conducted. Statistical methods outlined by SAE were performed to evaluate the overall best performer. It was found that a 3-sided device with complete seal performed the best. Also, it was found that maintaining a perfect seal between the device and the trailer produced a significant reduction in the aerodynamic drag.