

Abstract Submitted  
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**Aerodynamic Improvements to Cargo Carrying Rail Cars due to Roof Modifications** ROBERT CONDIE, DANIEL MAYNES, Brigham Young University — The aerodynamic drag associated with the transport of commodities by rail is becoming increasingly important as the cost of diesel fuel increases. We provide an assessment of the influence of the roof structure on aerodynamic performance of two dissimilar rail cars, namely automobile carrying cars and coal carrying cars. Currently, the roof material for automobile carrying rail cars is corrugated steel, with the corrugation aligned perpendicular to the direction of travel. Coal cars are currently left uncovered for loading convenience and on the return leg from the power plant are empty. Aerodynamic drag data have been obtained through wind tunnel testing on 1/29 scale models to understand the savings that may be realized by judicious modification to the tops of both these car types. For the automobile-carrying cars, testing is performed for the corrugated and smooth roof configurations. This modification alone has the potential of reducing the car drag coefficient by nominally 25%. A broader study is performed for the coal cars, with data being acquired for coal filled models, empty models, and several cover prototype configurations. The results reveal that implementation of a cover may yield reductions in the aerodynamic drag for both coal filled (nominally 7%) and empty coal cars (nominally 30%).

Robert Condie  
Brigham Young University

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