

Abstract

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Improving Vehicle Windshield Defrosting and Demisting

This paper examines the prevailing fluid flow and heat transfer on the windshield of a full-scale vehicle and examines ways of promoting efficient de-icing and demisting. It establishes that present methods of defrosting and demisting windshields are inefficient; since the first area cleared is below the driver's eye level and even this result only occurs some considerable time after the blower has been switched on. The complexity of the windshield topography and the defroster nozzle geometry yield inadequate flow mixing, poor momentum interchange and consequently dead flow zones in critical visibility areas. This study explores ways of improving the defrosting and demisting process through passive means and using the existing air handling system of the vehicle. The results presented are from numerical simulations validated by experiment.