

# **Abstract**

**Amr A. Mohamed Mohamed Hassan**

## **Assessing the performance of electrically heated windshields**

The safety and comfort aspects of passenger vehicles are significant sales argument and have become a topic of rising importance during the development process of a new vehicle. The objective of this study is to compare the performance of several current model vehicles, highlight the drawbacks of current defrosting/demisting systems and point the way to improved passive mechanisms. The investigation is experimental. The work presented is an experimental and numeric investigation of the clear-up pattern of a current vehicle fitted with an electrically heated windshield. Nottingham FDL climatic wind tunnel is used to perform the experimental tests. The clear up pattern developed utilising the vehicle defroster system is digitally captured and compared to the clear up pattern developed utilising the electrical heated windshield. Moreover, the clear up pattern developed using the vehicle defroster system is used to validate a computational model. The aim is to build a confidence on the relatively new developed numerical tools for phase change simulation. The design features of electrically heated windshields and the associated gadgets are briefly discussed. With the predicted shift to use 42V powernet, the market will require more vehicles to be installed with electrically heated windshields. The main benefit to the vehicle customer is the convenience of reducing the clear up times.