Study of the Regional Air Conditioning of the Intelligent Vehicle Cabin

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ABSTRACT

Vehicles have already become main means of transportation in people's life. If vehicles can be more comfortable, safe, energy efficient and humanization, it will be great good news to people. This study introduces an “ air flow management ” technique to control the air flow structures in the vehicle cabin for the purpose of regional steady state temperature. With this new concept, each passenger in different area of the compartment can be satisfied in their unique demands of temperature. The air flow is controlled by properly arranged air inlets and outlets with fans for the modulation of air flow directions and volumes. According to the experimental results, air flow from outlets could be managed easily within certain area no matter with or without the thermal manikin. Therefore, temperature in certain area can be controlled by the modulation of air flow structure. Besides, outside heat radiation, physiology heat and objects in the cabin have no effects on the results of temperature management. The concepts in this study are also effective to all kinds of regional air conditioning in any enclosed space.

Keywords : Air Flow Management, Regional Air Conditioning, Air Flow Structures

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