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Abstract
In the present study, the solar power is applied to drive the blower to reduce the indoor air temperature of the vehicle. Besides, the effects on the fuel consumption of the vehicle air conditioner are also investigated. In the past, most of the previous studies are trying to reduce the indoor air temperature of the vehicle but those effects are not obvious; moreover, the corresponding manufacturing cost is very huge and the structure is complex which are not meet the economy. Therefore, present study tries to utilize the electric energy which is switched from the solar panel to run the blower so as to transfer the air from outside into inside to reduce the indoor air temperature without wasting any energy of the vehicle.
The boundary conditions of the vehicle were derived by using the heat transfer theory and then the thermal-fluid flow can thus be solved by applying the software, STAR-CD. The present study proposes that a practical and effective cooling load prediction method will decrease the time and money on developing a new vehicle.
These results show that as the blower increases the exchange of the air, it also helps decrease the indoor air temperature of the vehicle.
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