

عنوان مقاله:

Numerical evaluation of the defrosting/defogging performance of HVAC system in the main product of the national vehicle platform

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خلاصه مقاله:

Due to the increasing development in various branches of the automotive industry, the need for a comfort climate in the cabin is more sensible. However, to achieve climate comfort, HVAC system consumes a considerable amount of engine power. Hence, improving HVAC system performance leads to more energy saving of the vehicle which is a critical factor for nowadays automotive. Besides, one crucial task of HVAC system is defrosting/defogging of windshield which is considered as a mandatory requirement in most countries. In the current study, the defrosting/defogging performance of HVAC system in the main product of national vehicle platform is numerically evaluated based on the ECE-78-715 legal requirement. For this purpose, after validation and mesh independency study, the transient air flow in three-dimensional cabin geometry is simulated by SSTk- $\omega$  turbulence model via ANSYS Fluent software and the windshield thermal condition is reported during defrosting/defogging. Besides, two national HVAC standards of AERC-10001 and AERC-10002 are also checked. The results demonstrate that HVAC system of the main product of the national vehicle platform can satisfactorily fulfill .ECE-78-715, AERC-10001 and AERC-10002

کلمات کلیدی:

defrosting/defogging performance, HVAC system, numerical evaluation, main product of the national vehicle platform, ECE-78-715

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