

Thermal Characterization of Commercial Electric Radiators

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Abstract :

Electric radiators with a storage element are commonly used to provide heating in cold weather. The thermal performance of an electric radiator is dependent on a number of key design features such as the core material, shape of radiator's outer surfaces, gap between the core and the outer surfaces. The effectiveness of an electric radiator can be improved by optimally designing these key features. Researchers around the world have been working to achieve this using a range of different methodologies. In the present study, two commercial electric radiator models have been considered for their thermal characterisation during their individual heating and cooling cycles. This has been carried out in order to evaluate the thermal behaviour of the two models. To achieve this aim, a purpose built test rig has been developed and the thermal testing has been carried out in a controlled environment. A thermal camera has been used to take thermal images of the front surfaces of the two models at every 5 minutes' interval enabling quantification of temperature field. It has been observed that the two electric radiator models considered depict different thermal characteristics. The heat dissipation characteristics of both the models have also been noticed to be different to each other.

Mots clefs : Electric Radiator, Thermal Camera, Surface Temperature, Radiator Core.