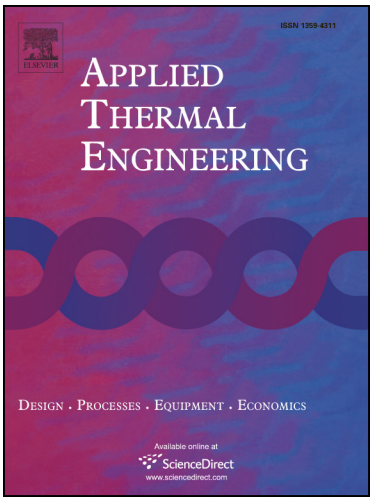

Research Paper

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Annual Energy Consumption of Electric Vehicle Air Conditioning in China

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Highlights

- Energy consumption model of electric vehicle air conditioning is established.
- Annual energy consumption of air conditioning in 30 cities across China are presented.
- The energy-saving of heat pump heating compared to resistor heater is illustrated.

Abstract

As the largest energy consumption auxiliary device on the electric vehicle, the energy consumption of air conditioning system has a great impact on total energy efficiency. A comprehensive model is established in this article to evaluate the total annual energy consumption of electric vehicle air conditioning system in different cities across China. The major influencing factors, such as climate data, vehicle-use intensity, average driving speed and the performance of air conditioning system are taken into consideration based on a cabin thermal comfort and climate control load approach. With the model, the energy consumption of air conditioning system in light duty vehicles is analyzed in 30 province capital cities across China. The fit curves of heating energy consumption to latitude are also given. It is