

Transcritical CO₂ system for automotive heat pump applications

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Abstract:

Modern vehicles with energy efficient engines have less waste energy available for heating. Quick warm-up is also a significant comfort advantage. Both of these functions could be obtained by turning an air conditioner into a reversible system with heat pump operation. CO₂ offers good performance and experimental results of a prototype system will be presented in the paper.

New generation of heat exchangers and compressor are used for the automotive air conditioning system used for the project that will be presented while operating in heat pumping mode.

The paper presents heating capacity and heating performance factor at different steady and warm-up scenarios. Objective functions in controlling operating parameters are capacity, heating performance factor and air discharge temperature.