Experimental evaluation of automotive air-conditioning using HFC-134A and HC-134A

Abstract

An experimental study to evaluate the energy consumption of an automotive air conditioning is presented. In this study, these refrigerants will be tested using the experimental rig which simulated the actual cars as a cabin complete with a cooling system component of the actual car that is as the blower, evaporator, condenser, radiators, electric motor, which acts as a vehicle engine, and then the electric motor will operate the compressor using a belt and pulley system, as well as to the alternator will recharge the battery. The compressor working with the fluids HFC-134a and HC-134a and has been tested varying the speed in the range 1000, 1500, 2000 and 2500 rpm. The measurements taken during the one hour experimental periods at 2-minutes interval times for temperature setpoint of 20°C with internal heat loads 0, 500, 700 and 1000 W. The final results of this study show an overall better energy consumption of the HFC-134a compared with the HC-134a.