

Analysis of a Multiejector Cooling System in a Truck at Different Loads

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Abstract : An alternative way of addressing the difficult to recover the useless heat is through an ejector refrigeration cycle for vehicles applications. A group of thermo-compressor supply the mechanical compressor function at conventional refrigeration compression system. The thermo-compressor group recovers the thermal energy from waste streams (exhaust gases product in internal combustion motors, gases burned in wellhead among others) to eliminate the power consumption of the mechanical compressor. These types of alternative cooling system (air-conditioners) present a kind of advantages in both the increase in energy efficiency and the improvement of the COP of the system being studied from their its mechanical simplicity (decrease of moving parts). An ejector refrigeration cycle represents a significant step forward in the optimization of the efficient use of energy in the process of air conditioning and an alternative to reduce the environmental impacts. On one side, with the energy recycling decreases the temperature of the gases thrown into the atmosphere, which contributes to the principal beneficiaries of the average temperature of the planet. In parallel, mitigating the environmental impact caused by the production and handling of conventional cooling fluids commonly available in the market, causing the destruction of the ozone layer. This work had studied the operation of the multiejector cooling system for a truck with a 420 HP engine at different rotation speed. The operation condition limits and the COP of multi-ejector cooling systems applied in a truck are analyzed for a variable rpm range from to 800-1800 rpm.

Keywords : ejector system, exhaust gas, multiejector cooling system, recovery energy

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