

NUMERICAL AND EXPERIMENTAL TESTING OF THE THERMODYNAMIC EFFICIENCY OF HEAT PUMPS

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Abstract

A new method of settlement and experimental testing of the thermodynamic efficiency of the heat pump, which allows for a limited number of measured parameters to estimate the power consumption of the produced heat. Using entropy-statistical approach Gordon - Ng formed semi-empirical thermodynamic model, which allows to take into account the real value of the internal energy dissipation in the cycle and to evaluate the effectiveness of the heat pump at partial load.

The program complex for processing the results of the monitoring system heat pump heating and cooling of the office building in real time. According to test results of the heat pump revealed that the model VMN430L used operated with incomplete load share (80%). This leads to an increase in irreversibility losses from at 7,3 ÷ 10 % compared to full load mode. Moreover, the model has VMN430L low efficiency in operation at ambient temperatures from -5 to 0 °C and humidity 80 – 85 %.