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EFFICIENCY COMPARISON OF THERMODYNAMIC CYCLES OF LITHIUM BROMIDE-WATER ABSORPTION REFRIGERATION MACHINES

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The energy efficiency analysis of the actual thermodynamic cycles of lithium bromide-water absorption refrigeration machines (ABLRM) with single- and multi-stage processes of absorption and generation and with associated mass flow is carried out. The temperature influence analysis of the heating and cooling sources on the heat coefficient is performed. Parameters of external sources that allow implementation of these thermodynamic cycles are determined. Meanwhile, for cycles with two-stage absorption and generation processes, a heating source with temperature (20—24)°C lower in comparison with the basic single-stage cycle, and for a cycle with three-stage processes—lower by (27—30)°C is required. It has been established that with the accepted parameters of external sources, the actual coefficient of performance is within the limits: for a single-stage ABLRM) it is 0,68—0,74, for a two-stage ABLRM, it is 0,36—0,39 and for a three-stage ABLRM, it is 0,24—0,26.

Keywords: efficiency, actual thermodynamic cycle, lithium bromide-water absorption refrigeration machine (ABLRM), coupled mass flow, coefficient of performance.

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