AMMONIA HEAT-EXCHANGERS FOR REFRIGERATION. PART.1: DYNAMIC REGIME MODELLING

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ABSTRACT

The main purpose of this paper is the dynamic analysis of new, and old, ammonia as refrigerant in refrigeration systems, and to study the behavior of the phase-change heat-exchangers as component of the whole refrigeration system. Permanent modification of the operating conditions for the refrigeration systems are stressed by changes in temperature regime, pressure mass flow, heat transfer conditions and by changes of the thermal load. These facts have imposed the approach of the refrigeration systems from the dynamic modeling point of view of the functioning regime. The dynamic regime modelling of heat exchangers has been made considering a lumped parameter system and a new approach for heat transfer using recent correlations for heat transfer coefficients of enhanced surfaces. The advantage brought by this dynamic approach is that it makes possible the study of lowering the refrigerant charge in a plant, the improvement of constructive solution for shell tube exchanger

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