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Digital Simulation of the Thermodynamics of a Reciprocating Compressor.

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ABSTRACT

A model of the thermodynamics of an open, reciprocating compressor has been developed on the basis of extensive measurements. From these the heat transfer between the control volumes corresponding to the parts of the compressor taking part in the internal heat transfer, is determined. On the basis of this a mathematical model of the internal and the external heat transfer, the thermodynamics of the refrigerant and the efficiencies of the compressor was developed.

Real data are used for the refrigerant, R-12. Sub-routines of the thermodynamic properties are included in the compressor simulation program.

The simulation program is short and is therefore economical and practical in use. Furthermore it is general in its form and can be used to other types of open compressors, and, with some modifications, to hermetic compressors too.