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Testing of refrigerant compressors

Essais des compresseurs pour fluides frigorigènes

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 86, *Refrigeration and air-conditioning*, Subcommittee SC 4, *Testing and rating of refrigerant compressors*.

This first edition of ISO 18976 is a technical revision of ISO 917:1989, which was withdrawn in 2015.

The main changes are as follows:

— addition of two stage and economized compressors;

— Clause 2 was updated;

— Clause 3 was updated, additional terms defined because of, for example, refrigerant blends with temperature glide;

— addition of the new Clause 4 “Uncertainty of measurement and test conditions”;

— deletion of the list of measuring devices;

— extraction of calibration of calorimetric methods into a separate clause;

— addition of transcritical application;

— addition of test requirements for inverter driven compressors;

— addition of cyclic capacity control;

— reference point numbering, symbols and indexes revised to allow for economised compressors and to simplify formulae;

— former Annex B regarding the list of symbols was moved under Clause 3;

— the text content of former Annex C was revised and is now Annex B “Estimation of errors”;

— document was editorially revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Testing of refrigerant compressors

1 Scope

This document applies to single stage, two stage and economised refrigerant compressors. Selected test methods are described for the determination of the refrigerating capacity, the power input, the isentropic efficiency and where possible the volumetric efficiency. These test methods provide results of sufficient accuracy to permit consideration of the suitability of a refrigerant compressor to operate satisfactorily under any set of basic test conditions required for a given application.

NOTE Tests on complete refrigeration installations are dealt with in ISO 916.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and symbols

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms and definitions

3.1.1
refrigerating capacity
Q
product of the refrigerant mass flow at the compressor inlet port and the difference between the specific refrigerant enthalpy at the compressor inlet port and the specific enthalpy of fluid entering the evaporator expansion device

3.1.2
subcooling
difference between the bubble point temperature of the refrigerant corresponding to its pressure and the temperature of the liquid refrigerant

3.1.3
power input
P
power demand to drive the compressor

Note 1 to entry: The determination of the power input is specified in Clause 7.

3.1.4
coefficient of performance
COP_R
ratio of the refrigerating capacity to the power input

Note 1 to entry: Both, refrigerating capacity and power input are at the specified test condition.