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Performance rating of centrifugal refrigerant compressor

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

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.

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Performance rating of centrifugal refrigerant compressor

1 Scope

This document specifies the ~~normative reference, terms and definitions,~~ rating requirements, published ~~rating~~ratings and marking ~~provision~~provisions of centrifugal refrigerant ~~compressor~~compressors. This document applies to centrifugal compressors and their ~~presentation of~~ performance in heating, ventilation and air-conditioning applications. ~~The manufacturer is solely responsible for the determination of values to be used in published product information.~~

This document provides guidance and requirements for the industry, including manufacturers, engineers, installers and contractors. It defines the minimum amount of information in a ~~standard~~standardized form to enable the evaluation and comparison of different compressors for use in an application and suggests a method to be used to guarantee the accuracy of that information.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 18976, *Testing of refrigerant compressors*

IEC 60038, *IEC standard voltages*

3 Terms and definitions

For the purposes of this document, the following terms and definitions ~~given in ISO 18976 and the following~~ apply.

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

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

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

3.1 ~~3.1~~
centrifugal refrigerant compressor
compressor relying on the impeller ~~to do work on the refrigerant vapour~~ to increase the pressure and kinetic energy of the refrigerant vapour before a portion of the kinetic energy is converted into pressure in the diffuser

Note 1 to ~~Entry: For clarity of~~ entry: In this document, the term compressor implies centrifugal refrigerant compressor.

3.2 ~~3.2~~
refrigerating capacity
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

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3.3 ~~3.3~~
economizer
heat exchanger or flash tank that is used to lower the liquid specific enthalpy of the refrigerant entering the evaporator while producing vapour that is reintroduced to the compression process

3.4 ~~3.4~~
head factor
HF
ratio of isentropic enthalpy rise at each stage of the compressor to the square of suction sonic velocity~~, a dimensionless parameter~~

~~3.5~~Note 1 to entry: This is a dimensionless parameter.

3.5
heating capacity
product of the refrigerant mass flow leaving the compressor discharge port and the difference of the specific refrigerant enthalpy at the discharge port and the outlet of the condenser or gas cooler

3.6 ~~3.6~~
heating coefficient of performance
C_{OPh}
ratio of heating thermal capacity to the power input

Note 1 to entry: This is a dimensionless parameter.

~~**3.7**~~
~~**hermetic compressor**~~
~~compressor assembly containing a motor within a gas-tight housing that is permanently sealed by welding or brazing with no access for servicing internal parts~~

~~Note 1 to entry: A terminal box, a terminal box cover and other electrical components or an electronic control system may be included.~~

~~**3.8**~~
~~**semi-hermetic compressor**~~
~~compressor and motor assembly within a gas-tight housing that is sealed by gasketed joints to provide access for servicing internal parts~~

~~**3.9**~~
~~**open type compressor**~~
~~compressor with a shaft or other moving part extending through its casing to be driven by an outside source of mechanical power~~

3.7 ~~3.10~~
application envelope
allowable operation range of the compressor based on the suction dew-point and discharge dew-point

3.8 ~~3.11~~
overall compressor efficiency
η_{all}
ratio of the isentropic enthalpy rise ~~times~~multiplied by the mass flow to the power input of the compressor

Note 1 to entry: This is a dimensionless parameter.

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