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Replacing GB/T 4976-1985

Compressors - Classification

(ISO 5390:1977, MOD)

压缩机 分类

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Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard replaced GB/T 4976-1985 *Compressors – Classification*. Compared with GB/T 4976-1985, this Standard has the major technical differences as follows besides the editorial modifications:

--- Add partial compressor types to the general classification (see Figure 1 of this Edition; Figure 1 of 1985 Edition);

--- Add 12 items of classification instructions for the compressors (see 3.2, 3.4~3.7, 3.9~3.15 of this Edition);

--- Modify the classification instructions for positive-displacement compressor (see 3.1 of this Edition; 3.1 of 1985 Edition);

--- Modify the classification instructions for axle-driven compressor (see 3.3 of this Edition; 3.1.1 of 1985 Edition);

--- Modify the classification instructions for rotary compressor (see 3.8 of this Edition; 3.1.2 of 1985 Edition);

--- Modify the classification instructions for dynamic compressor (see 3.16 of this Edition; 3.2 of 1985 Edition);

--- Modify the classification instructions for axial flow compressor (see 3.18 of this Edition; 3.2.1.1 of 1985 Edition);

--- Modify the classification instructions for centrifugal compressor (see 3.19 of this Edition; 3.2.1.2 of 1985 Edition);

--- Modify the classification instructions for ejector (see 3.20 of this Edition; 3.2.2 of 1985 Edition).

This Standard adopts re-drafting method to modify and use ISO 5390:1977 *Compressors – Classification*.

Compared with ISO 5390:1977, this Standard has the technical differences; the clause and sub-clause involved in these technical differences have been marked by the vertical single line (|) at the outer margin; Appendix B gives the table listed the corresponding technical differences and its causes.

This Standard also makes the following editorial changes:

a) Modify term in A.1 “Crankshaft reciprocating piston compressor”, which is replaced by a briefer one of “Piston compressor”;

NOTE: Compression can be divided into internal and external compression. The pressure of internal compression can be further divided into the fixed and changeable ones.

3.2 Reciprocating compressor: positive-displacement compressor that improves the gas pressure through compressing gas by the reciprocation motion of the piston in the cylinder or repeated deformation of the diaphragm in the cylinder.

3.3 Axle-driven compressor: reciprocating compressor with the crankshaft rotary motion.

3.4 Piston compressor: axle-driven compressor that compresses the gas through reciprocating motion of the piston in the cylinder.

3.5 Diaphragm compressor: axle-driven compressor that finishes compression cycle through direct-machinery-or-hydraulic-driven diaphragm deformation.

3.6 Free piston compressor: reciprocating compressor without crankshaft that finishes the piston return and synchronization through directly using dynamic piston to compress medium, utilizing the air cushion or synchronizing mechanisms.

3.7 Linear compressor: reciprocating compressor that compresses gas through directly driving piston by the linear motor.

3.8 Rotary compressor: positive-displacement compressor that realizes the gas compression through rotary motion of one or several rotors in the cylinder, further making the working volume change regularly.

3.9 Scroll compressor: rotary compressor consisting of orbiting and fixed scroll; it realizes the gas transportation and compression through horizontally moving of orbiting scroll and meshing of the fixed scroll.

3.10 Liquid ring compressor: rotary compressor that finishes the gas transportation and compression through forming a liquid ring close to the inner wall of cylinder by liquid that is thrown under the centrifugal force caused by rotation of working wheel, then forming a periodically expanding and contracting fan-shaped space between two adjacent blades and the liquid ring.

3.11 Vane compressor: rotary compressor that realizes the gas transportation and compression through eccentric rotor equipped with radial reciprocating vane, vane close to the inner wall of cylinder and rotated with rotor to form the periodically change of the elementary volume.

3.12 Triangle rotor compressor: rotary compressor that realizes the gas compression through rotating the piston by the triangle in the approximately elliptical cylinder.

3.13 Mono-rotor screw compressor: rotary compressor that realizes gas transportation and compression through the meshing motion between worm and the

planetary gear.

3.14 Screw compressor: rotary compressor that realizes gas transportation and compression through two helical rotors at a certain transmission ratio intermeshing and rotation.

3.15 Two-spool compressor: rotary compressor that realizes gas transportation and compression through two double-lobed or multi-lobed rotors intermeshing, rotating by synchronous gear.

3.16 Dynamic compressor: compressor that improves the gas pressure through improving converting its kinetic energy into pressure energy by increasing the speed of gas motion.

3.17 Turbine compressor: dynamic compressor with blades, rotary tables and impellers.

3.18 Axial flow compressor: turbine compressor that gas flows approximately axially on a cylindrical surface within a compressor stage.

3.19 Centrifugal compressor: turbine compressor that gas flows in radial direction within the impeller channels.

NOTE: there are also mixed-flow turbine compressor (gas flows along the direction between axial and radial ones) and combined turbine compressor.

3.20 Ejector: a type of dynamic compressor without moving elements that improves the gas pressure through using high velocity gas or steam jet flow to carry off the absorbed gas, then converting the kinetic energy of the gas mixture.

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