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GB/T 18430.1-2007
Replace GB/T 18430.1-2001

Water chilling(heat pump) packages using the vapor compression cycle—Part 1:Water chilling(heat pump) packages for industrial & commercial and similar application

蒸气压缩循环冷水(热泵)机组 第 1 部分:工业或商业用及类似用途的冷水(热泵)机组

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Contents

Foreword ..... 错误！未定义书签。

1 Scope 5

2 Normative references 5

3 Terms and definitions 6

4 Type and basic parameters 7

5 Requirements 11

6 Testing methods 17

7 Inspection rules 27

8 Mark, packing, and storage 29

Appendix A (Normative) The measurement of dry and wet bulb temperature of air for packages (sampling method) 31

Appendix B (Normative) Measurement of the water--side pressure loss of the unit 32

Appendix C (Normative) The determination of corrected temperature difference for the analog unit water--side fouling factor 35

Appendix D (Informative) Water quality of cooling water 39

Appendix E (Informative) 40

Partial load performance coefficient calculation example 40

Foreword

GB/T 18430 *Water chilling (heat pump) packages using the vapor compression cycle* is divided into two parts:

--Part 1: Water chilling (heat pump) packages for industrial & commercial and similar application;

--Part 2: Water chilling (heat pump) packages for household & similar application.

This part is Part 1 of GB/T 18430.

This part is the revision of GB/T 18430. 1-2001, and compared with GB/T 18430. 1-2001, have the major changes as follows:

-- The name of this part is changed into: Water chilling (heat pump) packages for industrial & commercial and similar application;

-- Add the definition of part load value IPLV/NPLV (see 3.2);

--Nominal operating condition is adjusted to the prescribed evaporator outlet water temperature and flow rate, and condenser inlet water temperature and flow rate (3.3.2 in version 2001, 4.3.2.1 in this version);

--Fouling factor is revised to: Fouling factor of evaporator at the water side is $0.018m^2 \cdot ℃/kW$, and that of condenser at the water side is $0.044m^2 \cdot °C/kW$ (3.3.3 in version 2001, 4.3.2.2 in this version);

-- Add part-load operating conditions and integrated part load value (see 4.3.2.3 and 4.3.3.1);

-- Coefficient of performance (COP) of refrigeration of the packages at nominal conditions is revised to not less than the limit value stated in GB19577 (3.3.4 in version 2001, 4.3.3.1 in this version);

-- Add part load performance requirements and test methods of the packages (see 5.5 and 6.3.3);

-- Add earthing resistance requirements and earthing resistance test methods (see 5.8.9 and 6.3.7);

-- Adjust insulation resistance test, withstand voltage test and water pouring test methods (5.3.7.3, 5.3.7.4, and 5.3.7.7 in version 2001, 5.8.3, 5.8.4, and 5.8.7 in this version).

This part will supersede DL/T18430--2001 from the date of its implementation.

The Appendix A, B and C are normative appendix and Appendix D and E of this part are informative appendix.

This part was proposed by China Machinery Industry Federation.

This part is under the jurisdiction of National Technical Committee on Refrigeration & Air-Conditioning Equipment of Standardization Administration of China (SAC/TC 238).

The units responsible for drafting this part; York (Wuxi) Air Conditioning and Refrigeration Co., Ltd., Hefei General Machinery Research Institute, Trane Air Conditioning System (Jiangsu) Co., Ltd., Zhejiang Dun'an Artificial Environment Equipment Co., Ltd., and Hefei General Environmental Control Technology Co., Ltd..

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National Technical Committee on Refrigeration & Air--Conditioning Equipment of Standardization Administration of China is responsible for the interpretation of this part.

The information concerning the issuance of previous versions of the Standard superseded by the Standard of this part is as follows:

--GB/T 18430.1--2001.

Water chilling (heat pump) packages using the vapor compression cycle
Part 1: Water chilling (heat pump) packages for industrial & commercial and similar application

1 Scope

This part provides the terms and definitions, types and basic parameters, requirements, test methods, inspection rules, signs, packaging and storage of motor--driven water chilling (heat pump) packages for industrial & commercial and similar application (hereinafter referred to as "units").

This part applies to water chilling packages for central air conditioning or process with a cooling capacity of more than 50 kW, and also applies to those preventing freezing and chemicals dissolution in water due to outdoor temperature decrease. It may be implemented by reference to the packages powered by the engine (diesel engine or gas engine) or turbine engine (steam turbine or gas turbine).

This part does not apply to the packages for industrial application with drinking water, beverages and water as cooling (heating) agent.

2 Normative references

The articles contained in the following documents have become this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB 4208-1993Degrees of protection provided by enclosure (IP code) (eqv IEC 529: 1989)

GB 4343.2 Electromagnetic compatibility -Requirements for household appliances，electric tools and similar apparatus-Part 2：Immunity-Product family standard (GB 4343.2-1999, idt CISPR 14-2: 1997)

GB/T 10870-2001 The methods of performance test for positive displacement & centrifugal water-chilling units and heat pump

GB/T 13306 Plates

GB/T 13384 General specification for packagings of mechanical and electrical products

GB/T 17758 Unitary air conditioners

GB 19577 The minium allowable values of the energy efficiency and energy efficiency grades for water chillers

JB/T 4330 Determination of noise emitted by refrigerating and air conditioning equipments

JB/T 4750 Pressure vessels for refrigerant equipment

JB/T 7249 Terminology of refiration

JB 8654 Safety requirements of positive displacement and centrifugal water-chilling packages

3 Terms and definitions

The following terms and definitions and those given in JB/T 7249 apply to this part.

3.1 (COP) Coefficient of Performance (COP)

At nominal operating conditions specified in Table 2, the packages adopt the same unit to represent the specific value after the amount of cooling (heating) divides the total input power.

3.2 Part load value (PLV)

A single value is adopted to represent part load efficiency indicator of water chilling packages for air conditioning, which is worked out by calculation of weighting factor of running times at different loads of the packages based on part load value thereof.

3. 2. 1 Integrated part load value (IPLV)

A single value is adopted to represent part-load efficiency indicator of water chilling packages for air conditioning, which is worked out through calculation of weighting factor of running times at specific loads of the packages by use of equation (1) based on part load value thereof at the operating conditions of IPLV specified in Table 3.

$$IPLV(or\ NPLV) = 2.3\% \times A + 41.5\% \times B + 46.1\% \times C + 10.1\% \times D \quad (1)$$

Where:

A -- Coefficient of performance (COP) at 100% load (kW/kW);

B -- Coefficient of performance (COP) at 75% load (kW/kW);

C -- Coefficient of performance (COP) at 50% load (kW/kW);

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