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PEOPLE'S REPUBLIC OF CHINA**

GB/T 10606.1-1989

Replacing GB/T 10606-2008

**Vocabulary of air separation unit
(English Translation)**

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Table of Contents

1 Scope	1
2 Normative reference documents	1
3 Basic terminology	1
4 Unit equipment	7
5 Rare gas extraction equipment	15
6 Cryogenic liquid storage and transportation equipment	20
7 Turboexpander	26
8 Cryogenic liquid pump	32
9 Instrument electronic control	35
10 Steam turbine and its auxiliary systems	36
Index	40

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting.

This document replaces GB/T 10606-2008 "Terminology for Air Separation Equipment". Compared with GB/T 10606-2008, except for structural adjustments and in addition to editorial changes, the main technical changes are as follows.

---Added standard state, pressurized air, low purity oxygen, pure oxygen, ultrapure oxygen, oxygen-rich air, oxygen-poor liquid air, forward flow, hot flow, return flow, cold flow, and more Stage distillation, LNG cold energy air separation equipment, air separation island, exempt materials, exempt pressure, cold backup, dry evaporation, heating, protection Wall and protective cover terms (see 3.1, 3.6, 3.8, 3.10, 3.12, 3.24, 3.25, 3.28, 3.29, 3.30, 3.31, 3.40, 3.70, 3.71, 3.72, 3.73, 3.74, 3.75, 3.76, 3.77);

---Changed the standard status, process air, industrial oxygen, medical oxygen, aviation breathing oxygen, industrial nitrogen, ultrapure nitrogen, oxygen-rich liquid air, self-cleaning in addition, non-freezing, low-temperature adsorption, liquid leakage, liquid flooding, nitrogen plug, expansion air entering the upper tower, cooling loss, extraction rate, high-pressure air flow, Terminology for medium-pressure air process, low-pressure air process, and liquid oxygen self-pressurizing process (see 3.1, 3.5, 3.9, 3.13, 3.14, 3.16, 3.19, 3.23, 3.35, 3.36, 3.41, 3.42, 3.43, 3.44, 3.46, 3.49, 3.50, 3.54, 3.55, 3.56, 3.60, 2008 version of 2.1, 2.5, 2.8, 2.10, 2.11, 2.13, 2.16, 2.20, 2.33, 2.34, 2.39, 2.41, 2.42, 2.43, 2.45, 2.48, 2.49, 2.58, 2.60, 2.61, 2.68);

---Deleted industrial process oxygen, kettle liquid, distillate liquid nitrogen, waste gas, waste liquid, throttling, isothermal throttling effect, Joule-Thomson effect, expansion Expansion, isentropic expansion effect, central temperature difference, sublimation, distillation, gas-liquid ratio, reflux ratio, Lachman air, primary throttling liquefaction cycle, Lin German cycle, high-pressure liquefaction cycle with expander, Hyland cycle, medium-pressure liquefaction cycle with expander, Kraut cycle, expansion cycle the low-pressure liquefaction cycle, Kapitsa cycle, Stirling cycle, high-low pressure process, high-nitrogen process, and low-pressure cycle with switching heat exchanger of the expansion machine Pressure process, low-pressure process terminology with molecular sieve adsorber (see 2.7, 2.19, 2.21, 2.23, 2.24, 2.25, 2008 edition 2.26, 2.27, 2.30, 2.32, 2.36, 2.40, 2.45, 2.51, 2.52, 2.53, 2.54, 2.55, 2.59, 2.63, 2.64, 2.65);

---Added random packing, film condensing evaporator, immersion bath condensing evaporator, single bed, double bed, switching cycle, demister, whole Install cold box, steel-aluminum transition joint, buffer tank, lift gas, air separation start time, low-temperature nitrogen compressor terminology (see 4.1.24, 4.2.16, 4.2.17, 4.3.20, 4.3.21, 4.3.22, 4.3.24, 4.4.5, 4.4.8, 4.4.9, 4.4.10, 4.4.11, 4.4.12);

---Changed the terms of structured packing, distributor, plate-fin heat exchanger core, liquid oxygen evaporator, electric heater, and muffler tower (see 4.1.23, 4.1.25, 4.2.6, 4.2.19, 4.2.23, 4.4.7, 2008 version of 3.1.25, 3.1.26, 3.2.6, 3.2.26, 3.2.30, 3.4.7);

---Deleted the distillation tower, low-temperature distillation tower, orifice tower, partition, seal, fin, straight fin, porous fin, sawtooth fin, corrugated fin fins, guide fins, double-layer condensing evaporator, vaporizer, air separation cold box, fractionation tower terms (see 3.1.1, 3.1.2, 2008 edition, 3.1.9, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13, 3.2.14, 3.2.24, 3.2.32, 3.4.4);

--- Added high-purity argon, high-purity neon, high-purity helium, ultra-pure helium, high-purity krypton, electronic grade krypton, aerospace krypton, high-purity xenon, electronic grade xenon, aerospace xenon, Terminology for enhanced argon tower, argon recoverer, crude neon-helium adsorber, pure neon-helium tower, pure neon-helium evaporator, and lean krypton condenser (see 5.1.5, 5.1.9, 5.1.13, 5.1.14, 5.1.18, 5.1.19, 5.1.20, 5.1.23, 5.1.24, 5.1.25, 5.2.3, 5.2.7, 5.2.20, 5.2.twenty one, 5.2.22, 5.2.29);

---Changed the terms of lean krypton xenon, crude krypton xenon, pure argon condenser, pure argon evaporator (see 5.1.36, 5.1.37, 5.2.8, 5.2.9, 2008 edition 4.1.27, 4.1.28, 4.2.6, 4.2.7);

---Deleted the terms neon-helium fraction, process xenon, argon heat exchanger, and catalyst furnace (see 4.1.24, 4.1.29, 4.2.8, and 4.2.10 of the 2008 edition);

--- Added terms for vacuum composite insulation, rated filling rate, interlayer vacuum degree, strain-strengthened container, electric reheater, and bottle filling device (see 6.1.5, 6.1.11, 6.1.16, 6.2.20, 6.3.8, 6.3.9);

---Changed high vacuum multi-layer insulation, geometric volume, effective volume, filling rate, static evaporation rate, vacuum sandwich air leakage rate, mobile type Terminology of tank car, car tank car, tank trailer, railway tank car (see 6.1.4, 6.1.8, 6.1.9, 6.1.10, 6.1.14, 6.1.17, 6.2.13, 6.2.14, 6.2.15, 6.2.16, 2008 version 5.1.4, 5.1.7, 5.1.8, 5.1.9, 5.1.12, 5.1.14, 5.2.13, 5.2.14, 5.2.15, 5.2.16);

--- Added terms for high-temperature turbine expander, liquid turbine expander, and auxiliary bearing (see 7.1.15, 7.1.16, 7.3.16);

---Changed the impulse turbine expander, reaction turbine expander, medium pressure turbine expander, high pressure turbine expander, expansion ratio, main Dynamic magnetic bearing and brake motor terminology (see 7.1.2, 7.1.3, 7.1.9, 7.1.10, 7.2.4, 7.3.15, 7.3.17, 2008 edition 6.1.2, 6.1.3, 6.1.9, 6.1.10, 6.2.18, 6.3.26, 6.3.27);

---Deleted horizontal split structure, standard flow, standard flow, mass flow, volume flow, inlet pressure, working wheel outlet pressure, Outlet pressure, inlet temperature, working wheel inlet temperature, nozzle outlet temperature, working wheel outlet temperature, outlet temperature, dimensionless characteristics Curve, rotation speed, specific rotation number, specific speed, specific diameter, specific diameter, pressure ratio, pressure ratio, wheel diameter ratio, reverse diameter ratio, nozzle axial width, working wheel Relative width of inlet, nozzle speed coefficient, working wheel speed coefficient, nozzle variable index, relative speed angle of working wheel inlet, work the absolute speed angle of the wheel inlet, the absolute speed angle of the working wheel outlet, the relative speed angle of the working wheel outlet, the nozzle flow deflection angle, the nozzle outlet Nozzle flow angle, nozzle outlet flow velocity, working wheel inlet absolute speed, working wheel inlet relative speed, working wheel outlet absolute speed degree, working wheel outlet relative speed, working wheel outlet circumferential speed, flow efficiency, cooling capacity, HS diagram of the expansion process, volute, Blades, main shaft, diffuser, intermediate body, seal, bearing box, fuselage, bearing, split bearing, integral bearing, oil bearing, coupling, Terms for oil supply device, oil cooler, and bladder accumulator (see 6.1.23, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.6, 2008 edition) 6.2.7, 6.2.8, 6.2.9, 6.2.10, 6.2.11, 6.2.13, 6.2.15, 6.2.16, 6.2.17, 6.2.19, 6.2.23, 6.2.25, 6.2.26.

6.2.27, 6.2.28, 6.2.29, 6.2.30, 6.2.31, 6.2.32, 6.2.33, 6.2.35, 6.2.36, 6.2.37, 6.2.38, 6.2.39, 6.2.41, 6.2.42, 6.2.43, 6.2.51, 6.2.53, 6.2.55, 6.3.1, 6.3.3, 6.3.9, 6.3.12, 6.3.13, 6.3.14, 6.3.17.

6.3.19, 6.3.20, 6.3.21, 6.3.25, 6.3.28, 6.3.29, 6.3.30, 6.3.35);

---Added cryogenic submersible pump, two-stage cryogenic centrifugal pump, multi-stage cryogenic centrifugal pump, dry gas seal, and specified point terms (see 8.1.10, 8.1.11, 8.1.12, 8.1.16, 8.2.13);

---Changed the terms cryogenic liquid pump, reciprocating cryogenic liquid pump, centrifugal cryogenic liquid pump, suction pressure, and discharge pressure (see 8.1.1,

8.1.2, 8.1.7, 8.2.8, 8.2.9, 7.1.1, 7.1.2, 7.1.7, 7.2.14, 7.2.15 of the 2008 version);

---Deleted theoretical flow, actual flow, instantaneous flow, maximum flow, average piston speed, average plunger speed, piston area, column Plug area, cryogenic liquid pump parts and components terminology (see 7.2.2, 7.2.3, 7.2.4, 7.2.5, 7.2.11, 7.2.12, 7.3 of the 2008 edition);

---Added instrument and electronic control terminology (see Chapter 9);

--- Added terms for steam turbines and their auxiliary systems (see Chapter 10).

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document defines the basic terms of cryogenic air separation equipment (referred to as air separation equipment) as well as the unit equipment and rare equipment in air separation equipment.

Common terms used for gas extraction equipment, cryogenic liquid storage and transportation equipment, turbine expanders, cryogenic liquid pumps, instrument and electronic controls, steam turbines and related auxiliary machines.

This document is applicable to various applications in air separation equipment-related fields that involve citing or standardizing the use of air separation equipment terminology.

2 Normative reference documents

This document has no normative references.

3 Basic terminology

standard state normalstate standardconditions the state when the temperature is 273.15K (0°C) and the pressure is 101.325kPa.

air separation Cryogenics are used to separate air into the required components.

air air

A mixture of gases present on the Earth's surface.

Note: It is mainly composed of oxygen (about 20.95%), nitrogen (about 78.09%) and argon (about 0.932%). It also contains trace amounts of hydrogen and rare gases such as neon, helium, krypton and xenon.

body. Depending on regional conditions, it also contains varying amounts of carbon dioxide, water vapor, acetylene and other hydrocarbons. The density of air under standard