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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 32975-2026

Replacing GB/T 32975-2016

Technical specification for energy saving in coke dry quenching

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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 32975-2016 "Technical Specification for Energy Saving in Dry Quenching Coke". Compared with GB/T 32975-2016, the main differences are in the structural adjustments. Aside from editorial changes, the main technical changes are as follows:

a) The terminology and definition for dry quenching have been removed (see section

3.1 of the.2016 edition);

b) The terms and definitions for dry quenching gas-to-fuel ratio, dry quenching boiler, and circulating gas have been revised (see 3.3, 3.5, 3.6, and

3.4 in the.2016 edition). 3.6, 3.7);

c) The dry quenching principle and process flow have been modified (see Chapter 4; see Chapter 4 for the.2016 version);

d) The energy conservation requirements and institutional requirements for newly constructed dry quenching coke projects have been deleted (see sections 5.1.1, 5.1.3, and

5.1.4 of the.2016 version);

e) The document requirements for the construction of dry quenching coke projects have been revised (see 5.1.11,

5.1.10 in the.2016 version);

f) Added requirements for refractory bricks in dry quenching furnaces and for safety and

environmental protection requirements in dry quenching coke (see 5.1.12, 5.1.13);

g) The requirements for the red coke conveying system have been revised (see 5.2.1, 5.2.2, 5.2.9; and 5.2.1, 5.2.2,

5.2.9 in the.2016 version);

4 Principles and Processes

4.1 Principle Dry quenching refers to a quenching method that uses circulating gas to cool red-hot coke. The coke moves downwards within the dry quenching furnace, and the circulating gas flows towards... In the upward flow, the coke is cooled by exchanging heat with the circulating gas. The high-temperature circulating gas, after heat exchange, transfers heat to the dry quenching process after dust removal. In a coke oven, the cooled circulating gas is recirculated back into the dry quenching furnace by a circulating fan for reuse.

4.2 Process Flow The dry quenching process mainly includes the coke process, the gas circulation process, and the steam-water process for the dry quenching boiler, as follows:

a) Coke production process. Red coke exiting the coke oven -> Coke can -> Coke can elevator -> Charging device -> Dry quenching -> Coke discharge device -> Cold coke transportation system;

b) Gas circulation process. Circulating gas -> Dry quenching furnace -> Primary dust collector -> Dry quenching coke boiler -> Secondary dust collector -> Circulating fan -> Feed gas Water preheating unit -> returned to dry quenching furnace for recycling;

c) Steam-water flow process for dry quenching coke boiler. System makeup water -> Demineralized water tank -> Deaerator feed water pump -> Feed water preheating device -> Deaerator -> Boiler Feedwater pump -> Dry quenching coke boiler -> Steam output. The process flow diagram is shown in Figure 1.

5.1 General Provisions

5.1.1 Dry quenching equipment should not use high-energy-consuming equipment that is explicitly eliminated by the state or restricted by the industry.

5.1.2 For cooling red-hot coal, a completely dry extinguishing method should be adopted.

5.1.3 The scale of the dry quenching unit should match the coke oven production capacity.

5.1.4 The dry quenching coke body should preferably adopt a ring-shaped planar arrangement.

5.1.5 The dry quenching body should be arranged compactly to reduce the height and width of the frame.

5.1.6 Steam generated during dry quenching should be recycled.

5.1.7 A centralized control system should be installed for dry quenching.

5.1.8 The temperature of cold coke discharge should be less than.200°C.

5.1.9 The reuse rate of cooling water in the dry quenching unit should be no less than 97%.

5.1.10 The construction of dry quenching coke projects shall comply with the provisions of GB 50432, GB 50390, GB 51363, DL5190.2, and YB/T 6093.

5.1.11 The insulation and heat preservation of dry quenching equipment and pipelines shall comply with the provisions of GB 50264 and GB 50126.

5.1.12 The properties of refractory bricks in all parts of the dry quenching furnace shall comply with the requirements of YB/T 4447.

5.1.13 Safety measures for dry quenching and technical indicators for pollutant emissions shall comply with relevant national regulations.

5.2 Red Coke Conveying System

5.2.1 One electric locomotive should tow two coke tank cars, or one self-propelled coke tank car should tow one non-self-propelled coke tank car.

5.2.2 Round rotary coke cans are recommended for transporting red coke, and coke cans lined with energy-saving and environmentally friendly refractory materials are preferred.

5.2.3 The effective volume of the coke pot is

1.2 times the coke production capacity of a single hole of the coke oven.

5.2.4 A heat-insulating layer should be sealed between the lining plate of the coke tank and the tank frame.

5.2.5 The storage time of red coke in the coke container should not exceed 30 minutes.

5.2.6 Coke can elevators should be equipped with coke can covers with heat insulation layers.

5.2.7 A feeder should be installed inside the red coke loading device.

5.2.8 The inner lining of the furnace cover of the red coke charging device should be heat resistant to no less than 1250°C.

5.2.9 Electric locomotives, self-propelled coke tank cars, coke tank rotating devices, electric cylinders for loading devices, and hoists should use frequency conversion speed regulation for lifting and traveling.

5.2.10 The coke pot elevator shall adopt a variable frequency control system with energy feedback function.

5.3 Dry Quenching Furnace and Gas Circulation System

5.3.1 A water seal should be installed at the furnace opening of the dry quenching furnace, and the water seal should preferably be a self-circulating type.

5.3.2 The amount of coke stored in the pre-storage chamber of the dry quenching furnace should be no less than the amount of coke quenched during the maximum coke supply interval of the coke oven.

5.3.3 The pressure in the pre-storage chamber of the dry quenching furnace should be controlled between -100Pa and 100Pa.

5.3.4 The normal material level in the dry quenching furnace should be monitored using a radar level gauge.

5.3.5 The circulating gas velocity in the inclined section of the dry quenching furnace should not exceed 4 m/s (under standard conditions).

5.3.6 The height-to-diameter ratio of the cooling chamber of the dry quenching furnace should be 0.7~0.9.

5.3.7 At least four temperature measuring points should be set along the circumference of the upper and lower sections of the cooling chamber of the dry quenching furnace.

5.3.8 The thermal shock stability and high-temperature flexural strength of the refractory bricks at the furnace mouth of the dry quenching furnace pre-storage chamber shall meet the requirements of the pre-storage chamber.

5.3.9 The thermal shock stability, high-temperature flexural strength and abrasion resistance of refractory bricks in the inclined zone of the dry quenching furnace shall meet the requirements of the inclined zone.

5.3.10 The wear resistance and compressive strength of the refractory bricks in the cooling chamber of the dry quenching furnace shall meet the requirements of the cooling chamber.

5.3.11 The circulating gas inlet of the dry quenching furnace shall be equipped with an air volume regulating device with an adjustable distribution ratio for circulating gas.

5.3.12 The inlet circulating gas velocity of a primary dust collector using gravity settling dust removal technology should not exceed 3 m/s (under standard conditions).

5.3.13 The lining of the high-temperature compensator between the primary dust collector and the dry quenching furnace or dry quenching coke boiler should preferably be made of brick.

5.3.14 The dome of the primary dust collector should be made of mullite bricks.

5.4 Cold coke discharge and transport system