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CHEMICAL INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HG/T 20512-2014

Replacing HG/T 20512-2000

Design code for instrument piping and wiring

仪表配管配线设计规范

(English Translation)

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Foreword

This code was revised in accordance with the requirements of the "Notice on Issuing the First Batch of Industry Standard Development and Revision Plans for 2010" of the Ministry of Industry and Information Technology (Gong Xin Ting Ke [2010] No. 74) and of the "Notice on Forwarding the Notice of the General Office of the Ministry of Industry and Information Technology on Issuing the First Batch of Industry Standard Development and Revision Plans for 2010" of the China Petroleum and Chemical Industry Federation (Zhong Shi Hua

Lian Zhi Fa [2010] No. 222). The revision was organized by the National Chemical Industry Automatic Control Design Technical Center Station, entrusted by the China Petroleum and Chemical Engineering Survey and Design Association.

From its date of implementation, this code replaces "Regulations for instrument piping and wiring design" HG/T 20512-2000.

In preparing this code, the drafting group carried out extensive investigation and research, conscientiously summarized practical experience, made reference to relevant international standards and advanced foreign standards, and completed the revision on the basis of consultation with many parties.

The main technical contents of this code include: the selection and laying of impulse lines and pneumatic signal lines; the selection and laying of cables; and the piping and wiring of instrument panels (boxes, cabinets).

Compared with HG/T 20512-2000, the main changes of this code are as follows:

1. The chapter "Terms" has been added;
2. The connection methods of impulse lines and pneumatic lines have been added;
3. The selection of impulse line sizes has been rewritten;
4. The section "Selection of Foundation Fieldbus (FF) cables and optical fibre cables" has been added;
5. The section "Cable entry to the control room" has been added.

This code was proposed by and is under the jurisdiction of the China Petroleum and Chemical Industry Federation.

SINOPEC Nanjing Engineering Co., Ltd. is responsible for the interpretation of the technical contents of this code. Any comments and suggestions arising in the course of implementing this code should be sent to SINOPEC Nanjing Engineering Co., Ltd. (address: No. 1189 Kejian Road, Jiangning District, Nanjing, Jiangsu Province; postcode: 211100) for reference in future revisions.

Chief editorial organization of this code: SINOPEC Nanjing Engineering Co., Ltd.

1 General provisions

1.0.1

This code is formulated in order to unify the technical requirements for instrument piping and wiring in the chemical industry, to promote the standardization of instrument piping and wiring engineering design, and to achieve the objectives of advanced technology, economic rationality, safety and suitability for use.

1.0.2

This code is applicable to the piping and wiring engineering design of impulse lines and signal transmission lines of measuring and control instruments of chemical plants.

1.0.3

In addition to complying with the requirements of this code, the engineering design of instrument piping and wiring shall also comply with the provisions of the current relevant national standards.

2.0.1 instrumentation

The general term for the devices and systems that measure and control measured variables and controlled variables.

2.0.2 impulse line

Impulse piping used for pressure, flow and level measurement, sampling piping used for analyzers, and piping used for isolation and purging, including the valves, fittings and auxiliary vessels used in the impulse piping system.

2.0.3 main cable

Multi-pair (multi-core) cable running from a field junction box to the cabinet terminals in the control room or field auxiliary room.

2.0.4 branch cable

Cable running from a field instrument to the terminals of a field junction box.

2.0.5 flame retardant cable

Cable having flame-retardant properties.

2.0.6 cable tray

A metallic or non-metallic structure used for laying and protecting cables and wires, including the body, the covers and the various connecting pieces.

2.0.7 protective pipe

Pipe and its connecting pieces used for laying and protecting cables and wires.

2.0.8 pneumatic line

Line that transmits pneumatic signals.

3 Basic requirements

3.0.1

The engineering design of instrument piping and wiring shall achieve accurate instrument measurement, reliable signal transmission, reduced lag, safety and suitability for use, neatness and good appearance, and ease of construction and maintenance.

3.0.2

In instrument piping and wiring, appropriate measures shall be taken for environments subject to explosion and fire hazards, corrosion, high temperature, humidity, vibration, lightning strikes, dust, sand and electromagnetic interference.

4.1 Connection methods of impulse lines

4.1.1

The connection between the impulse line and the instrument root valve shall be of the threaded, flanged or socket-welded type in accordance with the piping class table.

4.1.2

The connections between impulse lines (including valves and fittings) should be welded (both butt-welded and socket-welded) or of the compression-fitting type.

4.2 Material of impulse lines

4.2.1

The material of impulse lines (including valves and fittings) shall be determined according to factors such as the physical properties, temperature and pressure rating of the measured medium and the environmental conditions.

4.2.2

Stainless steel should be selected as the material of impulse lines.

4.2.3

Impulse lines, fittings and valves should be of the same material.

4.2.4

Stainless steel should be selected as the material of analyzer sampling lines.

List of quoted standards

GB 50058 Code for design of electrical installations in explosive atmospheres

GB 50093 Code for construction and quality acceptance of automation instrumentation engineering