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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 28766-2018

Replacing GB/T 28766-2012

Natural gas -- Performance evaluation for analytical systems

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 28766-2012 "Performance Evaluation of Natural Gas Online Analysis System". This standard and GB/T 28766-

The main technical changes in.2012 are as follows.

--- The word "online" was deleted from the standard name, which expanded the scope of application;

--- Revised the scope of the standard;

--- Revised the requirements for standard gas for performance evaluation. "The new instrument evaluates at least 7 concentration points, and the gas source is relatively stable.

At least 5 concentration points are modified to determine the concentration point according to the type of response function of each composition. linear function 3 concentration points;

The order function has 5 concentration points; the third-order function has 7 concentration points.

This standard uses the translation method equivalent to ISO 10723.2012 "Performance Evaluation of Natural Gas Analysis System".

This standard is proposed and managed by the National Natural Gas Standardization Technical Committee (SAC/TC244).

This standard was drafted. China National Petroleum Corporation Southwest Oil and Gas Field Branch Natural Gas Research Institute, Central Asia Pipeline Co., Ltd.

Division, China Metrology University, Emerson Process Control Co., Ltd., China National Petroleum Corporation Huabei Oilfield Branch.

1 Scope

1.1 This standard specifies the method for evaluating the suitability of a natural gas analysis

system and can be applied to the following situations.

a) Determine the evaluation when using a specific calibration gas, subject to the maximum allowable error and uncertainty requirements for composition and/or physical properties

The composition range of the sample gas to which the valence method is applicable;

b) evaluate instrumental measurements and/or physical properties based on composition when analyzing a given range of gases using a specific calibration gas

The error and uncertainty of the number.

1.2 The following conditions are required to use this standard.

a) for the category a) evaluation of 1.1, the range of uncertainty acceptable for the compositional measurements and the physical properties calculated accordingly is given explicitly;

b) For the b) class evaluation of 1.1, the analysis requirements such as the measured composition and the range of physical property parameters calculated accordingly are clearly given;

c) the operational procedures for analysis and calibration are clearly defined;

d) Analyze system performance evaluation The composition range of the gas used should be as close as possible to the gas composition variation range common in natural gas transmission and distribution systems.

Consistent.

1.3 If the performance evaluation results show that the analysis system does not meet the uncertainty in the required composition content range or the physical property value calculated accordingly

Requirements, you can find the reason from the following operating parameters.

a) analysis requirements;

b) analytical procedures;

c) equipment selection;

d) calibration gas mixture selection;

e) Calculation procedures.

Among the above parameters, the choice of the composition of the calibration gas mixture has the greatest influence on the performance evaluation results.

1.4 This standard applies to analytical systems capable of measuring the content of each component in a gas. For example, when applied to calorific value measurement, a typical

measurement method

The method is gas chromatography, which can measure at least N2, CO2, C1~C5 hydrocarbon components, and a mixed group representing all C6 components.

Divided; thus, the calorific value and other physical properties can be calculated within an acceptable accuracy range. In addition, H2S is measured separately by a specific method.

This method can also be used to evaluate the measurement results.

1.5 After the initial installation of the analysis system, performance evaluation is required to ensure that the deviations associated with the assumed response function meet the evaluation objectives. Recommended regularly

Or perform performance evaluation after debugging or replacing any key components of the analysis system. The interval between two performance evaluations depends on the instrument ringing

The conditions that should change over time and the maximum allowable error range, the primary influencing factor is the instrument/operating condition, followed by the instrument field application

Therefore, this standard does not provide specific recommendations for the performance evaluation cycle.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO /IEC Guide 98-3.2008 Measurement uncertainty - Part 3. Representation of measurement uncertainty (GUM..1995)

[Uncertaintyofmeasurement-Part 3.
Guidetotheexpressionofuncertaintyinmeasurement(GUM.

1995)]

ISO 6143.2001 Gas analysis to determine and test the comparison of the composition of standard gas mixtures (Gasanalysis-Comparison)