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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 34041.1-2017

**Measurement of fluid flow in closed conduits -- Ultrasonic
meters for gas -- Part 1: Meters for custody transfer and
allocation measurement**

封闭管道中流体流量的测量 气体超声流量计 第1部分：贸易交接和分输计量用气
体超声流量计

(English Translation)

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Foreword

GB/T 34041 "closed pipe fluid flow measurement gas ultrasonic flowmeter" is divided into two parts.

--- Part 1. Trade transfer and sub-transmission measurement gas ultrasonic flowmeter;

--- Part 2. Industrial measurement of gas ultrasonic flowmeter.

This section GB/T 34041 Part 1.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section uses the translation method is equivalent to using ISO 17089-1:2010 "closed pipe fluid flow measuring gas ultrasonic flowmeter Part 1. Transient and custody transfer gas ultrasonic flowmeters. " the documents of our country that are consistent with the corresponding international documents quoted in this part are as follows.

--- GB/T 17611-1998 Measurement of fluid flow in closed conduits Terms and symbols (idt ISO 4006:1991)

--- GB/T 27759-2011 fluid flow measurement uncertainty assessment procedures (ISO 5168:2005, IDT)

--- GB/Z 4887-2006 Cumulative Sums and Cumulative Techniques for Quality Control and Data Analysis Guidance (ISO/TR7871:1997, IDT)

--- GB/T 17747-2011 (all parts) Calculation of natural gas compression factor [ISO 12213:2006 (all parts)]

--- GB/T 27025-2008 General Requirements for Testing and Calibration Laboratory Capabilities (ISO/IEC 17025:2005, IDT) this part of ISO 17089-1:2010 made the following editorial changes.

--- Delete the note in the scope of "national regulations or other regulations may be more stringent than the provisions of this section." Considered in international standards to the actual situation in different countries may be some countries laws and regulations may be higher than the standard requirements, this situation does not exist in our country in

--- 5.2.3 in the information reference examples "such as ANSI (class300,600,900, etc.), DIN and JIS, etc." to "such as GB/T 9115-2010, GB/T 9119-2010, etc. ";

--- Clause 6.4.3 and 6.4.6 are added to ISO 17089-1:2010, the accuracy of the omission clause number;

--- Correct the error in the symbols in 8.2.2 and 8.2.5 of ISO 17089-1:2010.

This part is proposed by China Machinery Industry Federation.

This part of the National Industrial Process Measurement Control and Automation Standardization Technical Committee (SAC/TC124) centralized.

This section is drafted unit. Shanghai Institute of Industrial Automation Instruments, Beijing Institute of Metrology, Beijing Ruipu ternary instruments have Co., Ltd., Beijing Chang-Min Technology Co., Ltd., Zhejiang Cangnan Instrument Group Co., Ltd., Tianxin Instrument Group Co., Ltd. Shanghai a promise instrument Limited, Liaoning Sikai Technology Co., Ltd., Tianjin billion Central Automatic Instrument Technology Co., Ltd., Fujian Run Precision Instrument Co., Ltd.

Division, Dandong Tongbo Electric (Group) Co., Ltd., Shanghai Nuclear Veritas Instrument Co., Ltd., Beijing Jia Jieneng Technology Co., Ltd., Shanghai Hai Erlst - Emerson Gas Equipment Co., Ltd.

Introduction

Ultrasonic flowmeters (USMs), which measure gas flow rates, have rapidly entered the flowmeter market since 2000, becoming a measure of the volume of custody transfer One of the mainstream flowmeter to measure the output. Ultrasonic flowmeter in addition to high repeatability and high accuracy, but also has the following characteristics. Pressure loss Very small, large range, measurable pulsatile flow.

Ultrasonic flowmeters provide extended diagnostic information that not only verifies the performance of the ultrasonic flowmeter but also validates the system. Other components in the performance, such as gas chromatographs, pressure transmitters and temperature transmitters. Given the expanded diagnostic capabilities of ultrasonic flowmeters, this section advocates the increase and use of automatic diagnosis instead of tedious manual quality inspection.

This section focuses on the measurement of the transfer of trade and sub-transmission gas ultrasonic flowmeter (Class 1 and Class 2). Industrial measurement of gas ultrasonic flow Gauge is GB/T 34041.2 part of the theme.

Typical performance elements of the classification scheme are as follows.

Category Typical Applications Typical Uncertainty References

2 Points < 1.5% of the amount of this section

3 utilities and process measurement $q_V > q_V$, $t.1.5\% \sim 5\%$ GB/T 34041.2

4 Flare gas and air measurement $q_V > q_V$, $t.5\% \sim 10\%$ GB/T 34041.2

Typical configurations for Type 1 and Type 2 flow meters are multi-channel flow meters for chordal sounding at different radial positions.

Typical types 3 and 4 flow meters are mono flow meters, radial flow meters only, plug-in flow meters, domestic flow Gauge, chimney or flue type flowmeter and flare gas flow meter.

Measurement of Fluid Flow in Closed Pipes Gas ultrasonic flowmeter Part 1. Custody transfer and transfer measurement Use gas ultrasonic flowmeter

1 Scope

GB/T 34041 provisions of this part of the use of acoustic signal transit time to measure the closed pipe in a single homogeneous gas flow gas Body Ultrasonic Flowmeter (hereinafter referred to as the flow meter) requirements and recommendations, also provides for the transfer of trade measurement and sub-transmission measurement of two accuracy Grade gas ultrasonic flowmeter structure, flow measurement performance, calibration, output characteristics and other requirements and installation conditions.

This section applies to the custody transfer measurement and sub-transmission measurement of transit time method gas ultrasonic flowmeter, including equal diameter, reduced diameter, high pressure, low Pressure or any combination of these types of gas ultrasonic flowmeter. This section there is no limit on the maximum or minimum size of the flowmeter. Headquarters Points can be applied to the measurement of various types of gases, including air, natural gas, ethane and so on.

2 Normative references the following documents for the application of this document is