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INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Technical specifications and test procedures for ultrasonic open channel sewage flowmeter

(English Translation)

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Foreword

In order to implement the "Environmental Protection Law of the People's Republic of China" and the "Law of the People's Republic of China on Water Pollution Control", protect the ecology Environment, protect human health, standardize the technical performance of ultrasonic open channel sewage flow meters, and formulate this standard.

This standard specifies the technical requirements, performance indicators and detection methods of ultrasonic open channel sewage flow meters.

This standard was first published in 1996. The original standard drafting unit was Chongqing Hydrological Instrument Factory of the Ministry of Water Resources and other three units.

The first revision was in 2007, and the second revision.

The main contents of this revision are as follows.

--The name was changed to "Technical Requirements and Detection Methods for Ultrasonic Open Channel Sewage Flowmeters";

--Delete the requirement of automatic identification of water flow in the original standard;

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--Remove the requirement of trouble-free running time in the original standard;

--Modified the detection methods for level measurement error and flow measurement error;

--Added requirements for level precision and flow precision;

--Increase the requirements for level comparison error and flow comparison error;

--Added period drift requirements;

--Increased the minimum maintenance interval requirements;

--Added specific methods for the detection of various indicators;

--Clarified the distinction between primary and secondary instruments.

Since the implementation of this standard, "Technical Requirements for Environmental Protection Products-Ultrasonic Open Channel Sewage Flowmeters" (HJ/T 15-2007).

This standard is formulated by the Department of Eco-Environmental Monitoring, Laws and Standards Department of the Ministry of Ecology and Environment.

This standard was drafted. China Environmental Monitoring Station.

This standard was approved by the Ministry of Ecology and Environment on December 24, 2019.

This standard will be implemented from March 24, 2020.

This standard is explained by the Ministry of Ecology and Environment.

1 Technical requirements and detection methods of ultrasonic open channel sewage flowmeter

1 Scope

This standard specifies the technical requirements, performance indicators and detection methods of ultrasonic open channel sewage flow meters.

This standard applies to the production design, application selection and performance testing of ultrasonic open channel sewage flow meters.

This standard applies to ultrasonic open channel sewage flow using a standard volume weir trough that meets the requirements of JJG 711 for flow measurement.

(Hereinafter referred to as "flow meter").

2 Normative references

This standard refers to the following documents or clauses therein. For undated references, the valid version applies to this standard.

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GB 3836.1 Explosive environment Part 1. General requirements for equipment GB/T 13306 signs GB/T 17214.1 Working conditions for industrial process measurement and control devices-Part 1. Climate conditions JJG 711 Trial Verification Regulation for Open Channel Weir Channel Flowmeter

3 Terms and definitions

The following terms and definitions apply to this standard.

Ultrasonic open channel sewage flowmeter Refers to an instrument that uses the ultrasonic principle to measure the liquid level at a specified position in an open channel weir and calculates the flow according to a standard formula. It does not include Contains weir grooves.

Weirs and flumes for flow measurement Apparatus for flowmeter measurement consisting of up and down parade, weir body and water level observation facilities.

Flow rate

Refers to the volume of liquid that passes through a section of open water in a unit of time.

Level stage

Refers to the elevation value obtained from the measurement of the reference point (or zero) elevation plus the distance of a certain liquid level.

Error of liquid level Refers to the error between the flowmeter liquid level measurement and the standard ruler measurement.

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Flow rate error

The error between the displayed value of the flowmeter and the theoretical flow value.

Voltage adaptability the instrument measures the liquid level at the same height under different voltages, and the error between the measured value and the reference value.

4.1 Basic composition of the flow meter

The flowmeter generally consists of a primary meter and a secondary meter, as shown in Figure 1.

Figure 1 Schematic diagram of flowmeter composition

Primary instrument. Transmit and receive ultrasonic waves, convert the received ultrasonic signals into time series electrical signals and send them to the secondary meter.

Secondary instrument. Calculate liquid level height through time series electrical signal, calculate flow according to liquid level-flow formula, display, store, Output the measurement

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results.

4.2 Basic requirements

4.2.1

The identification of the instrument shall meet the requirements specified in GB/T 13306, and the label shall be fixed at an appropriate and obvious position.

Has the following identification.

a) the name and address of the manufacturer;

b) Instrument name, model specifications;

c) factory number;

d) manufacturing date;

e) measurement range;

f) Working conditions.

4.2.2

The surface coating of the flow meter should be sprayed evenly, without peeling, rusting or scratching, and with anti-corrosion function. Probe should Primary instrument secondary instrument

3 Seal is intact. The connecting part should be fastened and reliable. Potentiometers and screws used for adjustment should be varnished after assembly.

The flowmeter should have anti-corrosion function.

4.2.3

When the flowmeter is used in an environment with explosion-proof requirements, it should meet the explosion-proof technical requirements in GB 3836.1.

Obtain the corresponding explosion-proof certification.

4.2.4

The insulation strength of the flow meter should meet the requirement that it can withstand 50 Hz between the power line and the case, and 1500 V AC is effective the voltage is tested continuously for 1 min without flashover and breakdown. The insulation resistance between the power line and the case should be >=20 Mohm.

4.3 Functional requirements

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