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

GB/T 44398-2024

**Refrigerated hydrocarbon fluids - Dynamic measurement - Requirements and
guidelines for the calibration and installation of flowmeters used for liquefied
natural gas (LNG) and other refrigerated hydrocarbon fluids**

冷冻烃类流体 动态测量 用于液化天然气（LNG）和其他冷冻烃类流体的流量计校
准和安装的要求和指南

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document modifies ISO 21903:2020 "Dynamic measurement of refrigerated hydrocarbon fluids for use in liquefied natural gas (LNG) and other refrigerated Requirements and guidelines for calibration and installation of flow meters for hydrocarbon fluids.

Compared with ISO 21903:2020, this document has many structural adjustments. The structural number changes between the two documents are shown in the table below.

See Appendix A.

This document has many technical differences compared to ISO 21903:2020.

A list of these technical differences and their causes is given in Appendix B.

The following editorial changes were made to this document.

--- The definition of "measurement error" in 5.3 of JJF1001-2011 (including notes) replaces the term in 3.1.2 of ISO 21903:2020 definition;

--- The definition of "measurement uncertainty" in 5.18 of JJF1001-2011 (including notes) replaces ISO 21903:2020, 3.1.4 Definition of language.

1 Scope

This document specifies the calibration and installation techniques for flow meters used for dynamic measurement of liquefied natural gas (LNG) and other refrigerated liquid hydrocarbon fluids.

Require.

This document provides guidance for calibrations in laboratory and field conditions (mass or

volume) using LNG or other reference fluids.

This document applies to dynamic measurements with Coriolis and ultrasonic flow meters.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 20728 Measurement of fluid flow in closed pipes - Guide for selection, installation and use of Coriolis flowmeters (GB/T 20728-2021, ISO 10790:2015, IDT) GB/T 35138 Measurement of fluid flow in closed pipes - Transit time method - Liquid ultrasonic flowmeter (GB/T 35138-2017, ISO 12242:2012, IDT)

3.1 Terms and Definitions

The following terms and definitions apply to this document.

3.1.1

Mastermeter

A flow meter that is calibrated against a primary standard of sufficiently low uncertainty and used to calibrate other flow meters under the test conditions.

3.1.2

measurement error

The reference value is subtracted from the measured value.

Note 1: The concept of measurement error is used in the following two cases.

--- When there is a single reference quantity value, such as calibration with a measurement standard whose measurement uncertainty is negligible, or when a quantity value is given by agreement when, the measurement error is known;

--- Assuming that the measured quantity is represented by a unique true value or a set of true values with negligible range, the measurement error is unknown.

NOTE 2 Measurement error is not to be confused with error or fault.

[Source: JJF1001-2011, 5.3, modified] 3.1.3 A non-negative parameter that characterizes the dispersion of the values of the quantity being measured, based on the information used.