

SS 648 : 2019
(ICS 01.140.30; 47.020)

SINGAPORE STANDARD

Code of practice for bunker mass flow metering

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**Served till May 2019.*

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Krohne (South East Asia) Pte Ltd
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SGS Testing & Control Services Singapore Pte Ltd
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Foreword

This Singapore Standard was prepared by the Working Group on Mass Flow Metering set up by the Technical Committee on Bunkering under the purview of the Chemical Standards Committee.

This standard was first developed as TR 48 : 2015, "Technical Reference for bunker mass flow metering". TR 48 was reviewed to further its development into a Singapore Standard.

The changes resulting from the review are as follows:

- Expanded the scope of the standard to cover 2020 compliant fuels such as distillate fuels;
- Included multi meter installation;
- Enhanced zero verification procedure;
- Provided better clarity on the role of bunker surveyors.

In preparing this standard, reference was made to the following publications:

American Petroleum Institute Manual of Petroleum Measurement Standards

API MPMS 5.6:2002(2008) Measurement of liquid hydrocarbons by Coriolis meters

American Society of Mechanical Engineers

ASME MFC-11:2006 (R2014) Measurement of fluid flow by means of Coriolis mass flow meters

International Organization for Standardization

ISO 10790:2015 Measurement of fluid flow in closed conduits – Guidance to the selection, installation and use of Coriolis flowmeters (mass flow, density and volume flow measurements)

ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories

Bureau International des Poids et Mesures

Joint Committee for Guides in Metrology JCGM 200:2012 International vocabulary of metrology – Basic and general concepts and associated terms (VIM) 3rd Edition

International Organization of Legal Metrology

OIML D028:2004 Conventional value of the result of weighing in air
Reproduction of content from OIML D028: 2004 complies with OIML B11 - "Rules governing the translation, copyright and distribution of OIML Publications"

Some of the definitions in Clause 3 were reproduced from the above publications with permission from the respective organisations as indicated in brackets after the definitions. All rights are reserved by the organisations.

Acknowledgement is made for the use of information from the above publications.

This standard is expected to be used by vendors of Coriolis mass flow meters, bunker suppliers, bunker surveyors, bunker tanker operators, shipowners/buyers and the implementing authority.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all such patent rights.

NOTE

- 1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "Mature standards". Mature Standards will not be subject to further review, unless there are requests to review such standards.*
- 2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
- 3. Compliance with a SS or TR does not exempt users from any legal obligations.*

Code of practice for bunker mass flow metering

0 Introduction

This Singapore Standard was developed for the benefit of the bunker industry in Singapore comprising shipowners, operators, charterers, bunker suppliers, bunker craft operators and bunker surveyors. It is intended to enhance the efficiency of bunkering operations and promote best practices in the measurement of bunker fuel delivered.

The purpose of this standard is to document principles, requirements and procedures in the application of mass flow metering to the bunker custody transfer process in Singapore.

This standard does not alter the contractual obligations of the parties involved in the bunker delivery.

1 Scope

This Singapore Standard covers the requirements of bunker quantity measurement using Coriolis mass flow meter (MFM) system. The requirements include metering system qualification, installation, testing, procedures and documentation for bunker custody transfer. Sampling process of bunkering is also covered in this standard.

Figure 1 shows the application of MFM bunkering requirements for bunker custody transfer.

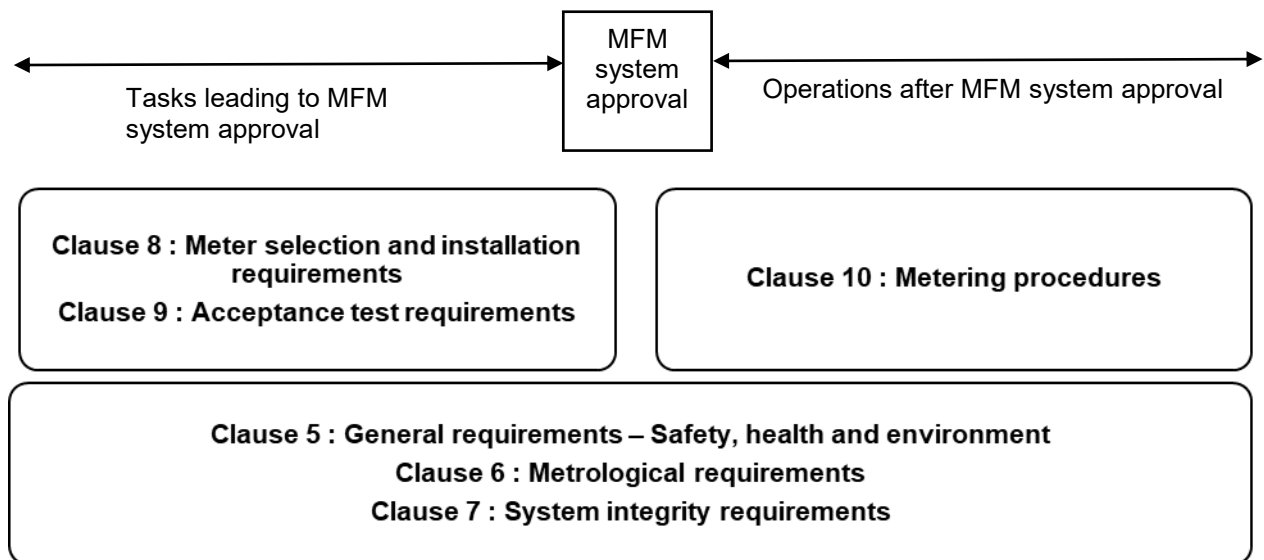


Figure 1 – Application of MFM bunkering requirements

2 Normative references

The following referenced documents are indispensable for the application of this standard. For undated references, the latest edition of the referenced document (including any amendments) applies, unless otherwise stated by the implementing authority.

International Recommendation OIML R117	Dynamic measuring systems for liquids other than water
ISO 3104	Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity
ISO 3675	Crude petroleum and liquid petroleum products – Laboratory determination of density – Hydrometer method
ISO 8217	Petroleum products – Fuels (class F) – Specifications of marine fuels
ISO 12185	Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method
ISO/IEC 17020	Conformity assessment – Requirements for the operation of various types of bodies performing inspection
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
Joint Committee for Guides in Metrology JCGM 100 GUM	Evaluation of measurement data – Guide to the expression of uncertainty in measurement
SS 600	Code of practice for bunkering