
Bunkering of marine fuel using the Coriolis mass flow meter (MFM) system

*Soutage de fioul marin à l'aide d'un débitmètre massique (MFM) selon
le principe de Coriolis*



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Contents

Page

| | |
|---|-----------|
| Foreword | v |
| Introduction | vi |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 4 General requirements (safety, health and the environment) | 7 |
| 5 Metrological requirements | 7 |
| 5.1 General | 7 |
| 5.2 Mass flow meter requirement | 7 |
| 5.3 Mass flow meter system requirements | 8 |
| 5.4 Post approval maintenance | 9 |
| 5.4.1 Meter zero verification frequency | 9 |
| 5.4.2 Zero verification procedure | 9 |
| 5.4.3 Meter and ancillary devices verification and/or calibration frequency | 9 |
| 5.4.4 Software upgrade/ software update | 9 |
| 6 System integrity requirements | 10 |
| 6.1 General | 10 |
| 6.2 Metrological control | 10 |
| 6.2.1 Documentation | 10 |
| 6.2.2 Type approval and pattern evaluation | 10 |
| 6.3 Security features | 10 |
| 6.3.1 Equipment security | 10 |
| 6.3.2 Software security | 10 |
| 6.3.3 Data security | 11 |
| 6.3.4 Critical alarm | 11 |
| 6.4 Installation and commissioning | 11 |
| 6.4.1 Pre-installation and MFM system sealing plan | 11 |
| 6.4.2 Installation and re-installation | 11 |
| 6.4.3 Commissioning | 11 |
| 6.4.4 Re-commissioning | 12 |
| 6.5 Operational security | 12 |
| 6.6 Maintenance and control of MFM system | 12 |
| 6.6.1 Inspection and verification | 12 |
| 6.6.2 Breaking of seals and re-sealing of MFM system | 12 |
| 7 Meter selection and installation requirements | 12 |
| 7.1 General | 12 |
| 7.2 Site survey onboard tankers | 13 |
| 7.3 Meter selection | 13 |
| 7.4 Meter installation | 13 |
| 7.5 Meter commissioning | 14 |
| 8 MFM system verification requirements | 14 |
| 9 Metering procedures | 14 |
| 9.1 General | 14 |
| 9.2 Documentation | 14 |
| 9.2.1 General | 14 |
| 9.2.2 Pre-delivery documentation | 15 |
| 9.2.3 Post-delivery documentation | 15 |
| 9.3 Additional documentation for bunker surveyor | 15 |
| 9.4 Additional documentation for bunker tanker | 16 |
| 9.4.1 Meter totalizer log | 16 |
| 9.4.2 Documents carried onboard the bunker tanker | 16 |

| | | |
|-----------|---|-----------|
| 9.5 | Planning for bunkering operation..... | 17 |
| 9.6 | Pre-delivery procedures..... | 17 |
| 9.6.1 | Flow measurement conditions and checks on system integrity..... | 17 |
| 9.6.2 | Pre-delivery conference..... | 17 |
| 9.6.3 | Bunker requisition form (mass flow metering)..... | 17 |
| 9.6.4 | Mass flow metering system seals checklist..... | 18 |
| 9.6.5 | Meter reading record form (delivery)..... | 18 |
| 9.7 | Delivery procedures..... | 19 |
| 9.7.1 | General..... | 19 |
| 9.7.2 | Start of delivery..... | 19 |
| 9.7.3 | End of delivery..... | 20 |
| 9.8 | Post-delivery procedures and checks..... | 21 |
| 9.8.1 | Meter reading record form (delivery)..... | 21 |
| 9.8.2 | Mass flow metering system seals checklist..... | 21 |
| 9.8.3 | Bunker metering ticket..... | 21 |
| 9.8.4 | Bunker delivery note..... | 21 |
| 9.8.5 | Custody transfer quantity..... | 22 |
| 9.9 | Others..... | 23 |
| 9.9.1 | MFM system failure..... | 23 |
| 9.9.2 | Quantity dispute..... | 23 |
| 10 | Sampling..... | 23 |
| | Annex A (informative) Safety, health and the environment..... | 24 |
| | Annex B (informative) Uncertainty budget table..... | 28 |
| | Annex C (informative) Metrological and system integrity requirements..... | 29 |
| | Annex D (informative) Procedures for zero verification..... | 30 |
| | Annex E (informative) Sealable bolts and nuts for blanks and ancillary device..... | 31 |
| | Annex F (informative) Request for information checklist..... | 33 |
| | Annex G (informative) Typical schematic diagram for MFM system (for delivery)..... | 35 |
| | Annex H (normative) Example of bunker requisition form (mass flow metering)..... | 36 |
| | Annex I (informative) Example of mass flow metering system seals checklist..... | 37 |
| | Annex J (informative) Example of meter reading record form (delivery)..... | 38 |
| | Annex K (informative) Example of bunker metering ticket..... | 39 |
| | Annex L (informative) Bunkering pre-delivery safety checklist..... | 40 |
| | Annex M (informative) Example of survey time log..... | 43 |
| | Annex N (informative) Example of statement of fact..... | 44 |
| | Annex O (informative) Example of meter totalizer log..... | 45 |
| | Annex P (informative) Example of letter of protest..... | 47 |
| | Annex Q (informative) Quantity dispute procedures and documents..... | 48 |
| | Bibliography..... | 49 |

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 28, *Petroleum and related products, fuels and lubricants from natural or synthetic sources*, Subcommittee SC 2, *Measurement of petroleum and related products*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

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

This document sets out the international best practices which documents principles, requirements and procedures in the application of mass flow metering to bunkering.

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

[Figure 1](#) shows the application of MFM bunkering requirements for bunker custody transfer.

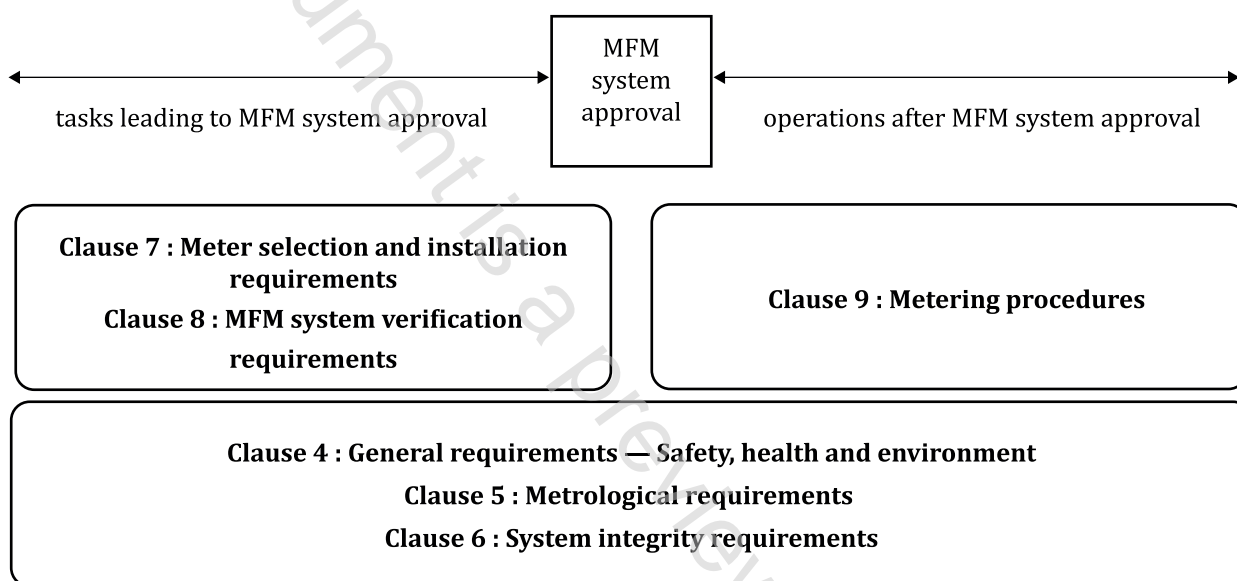


Figure 1 — Application of MFM bunkering requirements

Bunkering of marine fuel using the Coriolis mass flow meter (MFM) system

1 Scope

This document specifies procedures and requirements for the transfer of bunkers to vessels by bunker tankers using the Coriolis mass flow meter (MFM) system. It encompasses the process leading to the approval of the MFM system as installed on bunker tankers and post-approval bunkering operation. It covers terminology, specifications, requirements and procedures on metrology, system integrity, metering system selection and installation, MFM system verification, bunker delivery and dispute handling.

NOTE Local and international regulations, such as the International Convention for the Prevention of Pollution from Ships (MARPOL) can apply.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM: 1995)*

ISO 13739, *Petroleum products — Procedures for the transfer of bunkers to vessels*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

International Recommendation OIML R117-1, *Dynamic measuring systems for liquids other than water*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

accuracy of measurement

closeness of the agreement between the result of a measurement and the conventional, true value of the measurement

Note 1 to entry: Good accuracy implies small random and systematic errors.

Note 2 to entry: The quantitative expression of accuracy should be in terms of uncertainty of measurement.

3.2

adjustment

set of operations carried out on a measuring system to provide prescribed indications corresponding to given values of quantity to be measured

Note 1 to entry: Types of adjustment of a measuring system include zero adjustment of a measuring system, offset adjustment and span adjustment (sometimes called gain adjustment).