ISO 22192:2021 (E)

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

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 General requirements (safety, health and the environment)

5 Metrological requirements

- 5.1 General
- 5.2 Mass flow meter requirement
- 5.3 Mass flow meter system requirements
- 5.4 Post approval maintenance
- 5.4.1 Meter zero verification frequency
- 5.4.2 Zero verification procedure
- 5.4.3 Meter and ancillary devices verification and/or calibration frequency
- 5.4.4 Software upgrade/ software update

6 System integrity requirements

- 6.1 General
- 6.2 Metrological control
- 6.2.1 Documentation
- 6.2.2 Type approval and pattern evaluation
- 6.3 Security features
- 6.3.1 Equipment security
- 6.3.2 Software security
- 6.3.3 Data security
- 6.3.4 Critical alarm
- 6.4 Installation and commissioning
- 6.4.1 Pre-installation and MFM system sealing plan
- 6.4.2 Installation and re-installation
- 6.4.3 Commissioning
- 6.4.4 Re-commissioning
- 6.5 Operational security
- 6.6 Maintenance and control of MFM system
- 6.6.1 Inspection and verification
- 6.6.2 Breaking of seals and re-sealing of MFM system

7 Meter selection and installation requirements

- 7.1 General
- 7.2 Site survey onboard tankers
- 7.3 Meter selection
- 7.4 Meter installation
- 7.5 Meter commissioning

8 MFM system verification requirements

9 Metering procedures

- 9.1 General
- 9.2 Documentation

9.2.1 General
9.2.2 Pre-delivery documentation
9.2.3 Post-delivery documentation
9.3 Additional documentation for bunker surveyor
9.4 Additional documentation for bunker tanker
9.4.1 Meter totalizer log
9.4.2 Documents carried onboard the bunker tanker
9.5 Planning for bunkering operation
9.6 Pre-delivery procedures
9.6.1 Flow measurement conditions and checks on system integrity
9.6.2 Pre-delivery conference
9.6.3 Bunker requisition form (mass flow metering)
9.6.4 Mass flow metering system seals checklist
9.6.5 Meter reading record form (delivery)
9.7 Delivery procedures
9.7.1 General
9.7.2 Start of delivery
9.7.3 End of delivery
9.8 Post-delivery procedures and checks
9.8.1 Meter reading record form (delivery)
9.8.2 Mass flow metering system seals checklist
9.8.3 Bunker metering ticket
9.8.4 Bunker delivery note
9.8.5 Custody transfer quantity
9.9 Others
9.9.1 MFM system failure
9.9.2 Quantity dispute

10 Sampling

Annex A (informative) Safety, health and the environment

A.1 Pre-delivery conference
A.2 Planning for safety
A.2.1 Firefighting
A.2.2 Emergency preparedness
A.2.3 Condition of crew
A.2.4 Bunkering pre-delivery safety checklist
A.3 Observing safe work practices
A.3.1 Smoking and naked lights
A.3.2 Safe access
A.3.3 Outboard deckway
A.3.4 Unauthorised craft
A.3.5 General communication
A.3.6 Emergency shut down
A.4 Preventing exposure to health hazards
A.4.1 Gas monitors
A.4.1.1 Hydrogen sulphide (H2S)
A.4.1.2 Oxygen (O2)
A.4.2 Accommodation openings
A.4.3 Safety data sheet
A.5 Protection of the marine environment
A.5.1 Oil spill handling equipment
A.5.2 Scuppers
A.5.3 Oil spill

Annex B (informative) Uncertainty budget table

Annex C (informative) Metrological and system integrity requirements

Annex D (informative) Procedures for zero verification

Annex E (informative) Sealable bolts and nuts for blanks and ancillary device

Annex F (informative) Request for information checklist

Annex G (informative) Typical schematic diagram for MFM system (for delivery)

Annex H (normative) Example of bunker requisition form (mass flow metering)

Annex I (informative) Example of mass flow metering system seals checklist

Annex J (informative) Example of meter reading record form (delivery)

Annex K (informative) Example of bunker metering ticket

Annex L (informative) Bunkering pre-delivery safety checklist

Annex M (informative) Example of survey time log

Annex N (informative) Example of statement of fact

Annex O (informative) Example of meter totalizer log

Annex P (informative) Example of letter of protest

Annex Q (informative) Quantity dispute procedures and documents

Q.1 General
Q.2 Procedure
Q.3 Recommended list of documents to be produced

Page count: 0