Annex B

Factsheet on SS 660 : 2020 on *Code of practice for bunker cargo delivery from oil terminal to bunker tanker using mass flow meter*

What is SS 660 and what does it cover?

This Singapore Standard covers the quantity measurement and sampling requirements from an oil terminal to a bunker tanker during custody transfer. It is applicable to oil terminals that carry out bunker cargo delivery using the Coriolis mass flow meter[1] (MFM) to bunker tankers.

Key highlights of SS 660 include:

1. Bunker cargo quality

   This section covers bunker cargo specifications, sampling requirements, and related documentation.

2. Traceability and calibration requirements

   This section specifies MFM's metrological traceability, calibration and re-calibration requirements for an MFM system applicable to custody transfer of bunker cargo delivery. It also specifies the required maintenance and control of in-service MFM system.

3. System integrity requirements

   This section specifies the requirements and procedures to ensure the system integrity of an MFM system at each stage (i.e. pre-installation, installation, commissioning and operation). It includes documentation, equipment checks for mechanical, software, electrical and operational security.

4. Meter selection and installation requirements

   This section covers the selection and installation of an MFM system to meet the requirements set out in the standard. It includes pre-selection screening, site survey and highlights the responsibility of the terminal owners/operators and meter vendors in this process.

5. MFM system verification requirements

   This section covers the requirement to undergo and pass an onsite verification to ensure that the metrological and system integrity requirements in the standard are met.

6. Metering procedures

   This section covers the pre-delivery, delivery and post-delivery documentation and procedures for the delivery of bunker cargo using an MFM system in the terminals in Singapore.

[1] Coriolis mass flow meters are composed of one or more vibrating tubes that are usually bent. The fluid to be measured passes through the vibrating tube and the fluid accelerates as it moves towards the point where the vibration is at its maximum and decelerates as it leaves this point. This results in a twisting motion in the tubes. The degree of twisting motion is directly proportional to the fluid's mass flow.

How does SS 660 help and benefit the shipping and bunkering industry?

1. Enhances fair trade along bunker supply chain

   Bunker tankers receiving their bunker cargo through the MFM at the oil terminal for subsequent supply to vessels will have better assurance on the custody transfer quantity received. In addition, with the same method of measurement and requirements for custody transfer as SS 648 on *Code of practice for bunker mass flow metering*, bunker tanker operators and bunker cargo owners are better able to account for and manage their inventory from the start to the end of the bunker supply chain[2].

   The standard also requires the taking of a representative fuel sample at the custody transfer point for analysis to determine compliance with the agreed fuel specifications.
   The standard strengthens the application of SS 524 on *Specification for quality management for bunker supply chain*, which is adopted by bunker suppliers.

2. Enhances Singapore's bunkering hub status

   This standard catalysed the adoption of digital technology (i.e. use of Coriolis MFM) for terminal operations to improve efficiency, productivity and transparency. Shipowners and operators will have better assurance that not only will their vessels receive bunkers correctly, they will also know that the bunkering service is backed up by the integrity of the entire bunker supply chain.

   The implementation of best bunkering practices will encourage more shipowners to have their vessels call at Singapore to take bunkers with greater trust and confidence in Singapore's bunkering industry.

Who would use SS 660?

Users of SS 660 include oil terminals, vendors of Coriolis mass flow meters, bunker suppliers, surveyors, bunker tanker operators and relevant authorities.

Who developed SS 660?

The national Technical Committee (TC) on Bunkering appointed a Working Group (WG) to develop SS 660 under the Singapore Standardisation Programme administered by Enterprise Singapore. The Standards Development Organisation at Singapore Chemical Industry is appointed by Enterprise Singapore to support the Chemical Standards Committee and Environment and Resources Standards Committee and its various committees, including the TC for Bunkering and WGs.

The WG on SS 660 consists of expert members from the oil majors, oil terminals, oil traders, bunker suppliers, bunker tanker operators, testing laboratories, bunker surveying companies, meter vendors and supporting vendors, National Metrology Centre, Enterprise Singapore and Maritime and Port Authority of Singapore.

What is the process of developing SS 660?

From April 2019, the WG on SS 660 prepared the draft SS using TR 48/SS 648 *Code of practice for bunker mass flow metering* as base documents. Upon the TC for

[2] Bunker supply chain refers to the delivery of bunker from oil terminal to bunker tanker and to end user (i.e. receiving vessel).

Bunkering's approval, the draft SS was issued for public comment in mid-2020 to solicit stakeholders' feedback. The refined draft SS with incorporation of feedback was then approved by the Chemical Standards Committee under the Singapore Standards Council.

Purchase of SS 660

SS 660 can be purchased at Toppan Leefung:

Toppan Leefung Pte Ltd
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Price of SS 660 : 2020 is $42.40 (before GST).