

# Fact Sheet on TR 48 : 2015

## ***Technical Reference for Bunker Mass Flow Metering***

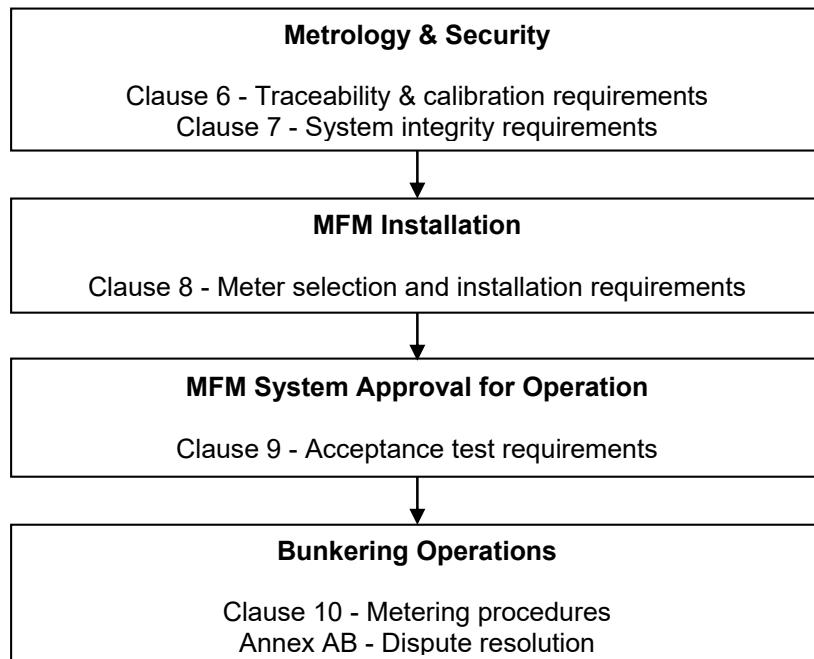
### **What is TR 48 : 2015 *Technical Reference for Bunker Mass Flow Metering* and what does it cover?**

This Technical Reference<sup>1</sup> (TR) for Bunker Mass Flow Metering is a technical document covering the set of core requirements for metering system qualification, installation, testing, procedures and documentation for bunker custody transfer<sup>2</sup> using the Coriolis mass flow metering<sup>3</sup> system.

These requirements provide a fair basis for custody transfer between the bunker supplier and bunker buyer in Singapore, aided by the independent bunker surveyor if engaged. Key areas of TR48 include:

- MFM system to operate within 0.5% overall measurement uncertainty
- Four criteria:
  - 1) Traceability to SI mass & meter selection
  - 2) System integrity requirements
  - 3) Acceptance test requirements
  - 4) MFM bunker delivery procedure

The flowchart below shows the various stages of the MFM bunkering requirements in Singapore.



<sup>1</sup> The technical reference is based on the current knowledge, extensive field trials and experience gained in the new application of Coriolis mass flow metering technology for the bunkering industry. The TR will be reviewed after two years based on industry feedback to consider its elevation to a Singapore standard.

<sup>2</sup> Custody transfer - Custody transfer takes place at the point where the bunker fuel passes the rail of the receiving vessel when the bunker is considered transferred from the buyer to the seller. Custody transfer in fluid measurement is defined as a metering point where the fluid is being measured for sale from one party to another.

<sup>3</sup> Coriolis mass flow meter - 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.

## **Why is TR 48 : 2015 important?**

### *1. Enhances Singapore's bunkering hub status*

Industry-wide adoption of standardised bunker delivery procedures since the early 1990s has contributed to the growth of the bunkering industry in Singapore. MPA has reported bunker sales volume of 45.16 million metric tonnes (mt) in 2015 with more than 132,000 vessels arriving in 2015. The use of Coriolis mass flow meters as prescribed in the TR will help boost Singapore's position as the world's top bunkering port through improvements in operational efficiency and productivity.

### *2. Ensures quality bunkering service*

Bunker suppliers and craft operators must be licensed by MPA before they can conduct bunker supply business in the port of Singapore. With effect from 1 Jan 2017, it is mandatory for bunker suppliers to use the mass flow meter (MFM) system for bunker delivery of MFO in the Port of Singapore. All existing bunker tankers operating in port must be fitted with a MPA-approved MFM system for MFO delivery in the Port of Singapore by 31 Dec 2016.

The MFM system enhances integrity, transparency and increases productivity. Adoption of MFM system for bunkering in the Port of Singapore will provide better assurance to both the bunker buyers and suppliers on the quantity of bunker delivered.

### *3. Enhances business opportunities on other related sectors*

Best bunkering practices will encourage more ship owners to have their vessels call at Singapore to take bunkers. This will have considerable positive impact on related sectors like oil trading and storage. The growth of bunkering industry and related sectors will contribute to the growth of Singapore as an international maritime hub.

## **Who would need to adopt TR 48 : 2015?**

Users of this TR include stakeholders of the bunker supply chain, including ship owners/charterers, bunker tanker owners and operators, bunker suppliers, bunker surveyors, maritime arbitrators, vendors of Coriolis mass flow meters and MPA.

## **Who developed TR 48 : 2015?**

The national Technical Committee (TC) on Bunkering appointed a Working Group (WG) to develop the TR on Bunker Mass Flow Metering under the Singapore standardisation programme administered by SPRING Singapore. This programme, guided by the industry-led Singapore Standards Council, focuses on developing and promoting the use of standards in the industry. The Standards Development Organisation at Singapore Chemical Industry (SDO@SCIC) was appointed by SPRING in 2011 to support the Chemical Standards Committee (CSC) and its committees, including the Bunkering TC and WGs.

The WG on Mass Flow Metering consists of expert members from the Singapore Shipping Association (SSA), International Bunker Industry Association (IBIA), bunker suppliers, testing laboratories, surveying companies, meter vendors and supporting vendors, National Metrology Centre (NMC), SPRING Singapore's Weights and Measures Office (WMO) and Maritime and Port Authority of Singapore (MPA).

## **What is the process of developing TR 48 : 2015?**

The WG on Mass Flow Metering prepared the draft TR with inputs from the industry. The draft was reviewed and endorsed by the Technical Committee for Bunkering before its final approval by the Chemical Standards Committee.

## **Implementation of the TR 48 : 2015**

Starting from 1 June 2016, TR 48 : 2015 will be used by MPA to support its initiative for all bunker tankers to be fitted with approved mass flow metering systems for marine fuel oil delivery in the Port of Singapore.

## **Purchase of TR 48 : 2015**

TR48:2015 can be purchased at Toppan Leefung:

### **Toppan Leefung Pte Ltd**

1 Kim Seng Promenade #18-01  
Great World City East Tower  
Singapore 237994

Tel: (65) 6826 9691

Email: [singaporestandardseshop@toppanleefung.com](mailto:singaporestandardseshop@toppanleefung.com)

Website: [www.singaporestandardseshop.sg](http://www.singaporestandardseshop.sg)

Price of TR48:2015 is \$81.32 (inclusive of GST)

## **National Standardisation Programme**

As the national standards body, SPRING administers the Singapore Standardisation Programme under the guidance of an industry-led Singapore Standards Council. The Council advises SPRING on the policies and strategic directions for the Singapore Standardisation Programme, which national and international standards are developed and promoted for adoption in various industries.

Over 1,600 representatives from the private and public sector come together as Standards Partners to identify emerging trends and develop standards to support both industry growth and meet regulatory requirements. These Standards Partners from government, educational institutions, industry associations and professional bodies, volunteer their time and expertise in more than 150 Standards Committees (SC), Technical Committees (TC) and Working Groups (WG).