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## **MEDEA: “Metrology – Enabling Developing Economies in Asia”**

### **Verification of Bulk Flowmetering Systems using a Master Meter**

**22 – 25 February 2021 online**

#### **Introduction**

Accurate measurement in the marketplace is an important component of an economy’s metrological system. APLMF has conducted training courses for the past 20 years to support the development of a sound measurement infrastructure that inspires confidence and trust within the region. This ensures both consumers and vendors are benefitting equally and promotes fairer trade with greater transparency, accuracy and long-term sustainability. Due to the high monetary value of fuel bought, sold and transferred through metering systems, it is vitally important that legal metrology authorities use harmonised verification test procedures. This train-the-trainer course is designed for staff who have a responsibility to train staff in their own economies.

#### **Objective**

This program is designed for people who verify bulk flowmetering systems or who have a responsibility for ensuring that these instruments are verified in accordance with OIML recommendations. In addition to some training experience all participants are expected to have practical experience in the field using a master meter. This training is composed of lectures which cover a basic understanding of the test procedures required to verify bulk flowmetering systems using a master meter and a volume measure as the reference standards. We will explain the test procedures and how the reference standard is verified.

This course provides participants with the knowledge and skills to:

- understand the role of trade measurement within an economy
- identify the major components of a bulk flowmetering system
- analyse the operating environment to determine how it could impact on the performance of the meter
- identify sources of any possible operational error
- verify a bulk flowmetering system in accordance with the test procedures and workplace health and safety guidelines
- train others to verify bulk flowmetering systems

## **Course Delivery**

Training will be delivered using **3 three-hour zoom sessions** held on **23, 24 and 25 February at 2 pm AEST (UTC+10)**. Participants will be expected to attend each session and to complete some reading and learning activities between sessions. A maximum of 12 participants will be accepted for the training. Participants will be able to ask the trainer questions throughout each session. A test run will be held on **22 February at 2 pm AEST** to ensure everyone has the technology working. During the test run participants will introduce themselves and we will share the collated results (economy report) regarding how bulk flowmeters are managed in each economy. You will receive a zoom link when you are accepted for the course.

## **Technical Requirements:**

The **recommended technical requirements** for optimal results to participate in the online training on the Zoom platform are as follows:

- Intel Laptop/PC from 2009 or higher
- Dual Core 2Ghz or higher
- Windows 10
- Google Chrome 56 or higher
- HD USB Webcam
- Headset/Mic combo or Earphones + USB Microphone
- Network Connection: Recommended 2Mbps Up/2Mbps Down network bandwidth

## **Organizers:**

1. Physikalisch-Technische Bundesanstalt (PTB)
2. Asia-Pacific Legal Metrology Forum (APLMF)

## **Supporting Organizations:**

1. National Measurement Institute, Australia (NMI,A)

## **Trainers:**

Marian Haire, Training Coordinator, APLMF  
Will Hartmann, Senior Trade Measurement Officer, NMIA

## **Registration:**

Please complete the attached "[Nomination Form](#)" and– [mail to: Anne.Hoepfner@ptb.de](mailto:Anne.Hoepfner@ptb.de) by **15 January 2021**

## **Contact Persons:**

### **APLMF Secretariat**

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## Agenda

### Verification of Bulk Flowmetering Systems using a Master Meter

#### Test Run Monday 22 February

Topic	Presenters
Technology check & VC protocols Introductions and course outline Economy reports Answers to pre-course questions	Marian Haire Will Hartmann

#### Session 1 – Tuesday 23 February at 2 pm Presenter Will Hartmann

Topic	Time
Technology check & VC protocols	10 mins
National measurement systems Verifier obligations in Australia Components of bulk flowmetering systems Certificates of approval Reference standards of measurement	75 mins
Break to stretch and rest	15 mins
Applying reference standard corrections Environmental factors Volume correction Questions - Session 1	75 mins
Complete <b>Learning activities 1-7</b>	After class

#### Session 2 – Wednesday 24 February at 2 pm Presenter Will Hartmann

Topic	Time
Technology check & VC protocols Answers to learning activities and any questions from last session	30 mins
Overview of NITP 5.2 Equipment required for testing Visual inspection Test procedure – Accuracy testing using a master meter <b>Learning activity 8.</b>	50 mins
Break to stretch and rest and complete <b>Learning activity 9</b>	30 mins
Test procedure continued <b>Learning activity 10</b> Questions	75 mins
Complete <b>Learning activities 11-13</b>	After class

#### Session 3 – Thursday 25 February at 2 pm Presenter Will Hartmann

Topic	Time
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Technology check & VC protocols Answer to learning activities and any questions from last session	15 mins
Test procedures: 4.1 indicating devices 4.2 zero setting 4.3 non-return valve 4.4 interlock 4.5 max. flow rate 4.7 repeatability 4.8 meter creep 4.9 conversion device <b>Learning activities 14-15</b>	75 mins
Break to stretch and rest	15 mins
Test procedures continued: 4.10 gas elimination 4.11 low-level cut-off 4.12 pre-set indications and accuracy 4.13 anti-drain/hose dilation 4.14 ticket printing <b>Learning activity 16</b> Suggested sequence for testing Wrapping up Action plans	60 mins