

PROPOSAL FOR NOMINATIONS OF OIML AWARD 2017 FOR EXCELLENT ACHIEVEMENTS IN LEGAL METROLOGY IN DEVELOPING COUNTRIES

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SECTION 1: BACKGROUND INFORMATION

INTRODUCTION

Historically, the development of modern metrology in Malaysia started from the need to ensure fair trading and consumer protection based on common units of measurement throughout the country. In 1972, the Weights and Measures Act was gazetted, but it took another ten years before it was enforced in 1983. One of the landmarks in the Act was the use of the SI units in all trade transactions. This requirement made it necessary to appoint an independent and competent laboratory to house the national reference standards to represent the SI units. Hence the forerunner of the National Metrology Institute of Malaysia or the NMIM was born in 1975 to address the national measurement standards for trade measurements and in the process NMIM was appointed as the Custodian of Weights and Measures. Since that time the NMIM has been working very closely with the Legal Metrology Unit of the Enforcement Division of the Ministry of Domestic Trade, Co-operatives and Consumerism to implement the Weights and Measures Act 1972. The present state of domestic control of trade measurements in Malaysia is a result of long collaboration between the above two institutions.

Routine verification and surveillance of trade instruments is carried out by the Metrology Corporation Malaysia Sdn. Bhd. (MCM) which is a private company appointed and monitored by the Ministry of Domestic Trade, Co-operatives and Consumerism. MCM has established its branches in all major cities in Malaysia.

In 2007 the National Measurement System Act was enforced. This Act is an umbrella Act that covers the use of legal measurements in Malaysia (see Figure 1). It includes the use of the universal coordinated time (UTC) as the reference for legal time of day in Malaysia. The NMIM is entrusted to implement the provisions in this Act. This also means that the responsibilities of the NMIM for legal metrology is expanded by having to deliver as the Custodian of Weights and Measures under the Weights and Measures Act 1972 and even greater roles under the National Measurement System Act 2007. This includes legal metrology of non-trade measurements.

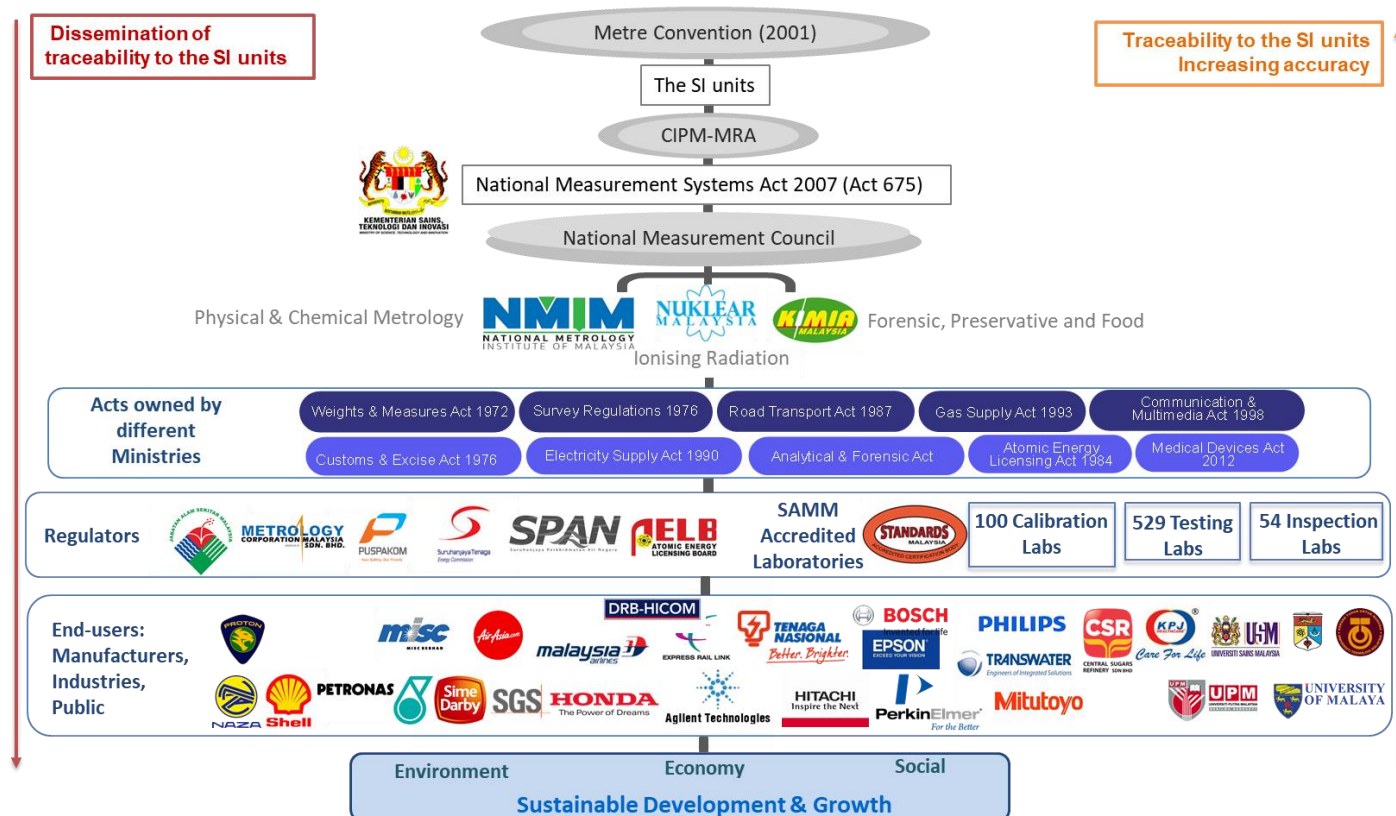


Figure 1: The National Measurement System of Malaysia

CONCEPT OF NOMINATION

Malaysia would like to propose the cooperative concept for the OIML Award in which the collective work amongst the three agencies of the NMIM, the Enforcement Division of the Ministry of Domestic Trade, Co-Operatives and Consumerism, and Metrology Corporation Malaysia Sdn. Bhd. is given the recognition. Together these three institutions has provided a particular model for a developing country like Malaysia and has provided an effective national system for legal metrology focussing on trade measurements. Further, this cooperation covers legal metrology activities at the national as well as at regional level.

SECTION 2: SUPPORTING INFORMATION ON ACTIVITIES

This section will provide more information on the roles and responsibilities of the nominated institutions. Relevant photographs are inserted to highlight actual activities.

2.1 Roles and Responsibilities of the National Metrology Institute of Malaysia (NMIM)

2.1.1 Responsibilities under legislation

- Implements the provisions under the National Measurement System Act 2007
- As the Custodian of Weights and Measures, NMIM provides technical advice to Legal Metrology Unit of the Enforcement Division of the Ministry of Domestic Trade, Co-operatives and Consumerism
- NMIM is the secretary to the National Measurement Council
- Appointed as the National Timekeeper
- Appointed under the Petroleum Act as the competent body to calibrate measuring instruments in oil and gas industry

2.1.2 Legal Metrology Services Provided

- Pattern Approval of regulated devices such as water meter, fuel dispenser pump, electricity meter, water dispenser, parking meter, container weighing system, portable axle-weigher, depth gauges for oil and gas installations.
- Calibration of working standards belonging to Metrology Unit of the Enforcement Division of the Ministry of Domestic Trade, Co-operatives and Consumerism for enforcement purposes.
- Calibration of working standards belonging to Metrology Corporation Malaysia Sdn. Bhd. For verification purposes.

2.1.3 Legal Metrology Training Provided

- Provides training on measuring instruments used in trade to inspectors of weights and measures and verifiers.

2.1.4 Hosting of regional courses under the PTB's MEDEA Project

- Verification and calibration of CNG Dispensers (8 – 11 September 2015). NMIM provided trainers.
- Training on NAWI (8 Nov. – 2 Dec. 2016). NMIM provided co-trainer
- Verification and pattern approval of water meters (12 -14 September 2017)
- Verification of rice/grain moisture (17 -21 July 2017). NMIM provides co-trainer.

2.1.5 Membership at regional and international level

- Corresponding member of OIML.
- Member of the Asia-Pacific Legal Metrology Forum (APLMF).
- Member of ASEAN Working Group on Legal Metrology.

2.1.6 List of OIML Recommendations that have been adopted by the NMIM

The NMIM has adopted a series of OIML Recommendations in its legal metrology work. This adoption finds common agreement with the Legal Metrology Unit of the Enforcement Division of the Ministry of Domestic Trade, Co-operatives and Consumerism, and the MCM. The list of the adopted OIML Recommendations is given in Appendix 1.

2.1.7 Statistics of regulated instruments received by the NMIM in 2016

The types of regulated instruments that were received by the NMIM in 2016 is given in Appendix 2.

2.1.8 Statistics of measuring equipment granted pattern approval in 2016 is given in Appendix 3.

2.1.9 The way forward for the NMIM is to establish a working committee at the national level to address legal metrology requirements for non-trade measurements. At the same time, the NMIM will take the initiative to expose the concept of National Quality Infrastructure to all stakeholders.

Legal metrology activities of the NMIM



DEMONSTRATION ON WEIGHBRIDGE
SYSTEM AT NMIM



TRAINING ON PRE-PACKAGED

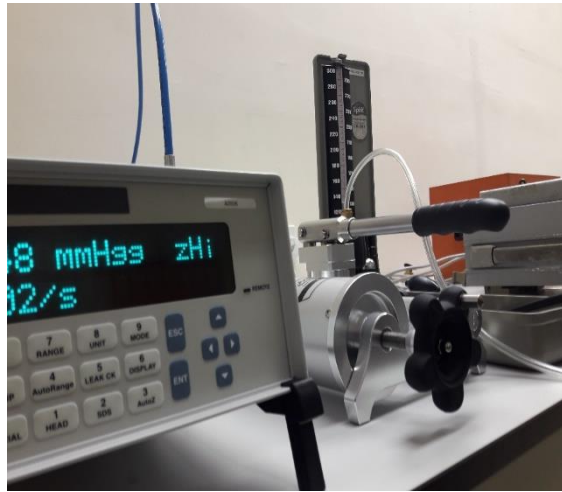


RICE MOISTURE CONTENT
MEASUREMENT SYSTEM



VEHICLE SPEED MEASURING
SYSTEM

Legal metrology activities of the NMIM



CALIBRATION OF BLOOD PRESSURE MONITORING DEVICE



TRAINING ON BALANCE CALIBRATION



DEVELOPMENT OF VERIFICATION OF HOPPER FOR BATCHING PLANT



FACTORY ACCEPTANCE TEST FOR CONVEYOR BELT SYSTEM

Legal metrology activities of the NMIM



PATTERN APPROVAL/CALIBRATION
AND VERIFICATION OF PORTABLE
AXLE WEIGHER/WHEEL LOAD SCALE



PATTERN APPROVAL FOR NAWI –
CONTAINER WEIGHING SYSTEM
(SAFETY OF LIFE AT SEA – SOLAS)



CALIBRATION OF WEIGH – IN-
MOTION SYSTEM – WIM



CALIBRATION OF STANDARD
WEIGHTS

Legal metrology activities of the NMIM

	
<p>MEASUREMENT OF METEOROLOGY DATA USING RADIOSONDE FOR METEOROLOGY DEPARTMENT</p>	<p>CALIBRATION OF SMOKEMETER ON-SITE</p>
	
<p>CALIBRATION OF PIPELINE METERING</p>	<p>MEASUREMENT OF VOLUME FOR CUSTODY TRANSFER</p>

2.2 Roles and Responsibilities of the Enforcement Division of the Ministry of Domestic Trade, Co-operatives and Consumerism

This Division delegates a Legal Metrology Unit which is responsible for implementing the provisions of the Weights and Measures Act 1972.

2.2.1 Responsibilities under legislation

- Implements the Weights and Measures Act 1972. This Act covers the provisions for trade measurements in Malaysia.
- The Director of the Division chairs of quarterly meetings of the Joint Committee on Legal Metrology whose members comprising of the NMIM, the Enforcement Division and MCM.

2.2.2 Legal Metrology Services Provided

- Provide advice on Legal metrology to government agencies.
- Organize pilot project on pre-packaged amongst Malaysian manufacturers.
- Provides legal metrology overview training to MCM staff.

2.2.3 Legal Metrology Training Provided

- Training to enforcement officers/inspectors
- Training to industries – e.g., pre-packaged regulation
- Seminar to trade instrument repairers

2.2.4 Hosting of regional courses under the PTB's MEDEA Project

- MEDEA training on Verification of Supermarket Scales (28 Nov – 01 Dec, 2016) in Kuala Lumpur

2.2.5 Membership at regional and international level

- Executive Committee Member of Asia-Pacific Legal Metrology Forum (APLMF)
- Member of ASEAN Consultative Committee for Standard and Quality (ACCSQ)
- Member of WG3 on legal metrology under ACCSQ

Legal metrology activities of the Enforcement Division of the Ministry of Domestic Trade, Co-operatives and Consumerism



MEDEA TRAINING COURSE ON THE VERIFICATION OF FUEL DISPENSERS, 11
-13 JULY 2016, PATTAYA, THAILAND

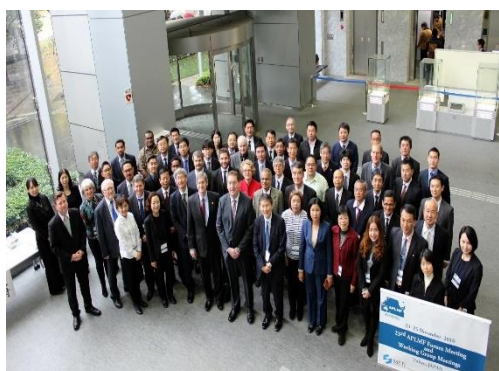


OIML ADVISORY GROUP TRAINING COURSE ON NON-AUTOMATED
WEIGHING INSTRUMENTS, 18 – 22 JULY 2016, BEIJING CHINA

Legal metrology activities of the Enforcement Division



THE 26TH ACCSQ WORKING GROUP ON METROLOGY (WG3) & ITS RELATED EVENT, 1 - 4 AUGUST 2016, DA NANG, VIETNAM



23rd APLMF FORUM MEETING AND WORKING GROUP MEETING, 23 -25 NOVEMBER 2016



BRIEFING TO LOCAL MANUFACTURER ON PRE-PACKAGED



VERIFICATION OF WEIGHING SYSTEM FOR BATCHING PLANT



PRE-PACKAGED LABORATORY AT THE ENFORCEMENT DIVISION

Legal metrology activities of the Enforcement Division



NATIONAL LEVEL JOINT COMMITTEE MEETING ON LEGAL METROLOGY
15 MEI 2017, PUTRAJAYA, MALAYSIA

2.2.6 Way Forward for the Enforcement Division of the Ministry of Domestic Trade, Co-operatives and Consumerism

- Provide assistance on legal metrology to various ministries.
- Improve technology that can be used to empower and facilitate the division to enforce the Weights and Measures Act 2007.
- Strengthen the verification work done by Metrology Corporation Malaysia Sdn. Bhd.
- To enhance legal metrology system and rationalization of pattern approval system in order to reduce the dumping of weights and measurement instruments.
- Adopt fully the OIML recommendations in all verification of trade instruments.

2.3 Roles and Responsibilities of the Metrology Corporation Malaysia Sdn. Bhd. (MCM)



BACKGROUND

Metrology Corporation Malaysia Sdn. Bhd. (MCM) was granted a fifteen (15) years concessionaire by the Government of Malaysia to undertake legal metrology works in the country. A weighing or measuring instrument intended to be used for trade must be of an approved type and, prior to being used, must be verified or reverified by MCM verification officers. The instrument must operate within the appropriate limits of error as prescribed by the Weights and Measures Regulations, 1981.

Instruments (such as weighbridge) that needs to be installed before an inspection can be performed are verified on site. Others are required to be inspected at the manufacturers or dealers' premises before they are delivered to customers. Every twelve (12) months or/and whenever such weight and measure instrument are repaired and recalibrated, they are subject to verification by MCM.

In 1980s and 1990s, the Government of Malaysia had encouraged many privatization projects especially in manufacturing and services sectors. MCM has taken the opportunity to propose the privatization concept in legal metrology verification and re-verification services.

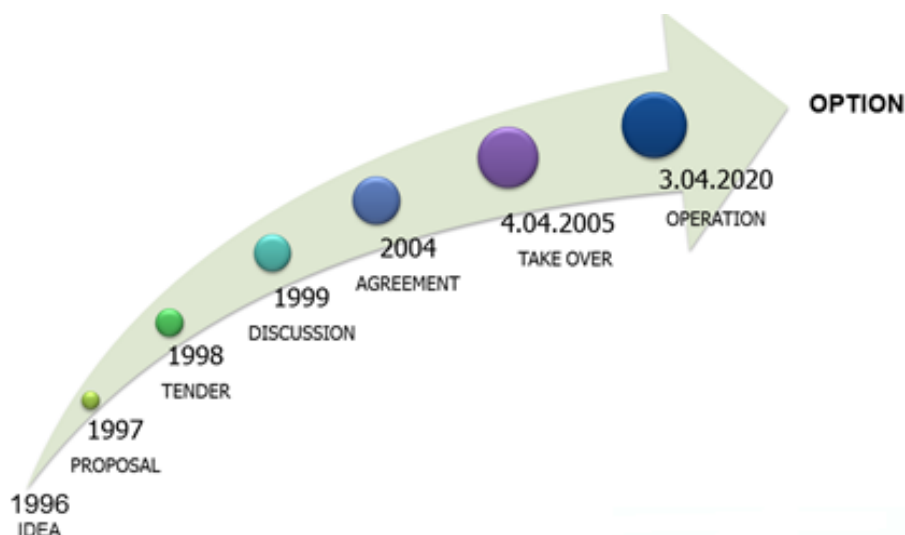
This privatization has resulted not only in saving the Government operational costs, but also collecting royalty fees as part of its income. Due to this privatization, separation of power is exercised between policy makers, enforcement, surveillance and verification officers. Thus there is no conflict of interest between all.

Since taking over the verification works, MCM has managed to increase the numbers of weighing and measuring instruments thus performance has increased

by more than 50% and fees collections has also increased by 300%. Under the privatization of the legal metrology verification office, government would not face any budget constraint, and also work process can be done fast and efficiently. Since the privatization, MCM staff numbers have increased. MCM also acquired bigger investment in lorry cranes, and with the implementation of an excellent strategic marketing plan MCM managed to increase productivity partly by discovering numbers of untapped instruments.

MCM staffs have been trained regularly either in-house or through overseas training. Based on MCM operations, experiences and expertise, MCM has provided proposals, suggestions and recommendations in the amendment of Weight and Measures Act, Pattern Order and its Rules and Regulations.

CRONOLOGY OF PRIVATIZATION



PURPOSE OF VERIFICATION WORK

- ✓ Accurate Measurement
- ✓ Fair Trading
- ✓ Consumer Protection
- ✓ Consumer Confidence
- ✓ Domestic & International Trade Support

VISION

To be a world class legal metrology service provider in Malaysia.

MISSION

To continuously provide quality and accurate services in line with legal metrology and technology.

CORPORATE BRIEF

Office Hour	:	8:30 am – 5:30 pm (Mondays – Fridays)
Branch Offices	:	34 branches
Working Standard	:	10,089 unit
Laboratory	:	Head Quater (Mass)
Total No. Of Staff	:	213 officers
Verification Officer	:	164 officers
Crane Truck	:	19 units
Four-wheel Drive	:	14 units
Van	:	1 unit

MCM BRANCHES IN MALAYSIA



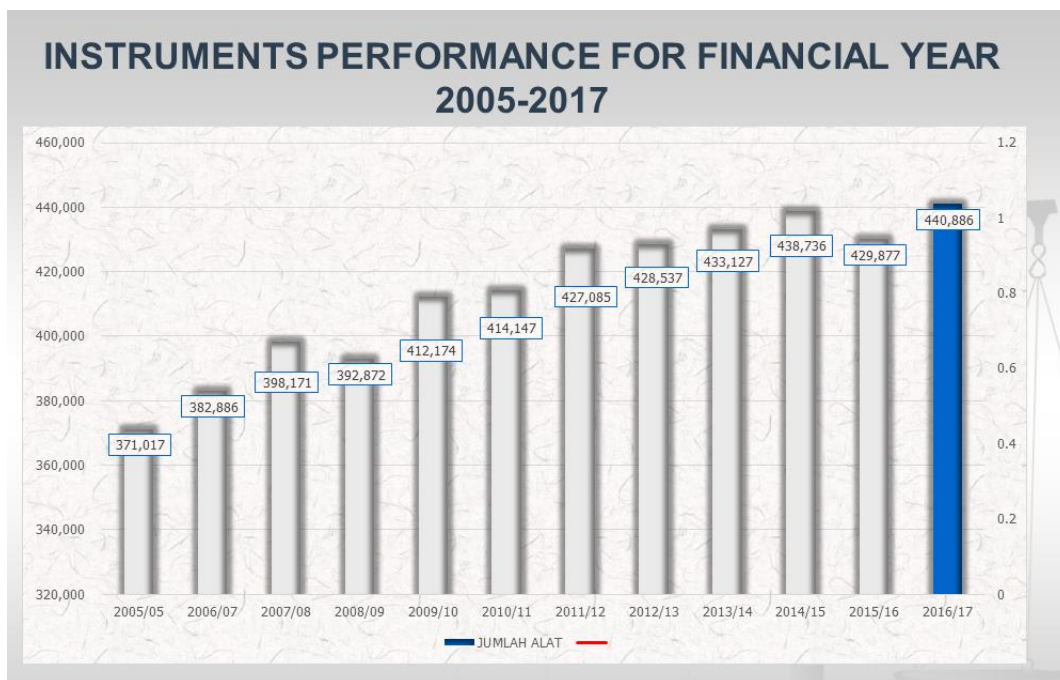
LIST OF WEIGHTS & MEASURES INSTRUMENTS VERIFIED

- 1) Weighbridge
- 2) Fuel Dispenser
- 3) Spring Balance
- 4) Balance
- 5) Beam Scale
- 6) Test Weight
- 7) Liteng
- 8) Linear Measure
- 9) Water Vending Machine
- 10) Tanker
- 11) Optic Measure
- 12) Flow Meter
- 13) Axle Weighing Scale
- 14) Parking Meter
- 15) Time Recorder

INNOVATION BY MCM

- 1) Sticker QR Code
- 2) Seal
- 3) e-Verification
- 4) e-Weight & Measure
- 5) ISO 17020 Compliance
- 6) ISO 17025 Compliance
- 7) Verification for SOLAS (SAFETY OF LIFE AT SEA)
- 8) R&D collaboration with Universities
- 9) In-house 'expert verification officer' training

INSTRUMENTS VERIFICATION PERFORMANCE FOR FINANCIAL YEAR 2005-2017



LEGAL METROLOGY ACTIVITIES OF MCM

1) Stamping Stations



2) Metrology Day, Ministry of Domestic Trade, Co-Operatives and Consumerism, Putrajaya



3) Seminar for Licensed Repairers



4) Joined Operation Activity with Ministry of Domestic Trade, Co-Operatives and Consumerism



5) Corporate Social Responsibility



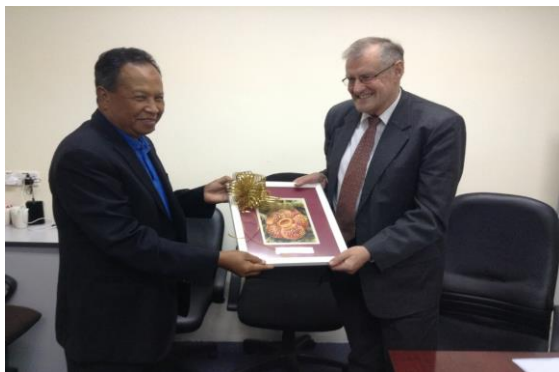
6) Consumerism Exhibition



7) Visit & Technical Training at Beijing Institute of Metrology (BIM)



8) Visit by Prof. Kochsiek from PTB Germany to MCM Headquarters



9) Technical Visit to PTB Germany 2016

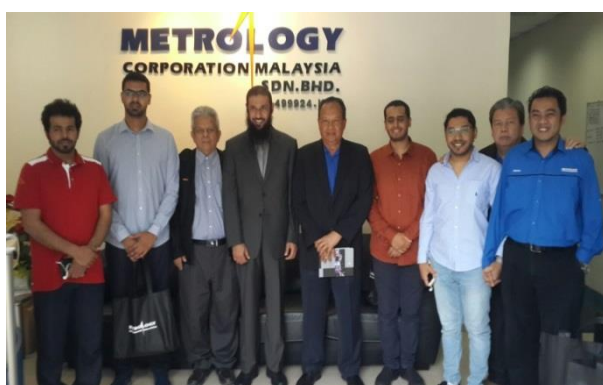


10) ACCSQ-WG3 Meeting, Bangkok 2016



ASEAN Workshop participants

11) Visit By Quality Control Council, United Arab Emirates – 2015



12) Technical Visit To CBWM, Nonthaburi, Bangkok (Pre-Packaged Products)
2015



13) Pattern Approval Of Mass Flow Meter In Switzerland



14) Pattern Approval Of Pump Dispenser In Japan



CONCLUSIONS

This report has presented the roles and responsibilities of the National Metrology Institute of Malaysia, the Enforcement Division of the Ministry of Domestic Trade, Co-Operatives and Consumerism, and Metrology Corporation Malaysia Sdn. Bhd. Their unique roles have combined to put in place a sound legal metrology infrastructure that encompass legislation, traceability, enforcement and verification of trade transactions.

The OIML Award 2017 for developing countries is highly recommended and timely for Malaysia considering the following:

- 1) There is a close cooperation between scientific metrology and legal metrology in Malaysia.
- 2) With regard to the areas covered under legal metrology, there are definite legal metrology interventions for trade, health, safety and the environment.
- 3) There is a close cooperation between the NMIM, the Legal Metrology Unit of Enforcement Division of the Ministry of Domestic Trade, Co-Operatives and Consumerism, and Metrology Corporation Malaysia Sdn. Bhd. They are the key players of legal metrology in Malaysia.
- 4) The above cooperation between the three parties has been effective to define the legal metrology system in Malaysia particularly for trade measurements.
- 5) There have been many improvements that have been delivered to the community as a result of their cooperation such as fair trade, consumer protection and eliminating fraud in palm oil and rubber industry.
- 6) Winning the OIML Award will be a significant milestone for them as this will further strengthen their cooperation in the future and also provide the strong motivation towards meeting the OIML recommendations.

Table 1: List of OIML Recommendations that have been adopted by the NMIM

1.	OIML R111	Weights of classes E1, E2, F1, F2, M1, M1-2, M2, M2-3 and M3
2.	OIML R 76	Non-automatic weighing instruments
3.	OIML R 79	Labelling requirements for pre-packages
4.	OIML R 87	Quantity of product in pre-packages
5.	OIML D 28	Conventional value of the result of weighing in air (Revision of R 33)
6.	OIML R134	Automatic instruments for weighing road vehicles in motion and measuring axle loads
7.	OIML R107	Discontinuous totalizing automatic weighing instruments (totalizing hopper weighers)
8.	OIML R 51	Automatic catch weighing instruments
9.	OIML R 61	Automatic gravimetric filling instruments
10.	OIML R50	Continuous totalizing automatic weighing instruments (belt weighers)
11.	OIML R99	CO-HC Gas Analysers
12.	R126	Breath alcohol analyser
13.	R59	Moisture meters for cereal grain and oilseeds
14.	OIML R49	Pattern Approval and the Verification of Water Meters

Types of regulated instruments that were received by the NMIM in 2016

No.	Name of Agencies and vendors	Number of instruments calibrated by the NMIM
1.	Ministry of Domestic Trade, Co-Operatives and Consumerism	261
2.	PUSPAKOM (A company set up under the purview of the Ministry of Road and Transport)	268
3.	Metrology Corporation Sdn. Bhd.	134
4.	Department of the Environment	53
5.	Andalas Timur (vendor)	11
6.	Autovis Sdn. Bhd. (vendor)	116
7.	Awana Spekterum Sdn. Bhd. (vendor)	17
8.	Translab Sdn. Bhd. (vendor)	150
	Total	1010

The following is the listing of the types of instrument submitted to the NMIM by the various agencies and vendors

Department of the Environment

- Smoke meter CO HC Analyzer - environment
- Sound Level Meter - environment
- Thermo-anemometer - environment

PUSPAKOM

- Mobile Balance for Vehicle Test – safety
- Lane Inspection equipment - safety

- RPM Tester – safety
- Side Slip Block – safety
- Sound Calibrator – safety
- UBT 3000 calibrator (speed & vibration) – safety
- Dead weight – safety
- Dial Indicator for Heavy Vehicle & Light Vehicle lane – safety
- Speedometer – safety
- Tinted meter - safety

Enforcement Division, Ministry of Domestic Trade, Co-Operatives and Consumerism

- Standard weights
- NAWI
- Stop watch
- Volume standard
- Length comparator
- Glass Measuring Cylinder
- Tape
- Prover Tank
- Taxi Meter

TRANSLAB Sdn. Bhd.

- Alcometer (drunk driving enforcement)

MOGAS Sdn. Bhd.

- Coriolis mass flow meter (oil and gas industry)

Statistics of Pattern Approval Approved by the NMIM in 2016

The NMIM recorded 52 measuring instruments that have been pattern approved in 2016.

The types of instruments that have been approved for usage in Malaysia are as follows:

1. Household water meter (9 units)
2. Gas ultrasonic meter (2 units)
3. Electricity meter (single-phase) (15 units)
4. Electricity meter (three-phase) (19 units)
5. Rotary gas meter (2 units)
6. Ultrasonic meter for liquid (3 units)
7. Coriolis meter for liquid (1 unit)
8. Gas turbine meter (1 unit)