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METROLOGY FORUM AND
WORKING GROUP MEETINGS**
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Economy Report - 2019

Republic of Korea

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SECTION 1 – Organisation and structure for metrology

Organisation Structures

Specialty	Scientific metrology	Legal metrology
Organization	Korea Research Institute of Standards and Science (KRISS)	Korean Agency for Technology and Standards (KATS)
Business unit	Measurement Standards Laboratory	Metrology & Measurement Division
Person in Charge	Dr. No Weon Kang	Dr. Wan Bin, Im
Location	Daejeon-si	Eumseong-gun, Chungcheongbuk-do

Relevant organizations

- [Korea Testing Certification](#)(KTC) – Type approval & verification of measuring devices
- [Korea Testing Laboratory](#)(KTL) – Type approval of electricity meters
- [Korea Association of Standards & Testing Organizations](#)(KASTO) – Association
- [Ministry of Food and Drug Safety](#)(MFDS) – Medical Devices

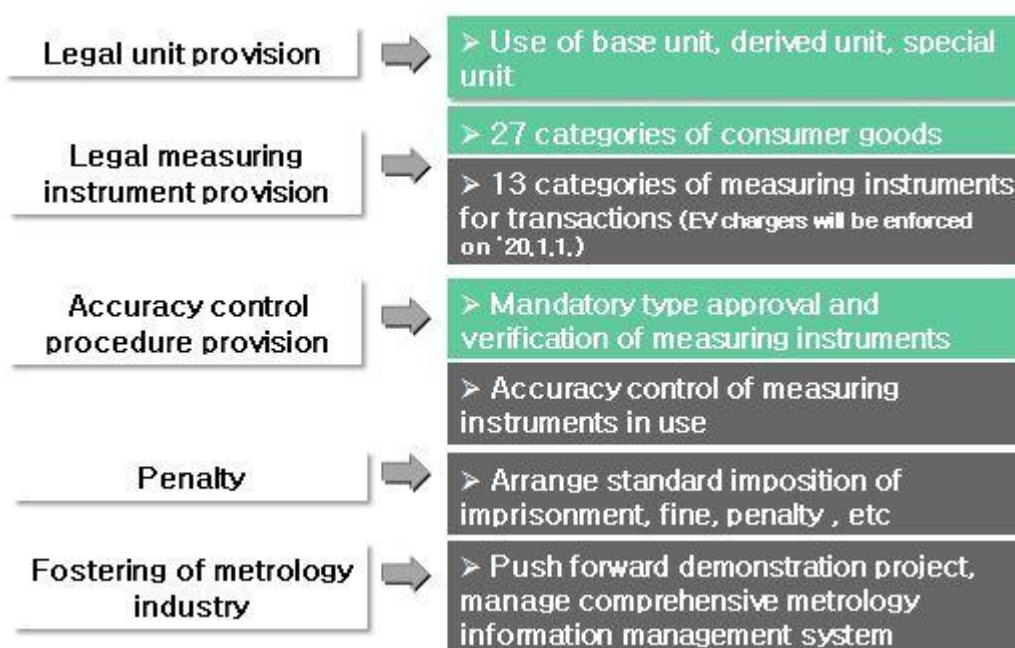
Legislative Frameworks

Measures Act 2018

Enforcement decree of the Measures Act 2019 (presidential decree)

Enforcement rule of the Measures Act 2019 (ordinance of the ministry of trade, industry and energy)

Main contents of Measures Act include the following:



23 regulations

- 11 technical regulations for testing 13 Measuring Instruments
- **Non-automatic weighing instrument technical standard (*No. 2018-110)**

- Weights technical standard (*No. 2018-110)
- Gas meter technical standard (*No. 2019-033)
- hot water meter technical standard (*No. 2018-110)
- water meter technical standard (*No. 2018-110)
- liquid meter technical standard (*No. 2018-110)
- graduated tank technical standard (*No. 2018-110)
- heat meter technical standard (*No. 2018-110)
- electricity meter technical standard (*No. 2018-110)
- urea water meter technical standard (*No. 2018-110)
- electric vehicle charger technical standard (*No. 2019-109) (New)

-12 by-laws for implementation of legal metrology

International arrangements and engagement

OIML TC 12/P1 meeting participation

(May. 21 ~ May. 26/Helsinki, Finland)

The 54th CIML meeting participation

(Oct. 21 ~ Oct. 25/Bratislava, Slovakia)

The 3rd Korea-China cooperation committee for Legal Metrology

(November, 2019)

The 42nd Korea-Japan cooperation committee for Legal Metrology

(Under discussion)

SECTION 2 – Key activities of 2018/19

Working with industry

New Addition to Legal Measuring Instruments



Starting May 2019, Electric Vehicle Charger became one of the legally controlled measuring instruments and DC electricity meter was added as an additional type of electricity meter subject to type approval. Until May of this year, there were 12 legal measuring instruments under Korean Measures Act.



The new additions of the two have been long awaited. In terms of EV charger, there were already 57,000 electric vehicles and 42,000 EV chargers in the market in 2018. As the supply of EV and chargers continue to rise, it is important to secure accuracy and reliability of the measurement value to ensure fair transactions.

On the same note, the use of DC electricity meter continues to increase for dispersed generation and energy storage system (ESS). Even though, electricity meter is subject to type approval, only AC electricity meter was designated and regulated as a legal measuring instrument.

In May 2019, in order to designate EV chargers and DC electricity meter as legally controlled measuring instruments, Measures Act Enforcement Decree was amended. Type approval and verification requirement will come into force in 2020 January in order to give sufficient time for manufacturers to prepare for facility requirements. Currently, type approval and verification body is in the process of being designated.

Smart Meter

Utility meters have become smart. From a single supply measuring instrument appeared a smart meter on a digital platform that converge the intelligence information technology. The focus of Korean Measures Act has been on the manual reading and error management to manage legal measuring instruments; however, immediate response is required to rapidly changing environment for utility meters.

The role of smart meter in securing of reliability of energy consumption and production data is important, especially considering the expansion of new and renewable distributed energy resources. Once validity of the metrology information for both consumers and businesses is secured, various energy services will improve by way of energy consumption and supply management, integrated meter reading, introduction of time of use rate system, and more.

In order to take proper action on the digitization, to support successful energy transition, and to expand supply of smart meter, the following comprehensive countermeasures have been prepared:

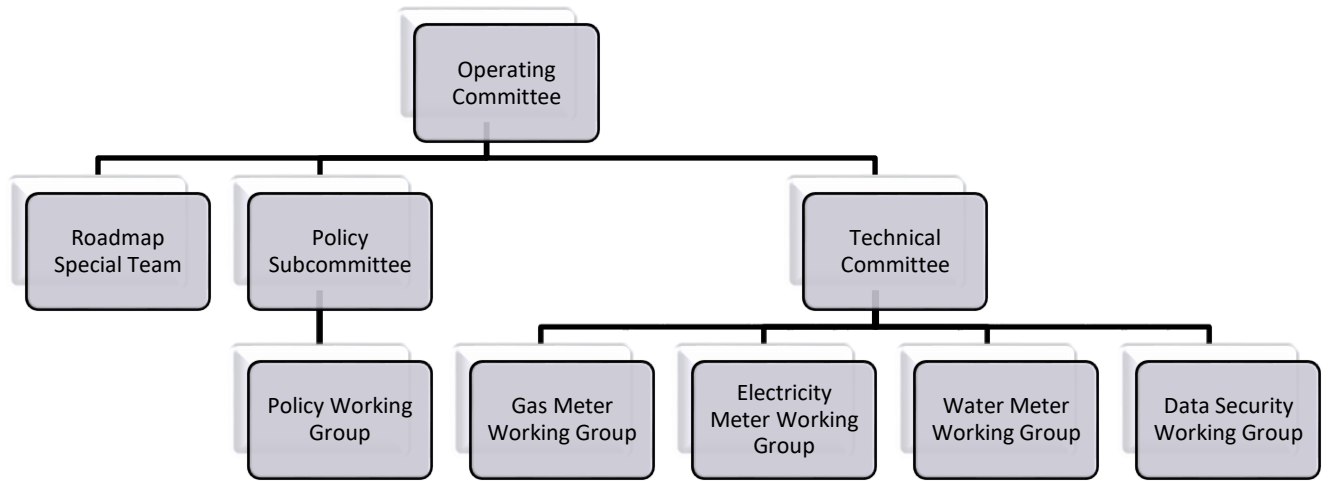
1. Create sustainable ecosystem: Expand scope of Measures Act and lay groundwork for interoperability
2. Vitalize supply of smart meter: Empower manufacturer's digital convergence
3. Vitalize demand of smart meter: Suggest energy service model that secures reliability and people's informational autonomy on energy consumption and production
4. Construct standard, test, and certification system: Develop standard for interoperability to maintain compatibility among instrument and system and build testbed for standard conformity.

Korea Smart Metering Forum Activities

For development of energy industry and protection of people's rights and interests, Korea Smart Metering Forum (the "KSMF") was established in July 2017. As of August 2019, KSMF is consisted of 106 members including the government, manufacturers, academia, and research institutions.

The work of the KSMF in relation to the countermeasures mentioned above involves:

1. Manage policy subcommittee and technical committee for establishment of a group standard.



<KSMF Organizational Chart>

2. Work on amendment of technical regulations
3. Request for opinions on necessary amendments to type approval and re-verification
4. Support research and development and request for opinions on key technology

Objectives of the Special Team and Working Groups are as follows:

Roadmap Special Team: strengthen smart meter road map

Policy Working Group: provide measures to supply and expand smart meters

Gas, Electricity, Water meter, Data Security Working Group: standardize and work on key technology

SECTION 3 – Future focus

New initiatives planned (next 1-2 years)

Management system for weighing instruments under 10 tons

Under the Measures Act, non-automatic weighing instruments under 10 tons are subject to regular periodic inspection. Every 2 years, regular inspection is conducted by local government officers who are responsible for measuring instruments.

NAWI inspection process



To enhance expertise and increase continuity on the work of periodic inspection and to overcome lack of expertise by the local government officers due to a change in personnel, a change in management system for NAWIs under 10 tons is necessary. Another challenge associated with periodic inspection is the fact that NAWIs are easily movable, thus making it difficult to locate whereabouts of all NAWIs and to manage the inspection

Expansion of self-management by the private sector is under review to replace the regular inspection by the local government officers. Discussions with the stakeholders including but not limited to local government officers, manufacturers, repairers, self-verifiers, verification body, and association will be held in the near future.

Improvement of Metrology Information Management System (MIMS)

In order to manage metrology information produced by certification bodies, testing houses, local governments etc, KATS launched the Metrology Information Management System (MIMS) in 2013, and then set legal basis of the operation of MIMS in Measures Act Article 61, Comprehensive Management of Measurement Information.

The major functions of MIMS are:

1. Manage legal measuring instrument: collect and make information open to public of information on type approval, verification, re-verification, periodic inspection, reporting of illegal/faulty measuring instrument
2. Manage imported measuring instrument: manage whether imported measuring instruments have gone through type approval at the customs
3. Notification: send out notification to measuring instrument users of schedules for re-verification or periodic inspection.

The current issue with MIMS is a lack of expandability and interoperability. MIMS's main function is gathering of the metrology information dispersed to many authorities and centralized controlling of the information. To resolve this, improvement of the system with the latest ICT technology such as cloud computing, block-chain and AI is under review.

Once MIMS is advanced with the latest ICT, more efficient management and wide usage of metrology information are anticipated. For instance, collection of information will become more open and dispersed through digital platform that connects local governments, test houses, certification bodies and self-verification manufacturers. Consumers will also be able to use the collected data and AI for monitoring activity of faulty measurement instrument.