SMB/5835/SBP

STRATEGIC BUSINESS PLAN (SBP)

IEC/TC OR SC:	SECRETARIAT:	DATE:
13	**Hungary**	**2015-09-25**

A. STATE TITLE AND SCOPE OF TC

TC13 Electrical energy measurement and control

TC13 Scope

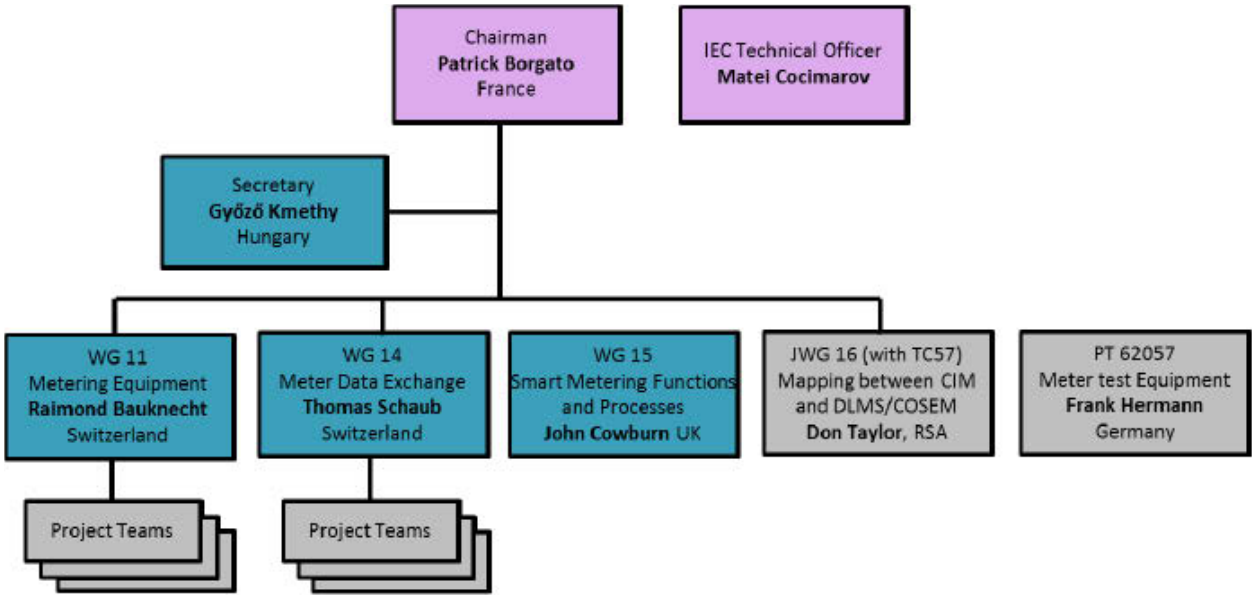
Standardization in the field of a.c. and d.c. electrical energy measurement and control, for smart metering equipment and systems forming part of smart grids, used in power stations, along the network, and at energy users and producers, as well as to prepare international standards for meter test equipment and methods.

Excluded: Standardization for the interface of metering equipment for interconnection lines and industrial consumers and producers (covered by TC 57).

B. MANAGEMENT STRUCTURE OF THE TC

TC13 works are carried out by three working groups, one joint working group linked to TC57 and one project team reporting directly to the Chairman:

- WG11, *Electricity metering equipment* is responsible for type testing, acceptance testing and product safety;
- WG14, *Data exchange for meter reading, tariff and load control* is responsible for the development of data models and communication protocols for meter data exchange;
- WG15, *Smart metering functions and processes* is responsible to define business functions, business processes and system elements within the context of an electricity metering system. This includes payment metering systems and payment meters;
- JWG16, Mapping between the common information model CIM and DLMS/COSEM data models and message profiles linked to TC57;
- PT62057, reporting directly to the Chairman, is responsible for developing standards for test equipment, techniques and procedures for electrical energy meters.



Moreover, there are several project teams created depending of needs that are usually integrated within the relevant working groups. At the moment, there are five active project teams in complement of PT62057.

C. BUSINESS ENVIRONMENT

The metering industry is going through fundamental changes, driven by smart metering and smart grid initiatives. From a conservative slow-pace business, metering became a fast moving business. Smart metering is essential to create smart grids.

*Liberalizatio*n of the electrical energy markets has broken up monopolies and introduced competition to varying degrees in all activities. Many customers worldwide should now be able to choose their energy and service providers taking the best offers available. Many customers also have the opportunity to generate locally and use or sell this energy. Such customers are also known as “prosumers”, from combining the words *consumer* and *producer*.

With *globalisation*, many utilities, meter manufacturers and metering system providers operate on a global level. This leads – to a certain extent – to harmonized requirements, global procurement processes and price equalisation. Open standards guaranteeing interoperability become essential.

Sustainable electricity supply, protection of the environment, energy efficiency, energy saving, and the integration of renewable energy resources became top political and business priorities: *smart metering and smart grid* projects are going on throughout the world. Smart metering also encompasses now non-electricity metering.

To operate energy markets and assets efficiently in this new and dynamic environment, and to facilitate using energy efficiently, more data is needed, more often, by more stakeholders. Data security and privacy of personal data become essential requirements.

In addition to these main trends, requirements for metering systems are deeply affected by legislation and regulation – generally on regional or national level.

To meet new needs, simple kWh meters, time switches and ripple control receivers are being

massively replaced by multi-function, communicating “smart” meters that provide export/import energy-, demand- and power quality measurement, load management, local generation management, customer information, customer and contract management and other value added functions.

Metering data must be accurate, traceable and auditable. Smart meters are integrated into metering systems that exchange data with other systems, in support of a range of business processes. They may interface with smart grids as well as with in-home systems and EV charging systems.

The market growth and the regional demand for metering equipment and systems is determined by factors like population, housing, industrial development, electrification and meter replacement programs. It is expected that due to these factors, and, in particular, due to large smart meter roll-outs as well as due to a shorter useful life (compared to electromechanical meters), the annual demand for meters and systems will grow, while large fluctuations may occur.

The number of electricity meters in operation worldwide in 2014 is estimated to be 1.5 billion out of which only 15% were equipped with communication facilities. According to the forecasts made by specialized institutes, the percentage of communicating meters should reach 50% of the installed base in 2020 for a yearly sale of smart meters about 100 million.

NOTE It is not the intention of this report to judge these forecasts or to quantify the growth.

Advanced functionality commands higher prices, while technology development, economies of scale and stronger competition will work in the opposite direction.

D. MARKET DEMAND

The customers of TC13 standards are manufacturers, system providers, electricity generation, trading, transmission, distribution and supply companies, meter operators, meter data agents, legal metrology bodies, testing institutes and end customers. These stakeholders need standards that cover all aspects of metering equipment and systems and facilitate their global trading, while taking into account differences in the operating environment and electrical infrastructure.

TC13 standards are globally recognized and used.

IEC and CENELEC work closely together through the Dresden cooperation agreement. IEC TC13 standards are usually adopted as European standards (EN 6xxxx) and many of them are referenced for the European standardization mandates for Smart Meters and Smart Grids.

On the other hand, ANSI (US) has developed its own standards to meet the needs of a different infrastructure. These standards are also used in some other countries. Japan also has its own standards.

E. TRENDS IN TECHNOLOGY AND IN THE MARKET

The advanced functionality becomes possible by using the latest achievements in electronic, information and communication technologies and by integrating these technologies. These new technologies may affect the way requirements and test methods are specified. The most important trends are the following:

- extensive use of electronic technologies, like digital signal processing, mixed signal circuits and firmware. To keep the functionality up-to-date, firmware may have to be updated during the life of the meter. This may be subject to legal metrology control;
- higher maximum currents and the more general presence of supply / load control switches in meters;
- integration to local energy generation systems;

- new architectures, in particular modular and multi-part meters, with the various functions implemented in more than one physical device;
- new kind of instrument transformers with low voltage analogue and digital interfaces;
- new communication technologies;
- advanced cryptographic data security algorithms;
- changes in network conditions and EMC environments due to the growing use of non-linear loads, local generation, power line and radio communications. On the one hand, this requires advanced measurement algorithms to measure power and power quality parameters. On the other hand, better protection is needed against inadmissible influences.

In addition to trends in technology, there are factors relevant to market trends:

- changes in the type approval process, in particular introduction of competition into this area; this requires even more clear, unambiguous test methods;
- changes in the life cycle management of metering equipment;
- lower entry barrier attracts new players;
- involvement of communication and business data management companies in metering;
- continuous price pressure.

Moreover, smart meters play an important role in informing customers and raising their awareness of energy use. Therefore, they contribute to the efficient and sparing use of natural resources.

As meters are continuously powered, low self-consumption is also important. Low temperature of the meter is also an important factor in life expectancy.

Electricity meters are expected to work continuously over extended periods with no or little human intervention. They are installed all along the electrical network, in widely differing environments. Therefore, they have to meet strict mechanical, climatic, environmental, electrical and safety requirements to perform as expected in any of these environments.

With traditional electromechanical designs and life spans of several decades, use of hazardous materials and safe disposal of decommissioned meters is not an issue. Electronic meters may have shorter life cycles due to functional obsolescence, and some types may contain batteries and other hazardous materials. Therefore, this aspect may be more important in the future.

F. SYSTEM APPROACH ASPECTS (REFERENCE - AC/33/2013)

System approach becomes more and more important for TC13 as smart metering is an essential part of smart grids.

Therefore, liaisons are confirmed with:

- TC8, to address issues on system aspects of electrical energy supply, and in particular to work on use cases for smart metering;
- TC38, to address the impact of new instrument transformers with low voltage analogue and digital interfaces;
- TC57, to address data exchange between systems, to harmonize data models and protocols;
- with TC66 to address safety issues;
- SC77A to address EMC, in particular low frequency conducted phenomena;
- TC85, to co-ordinate specifications for power quality functions of meters and metering functions for network analysers;
- PC118, to avoid conflict with data structure defined for smart grid user interface.

Externally, TC13 will maintain the type A liaisons with:

- Eureletric, the European union of Electricity Industry;
- OIML, the International Organization of Legal Metrology;

- ECOS, the European Environmental Organization for Standardization (under registration).

WG14 will maintain its D-type liaison with the DLMS User Association.

TC13 participates also to two IEC advisory committees which report directly to SMB of IEC (Standardization Management Board):

- ACTAD, in charge to deal with transmission and distribution (T&D) matters;
- ACEC, in charge to ensure electromagnetic compatibility.

Moreover, TC13 has been invited to join the new ACSEC committee created end of 2014 and in charge of information security and data privacy matters.

G. CONFORMITY ASSESSMENT

All publications issued by IEC TC13 are made in accordance with the requirements related to the conformity assessment aspects as specified within clause 6.7 of part 2 of ISO/IEC directives. Moreover, the publications aren't dependant or intended to be used for IEC Conformity Assessment Systems likely IECEE, IECEx, IECQ and IECRE.

TC13 standards specify requirements as well as test methods that allow repeatable and reproducible test results.

H. 3-5 YEAR PROJECTED STRATEGIC OBJECTIVES, ACTIONS, TARGET DATES

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
Implement the current IEC TC13 work program	Amend the IEC 62052 / 62053 / 62054 / 62055 series to take into account the safety standard IECF 62052-31.	2016
	Revise IEC 62052 / 62053 in order to take into account NC requests made past years.	2016
	Complete the ongoing work related to data exchange (IEC 62056 series)	2015 / 2016
	Achieve standardization of Test Equipment (Stationary first and then – if there is market interest – Portable): IEC 62057 series.	2016 / 2017
	Adapt IEC 62055-41 standards according to new market needs (IN, ZA, UK)	2016
	Reconfirm market interest for global revision of IEC 62055 series (Framework Standard for Payment Meters)	2015
Follow closely main market requests and technology developments and initiatives that may affect metering and needs for standards.	Adjust the work program as needed so that the necessary standards can be delivered in a timely manner.	Yearly base

Co-operate with other IEC TCs and non-IEC standardization organizations to ensure that system aspects are properly addressed	Maintain / Reinforce or reconsider the liaisons with the following organisations to assess topics (not exhaustive list): • TC38 : Connection of Low power transformers (LPITs) • TC8 and DLMS UA (TC13 WG14 D liaison) n order to make sure that systems use cases requirements are met • Syc System Committee on Smart Energy and Others organizations to evaluate possible needs versus Internet of Things (IoT)	2015 / 2016 Permanent 2015 / 2016
Partnering with industry players, promote the use of IEC standards worldwide, in particular the use of open standards for meter data exchange guaranteeing interoperability	Maintain / reinforce the relations with organisations such as: • Eurelectric • ESMIG	Depending of opportunities (events, solicitations, …)
Co-operate with industry consortia, seeking the opportunities to adopt industry standards and to make sure that the standards developed respond to actual market needs.	Assess if there are some fields of interest.	2016
Note: The progress on the actions should be reported in the RSMB.		