SMB/3972/SBP

STRATEGIC BUSINESS PLAN (SBP)

IEC/TC or SC	Secretariat	Date
13	Hungary	2009-03

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting, or sent to the Central Office promptly after its contents have been agreed by the committee.

Title of TC
Electrical energy measurement, tariff- and load control

A Background

TC 13 was established in the 1920's. Its first known publication is IEC 43:1931, *Recommendation for alternating current watt-hour meters*. Originally covering all electrical measuring instruments, TC13 today is responsible for electrical energy measurement, tariff- and load control.

Metering equipment is used to measure and control electrical energy and demand in power stations, along the transmission, distribution and supply network, and at industrial, commercial and residential customers. Metering systems provide data for billing, market and network operation, energy management, customer information and other purposes.

The work is carried out in four working groups and three project teams:

- WG11, *Electricity metering equipment* is responsible for type testing, acceptance testing and product safety. Two project committees are reporting to WG 11:
  - PT 62053-24 covers static meters for reactive energy (classes 0,5 and 1);
  - PT 62052-31 covers safety of electricity metering equipment;
- PT 62057, reporting directly to the Chairman, is responsible for developing standards for test equipment, techniques and procedures for electrical energy meters;
- WG 13, *Dependability of electricity metering equipment* is responsible for developing methods for dependability management, including the prediction and assessment of equipment reliability and durability;
- WG 14, *Data exchange for meter reading, tariff and load control* is responsible for the development of data models and communication protocols for meter data exchange;
- WG 15, *Electricity metering – Payment systems* is responsible for payment metering systems and payment meters, including type testing of payment meters.

B Business Environment

B.1 General

The business environment has gone through fundamental changes in recent years. From a conservative slow-pace business, metering became a fast moving business.

*Liberalizatio*n of the electrical energy markets has broken up monopolies and introduced competition. Many customers worldwide should now be able to choose their energy and service providers taking the best offer available.

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.

To ensure sustainable electricity supply and *to protect the environment*, energy efficiency, energy saving, and the integration of renewable energy resources into electrical energy generation became top political and business priorities.

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. This data has to be adequately secured and protected.

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

To meet new needs, simple kWh meters, time switches and ripple control receivers make way for multi-function, communicating "smart" meters that provide export/import energy-, demand- and power quality measurement, load management, customer information, customer and contract management and other value added functions. This change has taken place already in the commercial and industrial market segment and has now reached the residential segment. 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. In the future, they may interface with smart grids as well as with in-home systems.

The number of electricity meters in operation worldwide in 2006 is estimated to be 1,4 billion. The number of meters sold in 2006 exceeded 100 M, with a total annual sales volume of 4 billion USD. 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 rollouts as well as due to a shorter useful life, the annual demand for meters and systems will grow, while large fluctuations may occur. Advanced functionality commands higher prices, partly offset by lower cost technologies and as a result of competition.

B.2 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.

TC 13 standards are globally recognized and used.

In Europe, through the IEC/CENELEC cooperation agreement, they are generally adopted as European Standards (EN 6XXXX). To support the specific requirements of the European Measuring Instruments Directive (MID) for active electrical energy meters, CENELEC has developed "home grown" standards: the EN 50470 series. These are strongly based on the IEC 62052 and 62053 series.

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

B.3 Trends in technology

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

- extended use of electronic technologies, like digital signal processing, mixed signal circuits and firmware, which may have to be updated during the life of the meter;
- higher maximum currents and the more general presence of load switches in meters;
- new architectures, in particular 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 and advanced data security algorithms;

- changes in network conditions and EMC environments due to the growing use of non-linear loads, 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 undue influences.

B.4 Market trends

In addition to those described in Section B.1, the following factors are important:

- 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.

B.5 Ecological environment

Smart meters play an important role in educating 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.

Electricity meters are expected to work continuously over extended periods with 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.

C System approach aspects

System approach becomes more and more important for TC 13. Therefore, we confirm the liaisons:

- with TC 8, to address issues on system aspects of electrical energy supply;
- with TC 57, to address data exchange between systems and to avoid duplication of work and conflicting standards on data modelling and protocols.

With TC 38, we will consider establishing a liaison to address the impact of new instrument transformers with low voltage analogue and digital interfaces.

We confirm the liaisons:

- with TC 56 to address dependability; and
- with TC 66 to address safety issues.

Externally, TC 13 will maintain the liaison with EURELECTRIC and OIML. WG 14 will maintain its D-type liaison with the DLMS User Association.

D Objectives and strategies (3 to 5 years)

D.1 Objectives

Keep TC 13 standards up to date to reflect changes in market requirements, technology and environment, without sacrificing stability.

Seek more involvement of new market players in the standardization work where appropriate and posssible.

Respond to needs for improved and new standards in a timely manner, by further reducing the time to publication. Use fast track standardisation wherever possible.

D.2 Strategies

Monitor main market and technology developments and initiatives that may affect metering. Adjust the work program as needed so that the necessary standards can be delivered in time.

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.

Co-operate with other IEC TCs and non-IEC standardization organizations to ensure that system aspects are properly addressed.

Partnering with industry players, promote the use of IEC standards worldwide, in particular the use of open standards for meter data exchange guaranteeing interoperability.

E Action plan

WG 11 will start the revision of the IEC 62052 / 62053 series in 2009. Requirements and type test methods will be added / amended also taking into account changes in horizontal standards. The new standards should be available by the maintenance result date 2012.

PT 62052-31 will continue to work on the product safety standard IEC 62052-31, to be published in 2010. All safety related aspects will be addressed in this standard, and therefore they will be removed from the other standards.

PT 62053-24 will work on static meters for reactive energy for classes 0,5 and 1. The new standard should be published in 2010.

PT 62057 will work on laboratory and on-site test equipment and test methods. The new standard should be published in 2011.

WG 13 will revise IEC 62059-11 and IEC 62059-21 to reflect latest approaches in meter park management. IEC 62059-32-1, *Durability testing* should be published in 2009. Further standards for reliability assessment and dependability management will be developed, subject to market needs.

WG 14 will focus on extending the IEC 62056 series to support smart metering. This involves the extension of the COSEM data model to cover new functions and adding new DLMS based messaging methods and communication profiles to cover new media. Existing standards from other TCs will be used wherever possible. This work starts early 2009, in close co-operation with the DLMS UA and other industry consortia. This will allow fast track standardisation (NWIP with CDV-s attached) so that new standards can be published in less than two years. For OBIS codes and COSEM interface classes, a database approach will be considered.

WG 15 started to work on a Technical Specification for multi-part payment metering installations, to be published in 2010. This work may provide a model for other multi-part metering standards.

F Useful links to IEC web site

IEC TC 13 dashboard (enter 13) – includes the TC/SC Officers, Scope, Liaison committees, WG/MT//PT structure, Membership (IEC Member Countries), Publications issued and Work and Maintenance Programmes.

Name or signature of the secretary

Gyozo Kmethy