

CENELEC/TC or SC TC95x	Secretariat France	Date 2013-11-27
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TC or SC title: Measuring relays and protection equipment

A Background

To support the European smart grid development, the European Standardization Organizations CEN, CENELEC, ETSI have been mandated through the mandate M/490, to propose a program of standardization work to fill the main standards gaps already identified in the joint working group report on smart grid. Among these gaps, some are related to protection aspects linked with the integration of distributed energy generators.

On the other hand, at the European level, ENTSO-E is working on a network code for grid connection applicable to all generators. This work is perfectly in line with the CEN/CENELEC/ETSI joint working group results.

Among the identified gaps IEC/TC 95 was asked to work on protection function associated to connection of DER (especially from renewable energy resources) to the grid.

The proposed scope of CLC/TC 95X reads as follows:

"Standardization, in link with mandate M/490, of measuring relays and protection equipment used in the various fields of electrical engineering covered by CENELEC, taking into account combinations of devices to form schemes for power system protection including the control, monitoring and process interface equipment used with those systems.

Moreover, works on standards for electrical connection to ensure energy availability and security, in presence of a high ratio of Distributed Energy Resources (DER) and allowing connected generators to participate to new ways of operating grid (e.g. associated in VPPs or micro grids).

Excluded are the following:

All devices covered by standards prepared by other CENELEC technical committees, for example instrument transformers."

B Business Environment

B.1 General

Although IEC standards in the 60255 series are widely used throughout the world, there is an increasing emphasis in working in the European Community to propose European view at the International level.

Due to the recent action in Europe through the mandate M/490 on smart grid, it is becoming increasingly important to encourage European companies to devote adequate resources to the preparation of relevant European standards to meet the new smart grid requirements. The final goal for Europe will be to make proposals and support his technology at the IEC level.

B.2 Market demand

The European CLC/TC 95X will be the official body where European utilities and manufacturers can work together to develop standards on new protection functions adapted to their networks.

B.3 Trends in technology

With the development of information technology, communication technology, new type sensor technology, time synchronization technology, optical fibre Communication Technology etc., the impact on the work of TC95 needs TC95 to keep close watch on the development of future standards:

- Needs of unification of formatting digital data for all aspects of digital automation of power systems;
- Implementation of control, communication and protection functions in the same device (integrated systems);
- Management of configuration, settings, or parameters of complex multifunction protective relays and substation equipment that could impact protection performance;
- Maintenance requirements and approaches for old and new generations of protection system designs;
- New function and performance requirements for protection relays due to the new sensor technology;
- Phasor Measurement Unit and wide-area protection;
- Self-adaptive protection applied to Smart Grid;
- Fault locator;
- Fault recorders based on IEC 61850;

B.4 Market trends

The development of renewable energy should contribute to a new need of protections to address new concerns related to the loss of mains protection system.

Europe is starting work on smart grid projects and as a result more and more protections will be implemented both at medium voltage and low voltage level. A major conclusion of the work done in the CEN/CENELEC/ETSI working group mandated by the European Commission is that Europe needs new standards to meet the new requirements of distributed generators.

CLC/TC 95X has to attach great importance to these new related industrial markets and strive for suitable standards to meet the market demands:

- Loss of mains protection for renewable energy power;
- New functional protection focusing on smart grid applications.

B.5 Ecological environment

Possible ecological environmental issues relating to measuring relays and protection equipment include:

- The possible positive effects on electricity supplies to contribute in the future to smart grids applications where renewable energies are widely used;
- From a manufacturing viewpoint, volumes of equipment are low in relation to mass market products and hence the impact of the absence of recycling processes will be low. Nevertheless, the recycling process should be considered.

B.6 Involvement of societal stakeholders

Of course, expectations from associations of electrical utilities, electrical manufacturers should be welcome to have efficient work on standard for electrical connection of distributed energy generators.

B.7 Involvement of SMEs

Up to now, standards for measuring relays and protection equipment are mainly targeting equipment manufacturers and laboratories and generally, these products are not built by Small or Medium Enterprises.

The development of new protection functions for distributed generators should involve new companies such as photo voltaic, wind turbine equipment manufacturers.

C System approach aspects

Component committees	CLC/TC 14	Power transformers
	CLC/TC 17B	Low-voltage switchgear and controlgear
	CLC/TC 38	Instrument transformers
	CLC/TC 7x	Overhead electrical conductors
System committees	CLC/SR 115	HVDC transmission for DC voltage above 100 kV
	CLC/TC 8X	System aspects of electricity supply
	CLC/TC 57	Power systems management and associated information exchange

D Objectives and strategies (3 to 5 years)

In the short term, 2 or 3 years:

To fill the gaps identified by the Smart Grid Coordination Group, CLC/TC 95X will work on standard for electrical connection to ensure energy availability and security, in presence of high ratio of Distributed Energy Resources and allowing connected generators to participate to new ways of operating grid (e.g. associated in VPPs or micro grids).

In the long term:

At the IEC level, most of the future work of TC 95 will be concerned with the preparation of new functional standards. Some of these functional standards will be developed to meet the needs of market trends, particularly the needs of Smart Grid. European stakeholders should be active to influence the work done at the IEC level.

Collaboration with other TCs:

A priority for CLC/TC 95X will be to establish collaboration with CLC/TC 8X working on system aspects and detailing Network Code requirements in system standards.

Whereas technology within the power system protection field is moving more towards communication technologies and the responsibility for communications within substations is part of the scope of CLC/TC 57. CLC/TC 95X has to collaborate with CLC/TC 57.

E Action plan

- A first task will be to open investigations on protective functions which may be needed, when considering DER connection to the Grid;
- to liaise and cooperate with system technical committees such as CLC/TC 8X and CLC/TC 57 and product technical committee such as TC82 in order to contribute to the development of standards permitting to demonstrate compliance with grid connection requirements.

The way to solve this new issue related to the connection of distributed generators depends mainly on the network characteristics and topology. Over the world, these characteristics and topology are quite different depending on the area. So, Europe will have advantage to work first on these topics. A CLC/TC 95X would be the body where European utilities and manufacturers can work together to develop standards on new protection functions adapted to their networks.

F Useful links to CENELEC web site

TC home page giving access to Membership, TC/SC Officers, Scope, Publications, Work programme [password-protected area].

http://www.cenelec.eu/dyn/www/f?p=104:7:1565435950339694::::FSP_ORG_ID,FSP_LANG_ID:11505,25

Serge VOLUT FRANCE