

PRODUCT GROUP: SMALL, MEDIUM AND LARGE POWER TRANSFORMERS

TECHNICAL UPDATE (ANNEX B OF M/495)

DETAILS OF REQUEST TO CEN, CENELEC AND ETSI FOR STANDARDIZATION IN THE FIELD OF SMALL, MEDIUM AND LARGE POWER TRANSFORMERS IN SUPPORT OF COMMISSION REGULATION XXX/XXX (ENTR LOT 2)

1. BACKGROUND

1.1. Legal Basis

The legal basis for this technical update is represented by the Commission Regulation xxx/xxx implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for small, medium and large power transformers.

Furthermore, Standardisation mandate (M/495) to CEN, CENELEC and ETSI under Directive 2009/125/EC relating to harmonised standards in the field of Ecodesign foresees that its Annex B will be updated regularly, when the work progress on a product group allows the Commission to precisely specify the standardisation needs.

1.2. The aim of the technical update

The Regulatory Committee established by Directive 2009/125/EC of the European Parliament and of the Council is expected to endorse before the end of 2013 a Draft Commission Regulation implementing the Directive with regard to eco-design product information and minimum energy efficiency requirements for small, medium and large power transformers.

The Regulation will require that the measurement and calculation procedures for establishing energy performance or energy efficiency shall be reliable, accurate and reproducible and take into account the generally recognized state of the art, in order to ensure comparable measurement and calculation procedures for the product types in the scope of the Regulations and to facilitate market surveillance activities.

The aim of this technical update is to identify the needs for (a) harmonized standard(s) which cover(s) these requirements. The harmonized standard(s) shall incorporate relevant measurement and calculation methods, including measurement and calculation methods set out in Commission Communications which have been published for that purpose in the Official Journal of the European Union.

2. DESCRIPTION OF THE WORK

The Commission requests CEN, CENELEC and ETSI to elaborate (a) reliable, accurate and reproducible European standard(s), which take(s) into account the generally recognized state of the art, and/or to adopt or adapt existing European and international standards for small, medium and large power transformers laying down procedures and methods of measuring the energy performance or efficiency (see Peak Efficiency Index below) of small, medium power transformers and large power transformers. The standard(s) have also to include the necessary definitions of the product types and of the parameters to be measured and/or calculated.

The draft Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to small, medium and large power transformers' is meant to be consistent with the EN standards. For three-phase medium power transformers, the standard is currently under development by CENELEC TC 14. This EN standard is supposed to supersede EN 50541-1 and EN 50464-1. For the purposes of the draft Commission Regulation and the prospective harmonized standards, the following definitions are relevant:

- (1) "General purpose small power transformer" means a power transformer with a highest voltage for equipment not exceeding 1 kV.
- (2) "Medium power transformer" means a power transformer with a high voltage for equipment higher than 1 kV, but not exceeding 36 kV and a rated power equal or higher than 5 kVA but lower than 40 MVA.
- (3) "Large power transformer" means a power transformer with a high voltage for equipment exceeding 36 kV and a rated power equal or higher than 5 MVA, or a power transformer with a rated power above 40 MVA for which the highest voltage for the equipment is lower than 36 kV
- (4) Peak Efficiency Index (PEI) means the maximum value of the ratio of the transmitted apparent power of a transformer minus the electrical losses to the transmitted apparent power of the transformer. Annex II includes the calculation method for the calculation for the PEI.

The standardization tasks covered by this technical update are as follows:

- (1) to ensure that the prospective harmonized standard(s) provide(s), where appropriate, revised and/or new definitions at least for the types and main characteristics, including the parameters to be included in the 'Draft Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to small, medium and large power transformers';
- (2) to ensure that the prospective harmonized standard(s) provide(s) procedures and methods to measure and calculate at least the following aspects: (a) the load and no load losses for small and medium power transformers, (b) the energy efficiency for medium and large power transformers;
- (3) to investigate how losses should be measured and treated in Voltage Regulation Distribution Transformers. In particular, to determine if the losses associated with the components (reactors, etc...) performing voltage regulation purposes could or should be measured separately and whether they should be counted as part of the overall losses of these type of transformers;
- (4) to collect data on the efficiency of the installed base of large power transformers

and to provide efficiency benchmarks based on percentiles of the existing population, so as to facilitate the characterization of minimum energy efficiency requirements;

- (5) to extend existing or under development standard(s) for medium power transformers to include single-phase models for the purposes of calculating load and no-load losses and efficiency;
- (6) to ensure that the methods to measure the load and no load losses do not include equipment installed within the transformer for the purposes of controlling input and/or output voltage under load;
- (7) to ensure that the prospective harmonized standard(s) build(s) on existing standards by taking into account improved measurement and calculation methods to better reflect the state of the art at European and international level;
- (8) to ensure that the prospective harmonized standard(s) include(s) tolerances, as defined in the draft Ecodesign Regulation on small, medium and larger power transformers;

CEN, CENELEC, ETSI are expected to organize to organize the standardization work in such a way that the scope of the prospective harmonized standard(s) is fully consistent with the draft referred Commission Regulation. Given that an EN standard for medium power transformers is in advanced state of development, it would be advisable to elaborate separate, complementary standards for small and large power transformers. CENELEC TC 96 and TC 14 are already active in these respective products.

Verification procedure for market surveillance purposes:

- to ensure that the prospective harmonized standard(s) identify(s) and control(s) the sources of variability influencing measurement uncertainties to be considered for market surveillance purposes;
- to provide values for measurement uncertainties for the purposes of the verification procedure for the measured parameters taking into account the different sources of variability to be considered when a specific product is taken from the market and measured for market surveillance purposes;
- to verify if, in order to reduce the impact of variability to the system, the standard(s) should include specific criteria to be met by laboratories involved in the verification of the declared data (e.g. quality management system, qualification system, personnel training...).
- to recommend that the tolerances set out in the Draft Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to eco-design requirements for small, medium and large power transformers shall not have to be used by manufacturers to systematically place on the market products and/or put them into service that are not compliant with the requirements of the above-mentioned regulation.

Template for test report:

- to define a template for a test report indicating the information to be declared by the manufacturers to fulfill at least the eco-design requirements set out by the Draft Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to eco-design requirements for small, medium and large power transformers.

3. EXECUTION OF THE WORK

CEN, CENELEC and ETSI are requested to communicate to the Commission, **within 2 months** of the reception of this technical update, a work plan for the execution of the above mentioned standardization tasks, indicating the standard(s) requiring revision or amendment, and the new standard(s) that would need to be developed, if any, including the proposed timetable for the completion of the proposed standard(s).

CEN, CENELEC and ETSI are requested to communicate to the Commission after **10 months** from the reception of this technical update an interim report on the progress of the tasks set out in this mandate indicating any eventual difficulties encountered and communicating details of any standard(s) that has been taken into consideration and modified to answer to the needs of the Mandate.

CEN, CENELEC and ETSI are requested to execute this technical update, according to the timetable agreed with the Commission in the work plan, but in any case not later than **15 months** from communicating the work plan.

CEN, CENELEC and ETSI are requested to draw up the work plan and execute the above mentioned tasks in close cooperation in order to ensure consistency and avoid overlapping standards.