Working document on the review of Commission Regulation (EU) No 548/2014 of 21 May 2014 on implementing Directive 2009/125/EC with regard to small, medium and large power transformers

Preamble

(1) Article 7 of Commission Regulation 548/2014 requires the Commission to review the Regulation in the light of technological progress and present the results of this review to the Consultation Forum in 2017.

(2) The Commission has carried out a review study that analysed the specific aspects set out in Article 7 of Regulation 548/2014. The study was undertaken together with stakeholders and interested parties from the Union and the results have been made publicly available.

(3) The study confirmed that the impact of energy consumption during the use phase on the Global Warming Potential remains dominant. The analysis made did not provide sufficient evidence to support proposing environmental requirements other than minimum energy performance.

(4) The study found that current transformer models available in the market fulfil minimum requirements set in Tier 1 (July 2015) without difficulties. An enquiry amongst transformer manufacturers concluded that there are no technical barriers to manufacture Tier 2 compliant transformers, even when taking into account space and weight constraints in existing installations.

(5) The study analysed the economic viability of transformers compliant with Tier 2 minimum requirements (applicable as of July 2021). The study found that lifecycle costs for Tier 2 compliant medium and large power transformers are always lower than Tier 1 compliant models when these are being put into service in new installation sites (so called greenfield sites). However, in specific situations where medium power transformers are being used to replace old ones (so called brownfield sites), there can be space and weight constraints that affect the maximum size and weight of the replacement transformer to be used. Such constraints in the available space, in particular in urban locations, might require more expensive copper based transformers which can become uneconomic under relative low loading conditions. In such particular case there may be limited opportunity to install least life-cyle cost Tier 2

compliant transformers for economic reasons and therefore some kind of regulatory relief may be justified in specific cases.

(6) An existing regulatory exemption for the replacement of large power transformers related to disproportionate costs associated to their transportation and/or installation may need to be complemented with an exemption for new installations, where such cost constraints are also applicable.

(7) The existence of a market for the upgrade, repair, refurbishment and retrofitting of transformers makes it necessary to provide guidance on the circumstances under which a transformer that has undergone some or all of those operations can be considered a new products and must therefore comply with the minimum energy performance requirements set out in Annex 1 of this Regulation. Provisions included in Article X of this Regulation are meant to complement generic provisions on repaired products described in the Blue Guide on the implementation of EU product rules.

(8) Experience gained in implementing Commission Regulation 548/2014 has revealed the existence of national deviations in standard voltages in electricity distribution grids[1] which justify different threshold voltage levels in the categorisation of transformers and in their associated minimum energy performance requirements in Annex 1 of this Regulation.

Discussion topics

This document presents the main questions that need to be considered by the Ecodesign Consultation Forum for the review of Regulation EU 548/2014. It should be read together with the accompanying explanatory notes.

1. Definitions and exemptions

1.1 Improvements to existing definitions and new definitions

Declared value

Declared value of losses means the values of load and no load losses measured by the manufacturer and written in the test report as part of the technical documentation requirements.

Medium power transformer

Means a power transformer with all windings having rated power lower than or equal to 3 150 kVA and highest voltage for equipment greater than 1,1 kV and lower than or equal to 36 kV

Large power transformer

[1] CENELEC EN 60038 includes in Annex 2B a national deviation in the Czech Republic according to which the standard voltage for the highest voltage for equipment in AC three-phase systems are 38,5kV instead of 36kV and 25kV instead of 24kV.

Means a power transformer with at least one winding having either rated power greater than 3 150 kVA or highest voltage for equipment greater than 36 kV.

Medium power pole mounted transformer

Means a power transformer with a rated power of up to 315 kVA suitable for outdoor service and designed to be mounted on a single-pole support structure of overhead power lines.

[CENELEC TC 14 definition] [Means a power transformer that is designed for mounting on a single pole and has a maximum weight limitation]

Winding

Means assembly of turns forming an electrical circuit associated with one of the voltages assigned to the transformer.

1.2 Improvements to existing exemptions

Instrument transformers

Means a transformer intended to transmit an information signal to measuring instruments, meters and protective or control devices or similar apparatus.

Transformers for use with rectifiers to provide a DC supply

Means a transformer specifically designed and intended to supply power to electronic or rectifier loads[2]

Transformers for offshore applications

Means a transformer specifically designed to be installed on fixed or floating offshore platforms, offshore wind turbines or on board of ships and all kinds of vessels.

Transformer for emergency installations

Means a transformer designed specifically to provide for a situation limited in time when the normal power supply is interrupted either due to an unplanned occurrence, such as a failure or a station refurbishment, but not to permanently upgrade an existing substation.

Transformers for railway feeding systems

Means a transformer (with separate or auto-connected windings) connected to an AC or DC contact line, directly or through a converter, used in fixed installations of railway applications.

Earthing/Grounding transformer

[2] For a more complete definition, refer to standard EN 61378-1

Means a three-phase transformer connected in a power system to provide a neutral connection for earthing either directly or via an impedance

Traction transformer

Means a transformer installed on board of a rolling stock for specific use in railway applications[3]

Starting transformer

Means a transformer specifically designed for starting three-phase induction motors so as to eliminate voltage dips and that remains de-energized during normal operation.

Medium Voltage to Medium Voltage up to 5 MVA

Means an interface transformer means a transformer used in a network voltage conversion programme and placed at the junction between two voltage levels of two Medium Voltage networks and which needs to be able to cope with emergency overloads.

[New exemption proposed by EDF]

Medium power transformers specifically designed and qualified to ensure safety of nuclear installations, as defined in article 3 of Directive 2009/71/EURATOM.

[New exemption proposed by CENELEC TC 14]

Single-phase medium power transformers with rated power below 1 kVA and three-phase medium power transformers below 5 kVA[4]

2. Tier 2 requirements for three phase medium power transformers

2.1 Cost-effectiveness of Tier 2 requirements

The review study has undertaken the task of assessing to what extend the minimum energy efficiency requirements set out in Tier 1 and Tier 2 are technologically feasible, and more importantly, cost-effective.

The study team was able to ascertain that most current transformer models available on the market are able to meet Tier 1 requirements without difficulty. Stakeholder feedback indicated that some progressive utilities (e.g., Synergrid in Belgium) are already using Tier 2 requirements as a reference in their procurement processes.

Furthermore, the economic analysis carried out showed that the lifecycle cost of Tier 2 compliant transformers is always lower than that of only Tier 1 compliant transformers

[3] For a more complete definition, refer to standard EN 60310

[4] The reason for the exemption is that these are considered special transformers which are not covered by IEC/EN 60076-1

in the case of new installation sites (greenfield sites), this is, without size or space constraints.

However, a number of utilities reported that there can be instances where space and size constraints imposed by existing substations may make the use of Tier 2 compliant transformers unnecessarily expensive, thus defeating the original purpose of the regulation. Such limitations seem to be restricted to specific urban locations (so called brownfield sites) for medium power (e.g., distribution) transformers, and not to affect industrial sites, most of DER (Distributed Energy Resources) transformers or large power transformers.

Technical solutions to achieve Tier 2 compliant medium power transformers are available, or will be available, by the time Tier 2 requirements are applicable. However, it is not fully clear whether applying such technical solutions (e.g., high grade magnetic steel plus more copper, forced cooling, thermally improved insulation, etc…) will result in least lifecycle transformers for relative low loading conditions in combination with a discount rate of 4 %, as it is the intention of Tier 2 requirements, for the replacement of transformers in all space-constrained urban locations. It was not possible either, as part of the study, to collect precise data on the proportion of medium power transformers sales for utility brownfield sites that would be affected by these constraints. The study however estimated that 27% of the total installed capacity of LV/MV transformers (comprising distribution, industry & DER types) could be brownfield distribution transformers taking into account all applications and that the overall cost benefits should be positive.

Therefore a regulatory adaptation to address these situations could be considered.

[Option 1]

Derogation from complying with Tier 2 requirements may be possible for medium power transformers which are one-for-one replacements for existing ones in the same physical location/installation where this replacement cannot be achieved without entailing disproportionate costs.

A request for such derogation must be made by the economic operator to the competent market surveillance authority before the replacement transformer is [placed on the market]/[manufactured].

In any case, when derogation is granted, replacement transformers still need to meet the following conditions:

- They must be at least compliant with Tier 1 requirements for the given rated power
- They must have a core with specific core losses at a relative high magnetic flux density not higher than 0,80 W/kg at 1,7 Teslas.

2.2 Requirements based on the PEI (Peak Efficiency Index)

A second question for investigation, required by Article 7, was the possibility to replace energy performance requirements expressed by maximum values of load and

no-load losses by equivalent PEI (Peak Efficiency Index) values[5] for medium power transformers with rated power below 3150 kVA. For reference, this is already the case for medium power transformers with rated power above 3150 kVA and for large power transformers.

If PEI values were to be used instead of maximum values of load and no load losses, many other transformer designs would be possible, many of which would not necessarily be compliant with Tier 2 requirements as they are currently expressed. The estimate of energy savings and associated avoided CO2 emissions would be much more complicated, and in most likelihood, reduced.

Stakeholder views on this question were divergent, with manufacturers and some utilities expressing a clear preference to maintain maximum values of load and no load losses, while other utilities were clearly in favour of the design flexibility allowed by the use of minimum PEI values.

The team in charge of the review study revealed that a potential loophole could exist where transformers would be specified with a low optimum load factor (e.g. below 0,19 for medium power (if any) and 0,25 for larger transformers) to meet PEI requirements, while in reality they would operate at a different load factor, and therefore would not be yielding the expected savings.

It was proposed to add as a requirement a minimum load factor at PEI (kPEI), or alternatively a minimum ratio of load to no-load losses. A minimum value of 0,19 for medium power (if any) and 0,25 for larger transformers was proposed for this additional requirement, but neither the manufacturers nor the utilities were supportive of this requirement during the stakeholder dialogue.

A number of options are therefore possible on the way forward with Tier 2 requirements.

[Option 2A]

Maintain the current expression of Tier 2 requirements in the form of maximum values of load and no load losses.

[Option 2B]

Replace the expression of Tier 2 requirements with PEI values which are, at least, equivalent to the existing combinations of load and no load losses for a given rated power. To be noted that using the mathematical equivalence the other way (from PEI values back to sets of values of load and no load losses) would allow for flexibility, but also for transformer designs which would not necessarily be compliant with current Tier 2 values. A more restrictive version of Option 2B would consist in allowing only two or more (alternative) combinations of load/no load losses (e.g., for low, medium or high load factors) together with an equivalent PEI.

[5] For reference, a similar mathematical expression to the PEI is already used in the US Energy Conservation Act to set minimum efficiency requirements for distribution (medium power) transformers.

[Option 2C]

Provide for two alternative compliance pathways, where a choice is given to economic operators between meeting existing Tier 2 requirements (based on maximum values of load and no load losses) or meeting alternative minimum PEI values for a given rated power.

Options 2B and 2C would provide utilities and industrial users with additional leeway in their transformers' designs, but would risk fragmenting the market and potentially add extra production costs for manufacturers.

Options 2A, 2B or 2C could be used in combination with the regulatory concession discussed in Option 1, if deemed necessary.

3. Energy efficiency requirements for single-phase transformers

Single-phase transformers are only used in single phase power medium voltage networks in rural parts of Ireland and the United Kingdom. They were excluded from the existing regulation primarily on the grounds of lack of available data, lack of measurement standards and limited potential for energy savings.

Single phase transformers are a very small market with only a few grid operators using them and only one European supplier, which did not disclose price and performance data within the time frame of the review study.

With these limitations, the investigation undertaken as part of the review study has indicated that there would be little economic incentive in introducing minimum requirements for load-losses in single-phase transformers, simply mainly because typically very low loading was reported. The study suggests that it could be cost-effective however to impose minimum requirements on the no load losses of single phase transformers.

Since the regulation was first adopted in 2014, standard EN 50588-12015+A1:2016 has been updated and now includes minimum efficiency values based on the Peak Efficiency Index (PEI). These reflect actual transformer designs in Ireland informed by weight and impedance boundary conditions associated to the electricity distribution grid there. Cenelec has indicated that these values could also be used as minimum requirements in the UK with only some minor adjustments related to the grid impedance.

[Option 3A]

Introduce minimum efficiency requirements in the form of minimum PEI values included in EN 50588, as follows:

Tier 2 requirements for single phase transformers with a rated power, Sr, below 100 kVA

Sr (kVA)	Tier 2

15	98,48
16	98,48
25	98,65
33	98,80
50	98,89
100	99,08

PEI values for kVA ratings that fall in between the ratings given in the above table shall be calculated by linear interpolation.

In any case, there seems to be no risk of substitution effect of three-phase transformers in other Member States by not adopting minimum requirements for single-phase transformers. Introducing minimum requirements for single phase transformers would in any case address the current regulatory asymmetry for this type of transformers.

4. Regulatory concessions

4.1. Large power transformers

4.1.1 New installations

The review study recommends extending the existing regulatory concession for replacement large power transformers to new installations where weight and transportation limitations may entail disproportionate costs and may be technically unfeasible.

[Option 4]

Derogation from complying with Tier 2 requirements may be possible for large power transformers in new installations where this replacement cannot be achieved without entailing disproportionate costs.

A request for such derogation must be made by the economic operator to the competent market surveillance authority before the [new] transformer is [placed on the market]/[manufactured].

In any case, when derogation is granted, large power transformers for new installations need to meet the following conditions:

- They must be at least compliant with Tier 1 requirements for the given rated power
- They must have a core with specific core losses at a relative high magnetic flux density not higher than 1 W/kg at 1,7 Teslas.

4.1.2 Existing large-power transformers

The review study recommends complementing the existing provision for large power transformers with the maximum specific core losses, as in previous options. Thus, the existing text:

Large power transformers which are like for like replacements in the same physical location/installation for existing large power transformers, where this replacement cannot be achieved without entailing disproportionate costs associated to their transportation and/or installation.

could be turned into the following provision:

[Option 5]

Derogation from complying with Tier 2 requirements may be possible for large power transformers which are one-for-one replacements for existing ones in the same physical location/installation where this replacement cannot be achieved without entailing disproportionate costs.

A request for such derogation must be made by the economic operator to the competent market surveillance authority before the replacement transformer is [placed on the market]/[manufactured].

In any case, when derogation is granted, such replacement large power transformers need to meet the following conditions:

- They must be at least compliant with Tier 1 requirements for the given rated power
- They must have a core with specific core losses at a relative high magnetic flux density not higher than 1 W/kg at 1,7 Teslas.

4.1.3 Power transformers with rated power lower than 4MVA

The separation between medium and large power transformers is derived from the relevant EN standards and primarily depends on the highest voltage for equipment being higher or not than 36 KV. While this works well in most instances, it has been reported that the transition in energy efficiency requirements from the largest medium power transformers to the smaller large power ones is not fully consistent in the current regulation.

Thus, the PEI (Peak Efficiency Index) requirement for a large power transformer operating at 45kV and 50KVA is stricter than the equivalent load and no load losses requirements for a medium power transformer operating at 11/33kV.

A possible solution would be to introduce, from Tier 2, a new sub-category of large power transformers with highest voltage for equipment, Um, in between 36kV and 72,5kV. Minimum energy efficiency requirements in the form of minimum PEI values could be taken from the work that has been done by CENELEC Technical Committee 14 in the context of the development of TS 50675.

[Option 6]

Include two new tables (for dry-type and liquid immersed) for large power transformers with highest voltage for equipment, Um, in between 36kV and 72,5kV, as follows:

Tier 2 requirements for liquid immersed large power transformers with Um in between 36kV and 72,5kV

Sr (kVA)	Tier 2
25	98,25063
50	98,89114
100	99,09322
160	99,19145
250	99,28328
315	99,31983
400	99,36932
500	99,39807
630	99,43726
800	99,47321
1000	99,48376
1250	99,48713
1600	99,49388
2000	99,50238
3150	99,5181

Minimum efficiency values (PEI values) for kVA ratings that fall in between the ratings given in the above table shall be calculated by linear interpolation.

Tier 2 requirements for dry-type large power transformers with Um in between 36kV and 72,5kV

Sr (kVA)	Tier 2
100	97,866
160	97,893
250	97,933
400	98
630	98,102
800	98,177
1000	98,266
1250	98,392
1600	98,569
2000	98,771
2500	98,994
3150	99,166

Minimum efficiency values (PEI values) for kVA ratings that fall in between the ratings given in the above table shall be calculated by linear interpolation.

4.2. Concessions for transformers with unusual combinations of winding voltages

A regulatory concession in the form of an extra allowance for load and no-load losses was granted in the existing regulation to transformers with unusual winding voltage combinations (e.g., dual voltage). This was justified to compensate for the extra insulation required in building such transformers. It has been reported that some market players are using these concessions to take advantage of the extra allowance (10% to 15%) and sell dual winding transformers at a cheaper price than single winding ones, even if only a single ratio is required.

In order to close this loophole, it is proposed to complement existing Table 1.3 by adding the same requirement formulated previously in other options, namely:

[Option 7]

In any case, any transformer with a special combination of winding voltages, or dual voltage in one or both windings, must have a core with specific core losses at a relative high magnetic flux density not higher than 0,80 W/kg at 1,7 Teslas.

4.3. Concessions for pole-mounted transformers

A regulatory concession exists in the current regulation for medium power pole-mounted transformers with power ratings between 25 kVA and 315 kVA. This was justified on the grounds that a large stock of medium power transformers in some Member States are mounted on the support structures of overhead power lines, which impose weight limitations and prevent them from achieving the levels of energy efficiency that apply to ground mounted transformers.

This is therefore a lock-in effect into the existing infrastructure and installation practice of some utilities. However, this situation is not prevalent in all Member States and seems to be being gradually phased out. For instance, new safety regulations in Norway only permit the installation of transformers placed on the ground. In parallel, some manufacturers have reported being capable of manufacturing Tier 2 compliant medium power transformers suitable for pole-mounted installation.

In order to accelerate the phase out of this practice, a number of options are conceivable, from abandoning the existing regulatory concession altogether, to limiting it in time, to qualifying it with complementary requirements.

[Option 8A]

The more radical option would be to withdraw all concessions to pole-mounted transformers and require all medium power transformers to meet Tier 2 requirements regardless of whether they are for ground or pole-mounted installation.

[Option 8B]

A softer option would be to limit existing concessions to pole-mounted transformers in time (for instance 6, 8 or 10 years), in order to allow for a gradual phase-out of the existing practice. After a transitional period, all medium power transformers would have to meet applicable requirements (Tier 2 or ulterior) regardless of whether they are for ground or pole-mounted installation.

[Option 8C]

To complement Option B, the regulatory concession could be granted only for the one-to-one replacement of pole-mounted transformers into existing installations. This would at least prevent the installed base of these relatively inefficient transformers to become larger.

[Option 8D]

A fourth option could be used in combination with options B and/or C to improve the efficiency of pole-mounted transformers. As in previous cases, it could be required that, as of Tier 2 (July 2021), pole mounted transformers must have a core with specific core losses at a relative high magnetic flux density not higher than 0,80 W/kg at 1,7 Teslas.

[Option 8E]

Portugal has reported that the existing Table 1.6 is not suitable for the reality of their electricity distribution grid and that it would be necessary to add a 250 kVA rating with CkCo losses for Tier 2. It has not been possible yet to contrast this information with other sources.

5. Issues related to other environmental impacts

The review study has confirmed that the impact of energy consumption during the service lifetime of transformers remains dominant in terms of Global Warming Potential. The analysis made did not provide sufficient evidence to support proposing environmental requirements other than minimum energy performance/efficiency.

However, in order to further stimulate the recycling of transformers and provide a better estimate of their scrap value, it is recommended to make information related to the bill of material more easily available. To be noted that the existing regulation already requires the provision of information on the weight of all the main components of a transformer.

In any case, concerns have been reported by manufacturers of small power transformers (<1,1 kV) about the feasibility to include the required product information requirements on the name plate because of lack of space.

[Option 9]

The question here would be, first, whether to withdraw the existing provision to include product information requirements on the rating plate, and, second, whether to require more detailed information on the bill of materials of the transformer and in which support (i.e., digital, product-embedded, website, etc…).

It has been reported that transformers with higher efficiency and compact design may me prone to noise issues. This aspect has not investigated in the review study. It is therefore recommended that this aspect is investigated in time for the next review of this regulation, provisionally, in 2023.

6. Other miscellaneous topics

6.1. Small power transformers

Small power transformers are currently in the scope of the existing regulation. They are defined in Article 2 and are subject to product information requirements. However, there are no specific minimum energy efficiency requirements for them, and this has been the source of some confusion amongst relevant market players.

The use of small power transformers is very diverse and in many applications their use tends to be quite intermittent, what severely limits the opportunity to introduce minimum efficiency requirements. On the other hand, it is expected that with the gradual introduction of electric vehicles, a growth in LV/LV transformers can be expected.

The question is therefore still open as to the opportunity to introduce minimum energy efficiency requirements for small transformers in the future. This would require, in any case, a dedicated preparatory study.

[Option 10]

Consider the introduction of minimum energy efficiency requirements for small power transformers as of the next review of this regulation, provisionally, in 2023.

6.2. Technology neutral requirements for liquid immersed and dry type transformers

As it currently stands, the regulation set outs different minimum energy efficiency requirements for liquid immersed and dry type transformers. This treatment, in principle, is not in line with the principle of technology neutrality and is only explained by the fact that these transformers have different fire behaviour and they are not fully interchangeable in their applications, and thus constitute, to a certain extent, separate product markets.

[Option 11]

Investigate the possibility to adopt a completely technology neutral approach in the minimum requirements for liquid immersed, dry-type, and possible electronic transformers, as part of the next review of this regulation, provisionally, in 2023.

6.3. Retrofitted transformers

The current regulation does not contain any explicit provision on the treatment of repaired, refurbished or retrofitted transformers and relies on the Blue Guide on the implementation of EU product rules[6]. However, feedback from stakeholders, in

[6] http://ec.europa.eu/DocsRoom/documents/18027/

particular Gimelec[7] and CENELEC Technical Committee 14[8] provides the basis to consider more specific provisions, tailored to the transformers market.

More detailed guidance in the regulation providing more legal certainty and fostering the retrofitting of transformers, where economically viable, would be in line with the objectives of the Circular Economy policy adopted by the Commission in December 2015.

The Blue Guide states the following:

Products which have been repaired without changing the original performance, purpose or type, are not to be considered as new products according to Union harmonisation legislation. Thus, such products do not need to undergo conformity assessment again, whether or not the original product was placed on the market before or after the legislation entered into force. This applies even if the product has been temporarily exported to a third county for the repair operations.

Such repair operations are often carried out by replacing a defective or worn item by a spare part, which is either identical, or at least similar, to the original part (for example modifications may have taken place due to technical progress, or discontinued production of the old part), by exchanging cards, components, sub-assemblies or even entire identical units. If the original performance of a product is modified (within the intended use, range of performance and maintenance originally conceived at the design stage) because the spare-parts used for its repair perform better due to technical progress, this product is not to be considered as new according to Union harmonisation legislation. Thus, maintenance operations are basically excluded from the scope of the Union harmonisation legislation.

However, *a product, which has been subject to important changes or overhaul aiming to modify its original performance, purpose or type after it has been put into service, having a significant impact on its compliance with Union harmonisation legislation,* ***must be considered as a new product****. This has to be assessed on a case-by-case basis and, in particular, in view of the objective of the legislation and the type of products covered by the legislation in question. Where a rebuilt (44) or modified product is considered as a new product, it must comply with the provisions of the applicable legislation when it is made available or put into service. This has to be verified by applying the appropriate conformity assessment procedure laid down by the legislation in question.*

Existing power transformers which fall in the scope of this Regulation could be considered as new products when, as a result of a retrofitting operation, their energy performance and/[or] the life expectancy have been substantially increased.

More specifically, a retrofitted transformer shall be considered as a new product when the following operations have been performed:

- Replacement of a complete active part with a new one providing increased energy performance, for instance replacement of the complete phase of a single

[7] Gimelec is a French national association of electric equipment and services, which is part of T&D Europe
[8] As part of the development of standard prTS 50675

phase transformer, of the three phases of a three phase transformer or fixing/replacing a whole magnetic circuit with new steel.

- Replacement of the tap changer, of the bushings and of the complete insulation

[Option 12]

When it is considered that a retrofitted transformer can be considered a new product (see above), minimum energy efficiency requirements and product information requirements set out in Annex 1 of this Regulation shall be applicable.

Power transformers on which routine repair operations are performed shall not be considered as having been retrofitted, and therefore shall not be considered as new products. Routine repair operations include, in particular, the following:

- Replacing all coils on a specific leg in a three phase transformer
- Replacing one winding of a three phase transformer, when the other original windings are kept unchanged
- Fixing/replacing limited number of core sheets, involving no more than 20% of the core weight
- Drying and pressing the active part
- Repairing leakages, corrosion protection

6.4. National deviations in standard voltages

National deviations in standard voltages in electricity distribution grids exist in some Member States[9]. These standard voltages coincide with the thresholds used in this Regulation to characterise which minimum energy performance requirements are applicable to three-phase medium power transformers with rated power below 3150 kVA. Therefore, Tables 1.1, 1.2, 1.3, 1.4, 1.5, 1.7 and 1.8 in Annex 1 of this Regulation need to be read in conjunction with the referred existing national deviations.

[Option 13]

Add text in the regulation (possibly Article 3) to allow Member States (notably Czech Republic, Slovakia) notify the Commission about the existence of national deviations in standard voltages in electricity distribution networks, which require a different interpretation of the applicable requirements in Tables 1.1, 1.2, 1.3, 1.4, 1.5, 1.7 and 1.8 in Annex 1. The Commission would then make this notification publicly available.

[9] CENELEC EN 60038 includes in Annex 2B a national deviation in the Czech Republic according to which the standard voltage for the highest voltage for equipment in AC three-phase systems are 38,5kV instead of 36kV and 25kV instead of 24kV.