



**Position on the draft proposal to revise Ecodesign regulation 548/2014
on Power Transformers**

December 2017

General remarks

Following the Consultation Forum meeting which took place on 31 October to discuss the revision of the 2014 Ecodesign requirements on Power Transformers, we are concerned about the approach taken by the Commission. Disputed economic arguments relevant to a small minority of situations could open loopholes and undermine energy savings. These changes could put out of reach the economies of scale that would otherwise enable wide deployment of available solutions. We invite the Commission to revisit their approach and take into account the following remarks:

Causes for optimism

Transformers sold under Tier 2 requirements will be in use for decades and will directly impact energy savings up to and in many cases beyond 2050. Fundamental changes in our energy infrastructure must be achieved by then. There is much cause for optimism both on technology and economics:

- Major advances in the energy efficiency of transformer materials have been made in recent years with thinner and better steels on the way (Thyssen Krupp, 31 October 2017);
- These better materials will not be supply-constrained at 2021 when Tier 2 takes effect (Thyssen Krupp, 31 October 2017);
- MEPS have focused manufacturers on a narrower range of designs. A survey showed 435 designs reduced to 35, which has reduced manufacturing costs through economies of scale (T&D Europe, 31 October 2017);
- There is uptake of amorphous core material by manufacturers already (ViTO) with losses as low as 0.2 W/kg, and amorphous will not be supply-constrained in 2022 (Hitachi, 31 October 2017)

These improvements have at least in part been driven by ambitious MEPS in other major economies and the Ecodesign rules adopted three years ago. Policy must be consistent and support the further development and wider deployment of these very efficient solutions that could also deliver smaller and lighter transformers and thereby ease pressure on brown-field sites. Ambitious policy with only the minimum essential derogations is the way to build the economies of scale that can transform this market.

No solid justification to revisit established requirements

Unfortunately, on 31 October 2017, the Ecodesign Consultation Forum heard arguments to weaken the established, technically feasible and economically justified Tier 2 requirements that were adopted in 2014. The arguments exempt many applications that could account for a majority of transformer

usage in the coming decades and undermine the impact of the regulation. The economic argument presented at the Consultation Forum to weaken Tier 2 was disputed during the discussions:

- Firstly, it is now clear that the cost of Tier 1 compliance was 30% less than anticipated at the time of proposal, in common with many studies of similarly regulated products under Ecodesign. With improvements in manufacturing and materials, as well as lower material costs and increased supply, it is unclear why Tier 2 would not also achieve a lower compliance cost.
- Secondly, as pointed out during the meeting, the numbers presented by Eurelectric were not based on incremental costs and gave a falsely unfavourable impression of the market.
- Thirdly, weakening Tier 2 would undermine regulatory stability and the climate for investment. Due to long lead times, many manufacturers and material suppliers have already made investments¹, meaning early adopters will be penalised and the economies of scale for better and more efficient materials in the future will be reduced.
- Overall, the Commission's actions also run counter to Article 7 in Regulation 548/2014 which does not call for a review of the ambition or schedule of Tier 2. This sets a dangerous precedent with regards to the certainty of European regulations.

We therefore call on the Commission to adopt a default position of no derogation. There is no justification for blanket weakening of requirements or derogations across all applications for any product type. We also expect the European Commission to carry out a solid Impact Assessment of the options proposed.

Missing option: correct poor ambition of EU MEPS for medium power transformers below 60 kVA

As stated in our comments from May 2017, EU efficiency requirements for medium power transformers below 60 kVA are weak compared with all other economies. This is obvious from the SEAD/IEA4E MEPS comparison chart included in the review study and shown below. The European requirements stand in stark contrast for all other economies that regulate this same product in that the ambition drops off rapidly at the smaller kVA ratings, and thus is not following the physics of transformer design. Rather, this represents a weak level of ambition for MEPS that is simply not justified for this high-volume category of small sized medium power transformers. The review failed to address this issue and did not present any options to the Consultation Forum. We call on the Commission to bring the requirements more in line with international practice.

¹ Note: The review study fails to take into account the investments made following the Regulation's publication, including the extensive capital equipment investments necessary in steel and amorphous core material manufacturing, as well as all the equipment necessary on the manufacturer's facilities for working with these new highly efficient materials.

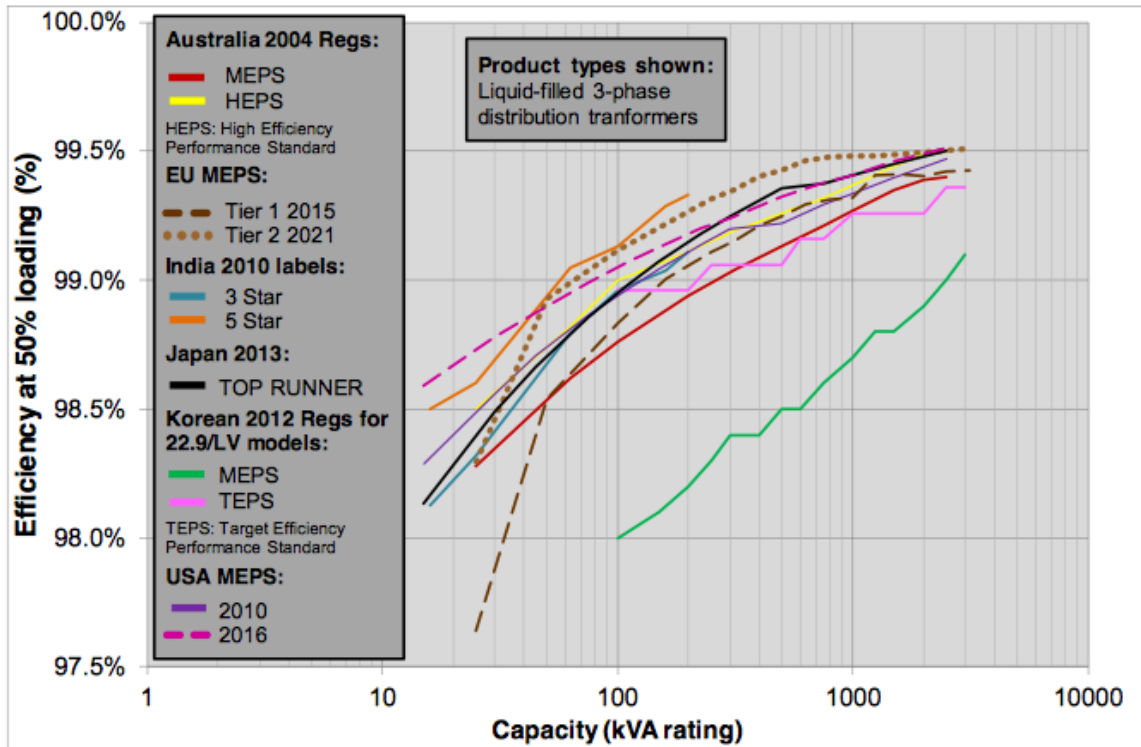


Figure 1: Mandatory MEPS levels for 3-phase liquid-filled distribution transformers. Normalised to IEC capacity measurement (source: IEA 4E Mapping and Benchmarking)

Review of the proposed options

Option 1, 4 and 5:

- Derogation for 1-for-1 replacement of medium power TRF on brownfield sites, where entails “disproportionate costs”
- Extend derogation to new large power TRF that “may entail disproportionate costs and may be technically unfeasible”.
- Extend derogation to replacement large power TRF that “may entail disproportionate costs”

We disagree with the approach proposed in options 1, 4, and 5 for the reasons described above. Moreover, the formulations proposed entail too high a level of legal uncertainty to be acceptable. Such vague formulations open the door to abuse, and cannot be kept as such. We share the many concerns expressed at the Consultation Forum regarding the technical and application processing capacity of MSAs to assess derogations in a timely and thorough manner. The scope of applications for which derogations are admitted should be reduced to help mitigate this – specifically, derogations would never be allowed for greenfield installations and never be allowed for industrial sites (the study found that no derogation was required or justified for industrial sites).

We recommend the following five requirements for derogation:

- 1) **Economic justification** – must demonstrate the disproportionate costs incurred relative to other installations in that same utility’s network and that the future savings from the more efficient transformer would not otherwise recover those costs in a reasonable timeframe;
- 2) **Technical feasibility** – must demonstrate that alternative core steels, different core designs and higher flux densities would not otherwise achieve the same requirements;

- 3) **Application declaration** – the end-user would need to specify the application into which the transformer is being installed, demonstrating that it is not a greenfield site and that it is not an industrial site. As such, derogation would only ever be granted for an individual unit, never a batch of designs. Furthermore, the declaration could also include photographs of the existing installation, load forecasts and other relevant information about the site.
- 4) **Information requirement** – the end-user would be required to comply with all the information requirements of Regulation 548/2014 so as to give guidance to the Commission for future revisions of the regulation.
- 5) **Fall-back requirement** – it is absolutely essential that any derogation granted the inclusion of fall-back minimum criteria including core loss limit and meeting Tier 1. Confirmation of this fact must be demonstrated in the application submission for derogation.

Option 3A: MEPS for single phase transformers

We support this option to bring the EU more closely in line with other economies that do not have this unnecessary loophole. We recommend a review to increase stringency at the earliest opportunity.

Option 7: Introduce core loss limits for special windings, including dual-voltage windings

We support the inclusion of minimum criteria on core loss limits for special windings, including for dual-voltage windings. Dual-voltage windings were discussed in some detail at the Consultation Forum and the consensus was that such transformers are inevitably compromised on efficiency and should be phased out as soon as possible. A convincing case was made for the elimination of dual voltage concessions to avoid cheating (T&D Europe, 31 October 2017). Certain cases justifying their use were noted in Ireland and Belgium. But these uses are limited to 'grid transition applications' (Synergrid, 31 October 2017). This should be specified in the regulation as the only application that is subject to exemption, and the core losses limit should be applied.

Options 8 on pole-mounted transformers

Overall on pole-mounted transformers, the evidence overwhelmingly shows that the old technology routinely deployed for pole-mounted applications does not belong in the efficient grid needed for the coming decades. Many economies have already recognised this and moved on (CF was told of Poland, for example, where the same requirements apply for pole and pad-mounted, European Copper Institute, 31 October 2017). The US has adopted equivalent requirements for pole and pad-mounted units, more than one third of which are amorphous core (which tend to be larger and heavier than silicon-based steel).

The Commission has proposed some sound options to drive the EU as a whole to address this, but all of these options must be applied to the full:

- Transition to remove concessions over no more than six years (we call for a transition of only four years to drive early action, innovation and economies of scale to improve the economics of dual pole and other approaches)
- Exceptions only allowed on one-for-one replacements in existing installations
- From Tier 2, maximum core losses apply to any exceptions granted

Option 9: other environmental impacts

We do not support the option to withdraw the existing provision to include product information requirements on the rating plate. The provision of information related to the bill of material is valuable for recyclers.

Option 10: Consider MEPS for small power TRF at next review in 2023

We strongly support the development of requirements for small power transformers, including to make use of the imminent technical standard on this topic. It is regrettable that these requirements are unlikely to be in place during the explosion of demand for electric vehicle charging infrastructure from now to 2030, a proportion of which will include transformers of various types. Equipment for fast charging is especially relevant for small transformers; the lack of analysis of this growth in the preparatory study was also regrettable.

Option 11: Adopt technology neutral requirements after review in 2023 (no longer lower standards for dry TRF)

Wide availability of fire-safe alternatives to mineral oil-filled transformers means that the concessions allowed for dry-type transformers must be re-evaluated as soon as practicable. As acknowledged in the study, different standards for dry and oil-filled are also not in line with the principle of technology neutrality.

Other remarks

▪ Assess proposed options for Tier 3

We support the further examination of the refining options for Tier 3, including adding a minimum kPEI for large power transformers, reduced no load losses e.g. A0-10%, extend scope to substations and mounting-poles (facility provisions) covering minimum dimensions and weights characteristics - to avoid lock-in of transformer types.

▪ Issues for inclusion in the review clause

We would like the following issues to be added to the review clause:

- Narrowing the scope of derogations due to improved economics and technology deployment
- Removing distinction between oil-filled and dry transformers
- Setting MEPS for transformers below 60 kVA that drive market improvement
- Stringency of maximum core losses thresholds as applied to all concessions
- Stringency of single phase MEPS.

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