Directive 2009/125/EC

COMMISSION REGULATION (EU) No 548/2014

A Guide to the “Eco-design Directive”.

R.G Thomson 30 March 2015

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1. Introduction.

Reducing energy consumption and eliminating energy wastage are two of the major aims of the European Union (EU). The EU European Minimum Energy Performance Standards (MEPS) were introduced in 1999 to impose minimum efficiency levels on energy consuming equipment sold in the EU. The European Directive 2009/125/EC of October 2009 established a framework for the setting of “eco-design” requirements for energy-related products (ERPs) for sale into the EU and transformers are deemed an ERP under this directive. From July 1st 2015 Commission Regulation (EU) No 548/2014 which governs the energy efficiency levels and sets MEPS for small, medium and large 3-phase power transformers sold in the European Union will be in force.

2. What is the Eco design Directive?

The Eco design Directive (Directive 2009/125/EC) establishes a framework to set mandatory ecological requirements for energy-using and energy-related products (ERPs) sold in all 28 Member States of the EU.

3. What is Commission Regulation (EU) No 548/2014?

This Regulation establishes the Eco design requirements and MEPS for Directive 2009/125/EC with regards to small, medium and large power transformers which are sold in in all 28 Member States of the EU. The Eco design requirements are basically limits set on the losses and efficiency levels permitted for these power transformers.

4. Is the Eco design Directive a legal requirement?

Yes it is an EU Directive that requires all EU member states to achieve a particular target. As a manufacturer of ERPs our transformers must comply with Commission Regulation (EU) No 548/2014 where applicable if they are to be sold in any EU28 country. Countries of the European Economic Area (Iceland, Liechtenstein and Norway) have also committed to implement MEPS the same or similar to those set by EU Eco-design Regulations.

5. When does it come into force?

Commission Regulation (EU) No 548/2014 entered into force on 11 June 2014 and its MEPs shall start applying from 1 July 2015. The time between these two dates acts as a grace period to give manufacturers and their customers time to adapt to the requirements of the regulation.

Commission Regulation (EU) No 548/2014 is a two tier compliance requirement with tier one requirements coming into force from July 1 2015, and more stringent efficiency requirements coming into play from 1 July 2021. The Regulation is only applicable to transformers purchased after the entry into force of the Regulation (01 July 2015). The regulation will be reviewed during 2017 to assess the possibility of broadening the scope of the regulation to cover transformer types that currently do not require compliance. This review could also impact the current tier 2 requirements set for 2021.

6. Which Noratel transformers will be effected by this directive and how?

This Directive Regulation will apply to:

Small 3-Phase power transformers with a highest working voltage not exceeding 1.1kV and a rated power of 1.0kVA and upwards. **This includes Noratel 3LT ranges of 3-phase power transformers and derivatives.**

- No restrictions on losses or efficiency levels.
- Labelling, rating plates and documentation (including catalogues data, website listings) will need to include new information on the transformers rated losses and the weights of active materials, steel, copper etc.

Medium 3-Phase power transformers with a highest working voltage higher than 1.1 kV, but not exceeding 36 kV and a rated power equal to or higher than 5 kVA but lower than 40 MVA. **This includes Noratel 3HT ranges of 3-phase power transformers and derivatives.**

For Medium 3-Phase Power Transformers (3HT) with rated power of ≤ 3 150kVA

- Restrictions on the level of no-load losses (Core Losses) and Load losses (Winding losses) permitted after July 1st 2015.
- Labelling, rating plates and documentation (including catalogues data, website listings) will need to include new information on the transformers rated losses and the weights of active materials, steel, copper etc.

For Medium 3-Phase Power Transformers (3HT) with rated power of > 3 150kVA

- A minimum Peak Efficiency Index (PEI) must be met after July 1st 2015. The PEI % figure is calculated from the rated power and the no-load and load losses of the transformer.
- Labelling, rating plates and documentation (including catalogues data, website listings) will need to include new information on the transformers rated losses and the weights of active materials, steel, copper etc.

Large 3-Phase power transformers with a highest working voltage exceeding 36 kV and a rated power equal or higher than 5 kVA, or a rated power equal to or higher than 40 MVA regardless of its highest working voltages. **Currently beyond Noratel's scope of manufacture.**

7. Which transformers are currently exempt from this directive?

The directive is currently aimed mainly at distribution transformers and there are a lot of transformer categories that are currently exempt from the Eco design requirements. However this may change when the Regulation (EU) No 548/2014 is reviewed in 2017.

This Directive Regulation will not apply to:

Transformers specifically designed and used for the following applications…

- 1-Phase Transformers.
- Instrument transformers, specifically designed to supply measuring instruments, meters, relays and other similar apparatus.
- Transformers with low-voltage windings specifically designed for use with rectifiers to provide a DC supply.
- Transformers specifically designed to be directly connected to a furnace.
- Transformers specifically designed for offshore applications and floating offshore applications.
- Transformers specially designed for emergency installations.
- Transformers and auto-transformers specifically designed for railway feeding systems.
- Earthing or grounding transformers, this is, three-phase transformers intended to provide a neutral point for system grounding purposes.
- Traction (mobility) transformers mounted on rolling stock, this is, transformers connected to an AC or DC contact line, directly or through a converter, used in fixed installations of railway applications.
- Starting transformers, specifically designed for starting three-phase induction motors so as to eliminate supply voltage dips.
- Testing transformers, specifically designed to be used in a circuit to produce a specific voltage or current for the purpose of testing electrical equipment.
- Welding transformers, specifically designed for use in arc welding equipment or resistance welding equipment.
- Transformers specifically designed for explosion-proof and underground mining applications.
- Transformers specifically designed for deep water (submerged) applications.
- Medium Voltage (MV) to Medium Voltage (MV) interface transformers up to 5 MVA.
- Large power transformers (*) where it is demonstrated that for a particular application, technically feasible alternatives are not available to meet the minimum efficiency requirements set out by this Regulation.
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- 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.

  ** with a highest working voltage exceeding 36 kV and a rated power equal or higher than 5 kVA, or a rated power equal to or higher than 40 MVA regardless of its highest working voltages*

The directive does not apply to products for export to countries outside the EU (or EEA). Any products already in the field are allowed to remain in service.

8. What are the Pros and Cons of complying with the Eco directive?

Pros of compliance:

- Transformers designed to comply with the Eco-Directive will play a part in the reduction of Europe’s CO2 emissions. For example, the total losses of the transformers fleet in the EU27 countries in 2008 amounted to 93.4 TWh per year. The cost-effective improvement potential through this directive has been estimated to be about 16.2 TWh per year in 2025, which corresponds to 3.7 Mt of CO2 emissions.

Cons of compliance:

- Compliant transformers may be more expensive (may require more exotic core materials and/or more copper/aluminium), and possibly larger in dimensions/weight.

9. Can Noratel supply transformers compliant with the Eco directive?

Yes of course! Noratel are committed to improving energy efficiency and the prospect of greener planet. Noratel can design and supply any transformer fully compliant with the ECO Directive under Regulation No 548/2014, where compliance is required by the transformer type, power rating or application.

10. As a customer, will I have to state that compliance is required in my transformer specifications or RFQs?

No, it is up to manufacturers and suppliers to ensure that compliance with the directives is met. Noratel will ensure that if your transformer specification comes under the scope of the directive, it will be fully compliant.

11. How will compliance be indicated on a transformer?

All transformers supplied to the EU must bear a CE-mark which indicates compliance with this directive and any other directives required. This CE-mark will be backed up by a signed EC Declaration of Conformity document that states the directives applicable. The rating plate on the transformer will also contain information required by the directive and Regulation No 548/2014.

12. How can I find out more?

Please contact Noratel sales departments if you need any further information or if you have any concerns regarding this directive and your transformer requirements, or visit our website www.noratel.com