***Multiple FWC with reopening of competition in the field of Sustainable Industrial Policy and Construction – Lot 2: Sustainable product policy, ecodesign and beyond***

***(No 409/PP/2014/FC Lot 2)***

***Client: European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs***

**PREPARATORY STUDY FOR THE REVIEW OF COMMISSION REGULATION 548/2014 ON ECODESIGN REQUIREMENTS FOR SMALL, MEDIUM AND LARGE POWER TRANSFORMERs**

**Questionnaire for Installers on Transformers constraints and limitations**

Dear Madams and Sirs,

This enquiry is designed to gather data to determine the effect that Tier 2 efficiency requirements would have on transformer constraints. More information on the scope of work can be found on the project website: <https://transformers.vito.be/>. This questionnaire document is intended to structure your data input to reflect the current and future situation in the transformer market (EU) appropriately.

The enquiry is a **joint enquiry with CENELEC CLC/TC14** and hence **if you have filled in such an enquiry before you can also send it to share the work for the ongoing study.**

Note that VTIO is committed to comply with antitrust rules. As a result, the present enquiry does not require the participants to provide (i) individualized and /or raw information on the technical specifications of transformers they supply confidential to their customers nor (ii) to provide any other commercially sensitive information. Similarly, the respondents to this enquiry should not voluntarily provide such information in response to this enquiry if this does not belong to the public domain and/or cannot be disclosed within the report of supplied to the European Commission services. This questionnaire document is only intended to structure your data input to reflect the current and future situation in the transformer market (EU) appropriately. The primary objective of this enquiry it to gather sufficient information to assess if Tier 2 requirements of EU regulation 548/2014, applicable in 2021, are still technologically justified.

You are kindly invited to reply to this Enquiry indicating, if possible, what are the most typical values to be considered in your area for the different types of transformers.

This enquiry consists of two sections, where data can be provided by filling the proposed tables. Please add as many columns as necessary (one column per each transformer). In case not all requested data are available, feel free to indicate “N.A.” – “Not Available” – in the cells with missing data.

The deadline to submit your answers is December 19th, 2016.

Best Regards,

Paul Van Tichelen on behalf of the project team

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Sent to: [transformers@vito.be](mailto:transformers@vito.be)

**1st SECTION: TRANSFORMERS GENERAL DATA AND CONSTRAINTS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Transformer category(1)** |  |  |  |  |  |
| **Rated power(2) of each winding [MVA / MVA / …]** |  |  |  |  |  |
| **Frequency [Hz]** |  |  |  |  |  |
| **Number of phases** |  |  |  |  |  |
| **Type (liquid / dry)** |  |  |  |  |  |
| **Rated voltage of each winding**  **[kV / kV / …]** |  |  |  |  |  |
| **Highest voltage for equipment of each winding Um [kV / kV / …]** |  |  |  |  |  |
| **Vector Group(3)** |  |  |  |  |  |
| **Regulation type(4)** |  |  |  |  |  |
| **Type of cooling(5)** |  |  |  |  |  |
| **Impedance(6) [%]** |  |  |  |  |  |
| **Maximum dimensions(7)**  **(length x width x height) [mm]** |  |  |  |  |  |
| **Maximum weight [kg]** |  |  |  |  |  |
| **Minimum clearance between live parts and ground [mm]** |  |  |  |  |  |
| **Minimum free distance required around the transformer [mm]** |  |  |  |  |  |
| **Please clarify the reason for the constraints(8) and the consequence of exceeding them** |  |  |  |  |  |

1. Please specify the transformer application by indicating the relevant letter among the options in the following list:
2. Arc furnace transformer
3. Distribution transformer
4. Earthing transformer
5. Generator step-up transformer
6. Ground mounted distribution transformer
7. HVDC converter transformer
8. Medium Voltage (MV) to Medium Voltage (MV) interface transformer
9. Offshore transformer – Oil platform
10. Offshore transformer – Wind collector substation
11. Offshore transformer – Wind turbine
12. Phase-shifting transformer
13. Photovoltaic application transformer
14. Pole mounted distribution transformer
15. Rectifier transformer
16. Starting transformer
17. Subsea transformer
18. System intertie transformer
19. Traction transformer for fixed installations
20. Traction transformer for rolling stock
21. Variable Speed Drive transformer (VSD)
22. Wind turbine onshore transformer

In case a specific application is missing, feel free to add additional letters to the list above

1. If different values of apparent power are assigned under different cooling methods, please indicate the highest of these values, which is the rated power
2. As defined in EN 60076-1, paragraph 7. In particular:
   1. if a transformer is specified with a reconfigurable winding connection (reconnectable windings), the alternative coupling voltage and connection shall be noted in brackets. For example: 110 / 11 (5,5) kV indicates a reconnectable LV winding
   2. if a tertiary winding is provided as stabilizing winding, the “d” symbol shall be preceded by the “+” sign and no phase displacement shall be indicated. For example: YNa0+d indicates the presence of a tertiary stabilizing winding
3. Please specify either “None”, “DETC” or “OLTC”. In case voltage variation is provided on more than one winding, please indicate each winding voltage and its regulation type separately
4. If the transformer has several assigned cooling methods, please indicate all of them
5. Referred to the highest value of rated power and to the rated voltage (i.e. rated tap position). In case of more than two windings, please indicate between which winding pair and at which power the value refers
6. Parameters not constrained can be left unspecified (e.g. if the length and the width are constrained, but the height is not, it can be indicated or example: 6000 x 4000 x H)
7. For example: size of door in existing substation, width limitation on transport, limits on pole weight, etc…

**2nd SECTION: TRANSPORTATION DIMENSIONAL AND WEIGHT CONSTRAINTS**

Please indicate in the following table what are the transportation constraints to be considered in your country (maximum values). In case more than one type of constraint exists (e.g. constraints may be different depending on the installation site), feel free to add rows to the table below and use the column “Comments” to clarify the rationale.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Length [mm]** | **Width [mm]** | **Height [mm]** | **Weight [kg]** | **Comments** |
| **Railway transportation** |  |  |  |  |  |
| **Road transportation** |  |  |  |  |  |
|  |  |  |  |  |  |