Electric motors and variable speed drives:
Recommendations on the final Ecodesign proposal

November 2018

Ahead of the Member States vote scheduled for early 2019, we would like to welcome the draft Ecodesign requirements[1] proposed by the European Commission which include some major improvements in terms of scope and ambition over the current regulation. We confirm our support for having motors integrated in other products within the scope of the regulation and would like to make the following recommendations on how to further improve the proposals.

Increase ambition on motors

We do not see any technical reason for delaying the entry into force of Tier 1 for certain type of motors and call on Member States to bring the entry into force date forward for:
- 8-pole motors
- brake motors
- explosion proof motors
- small motors with a rated output from 0.12 kW up to 0.75 kW.

Furthermore, Tier 2 should foresee that motors from 0.75 kW to 375 kW which use asynchronous or advanced motor technologies (like permanent magnet and synchronous reluctance motors) **reach the IE4 levels**. As demonstrated in the preparatory study from 2014, IE4 technology is cost-effective and has roughly the same short payback time as IE3. The large related electricity savings at stake should not remain untapped and the European's industry innovation should be pushed.

Increase ambition on VSDs

The use of VSDs is necessary to save electricity in motor systems and their applications with variable load. The VSDs scope should match the motors scope. We therefore call for the inclusion of VSDs that are rated for operating with motors **down to 0.12 kW and up to 1000 kW**. Not covering these products already in Tier 1 represents a missed opportunity since their efficiency is very low and they are widely sold.

Based on preliminary results of the global Round Robin for Converter Losses[2] programme, the real losses in VSDs are very much lower than the 100% reference losses for IE1 and the 75 % for IE2. In order to have any effect on the market, we firmly believe that the Tier 2 requirements should be

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[1] Version notified to the WTO on 22 October 2018
[2] IEC/EMSA research project RR'C: Round Robin for converter losses, phase 1 November 2017 to February 2019.

taken to the next level **by requiring IE3**. Figure 1 demonstrates that there is no reason to distinguish requirements for VSD losses by size.
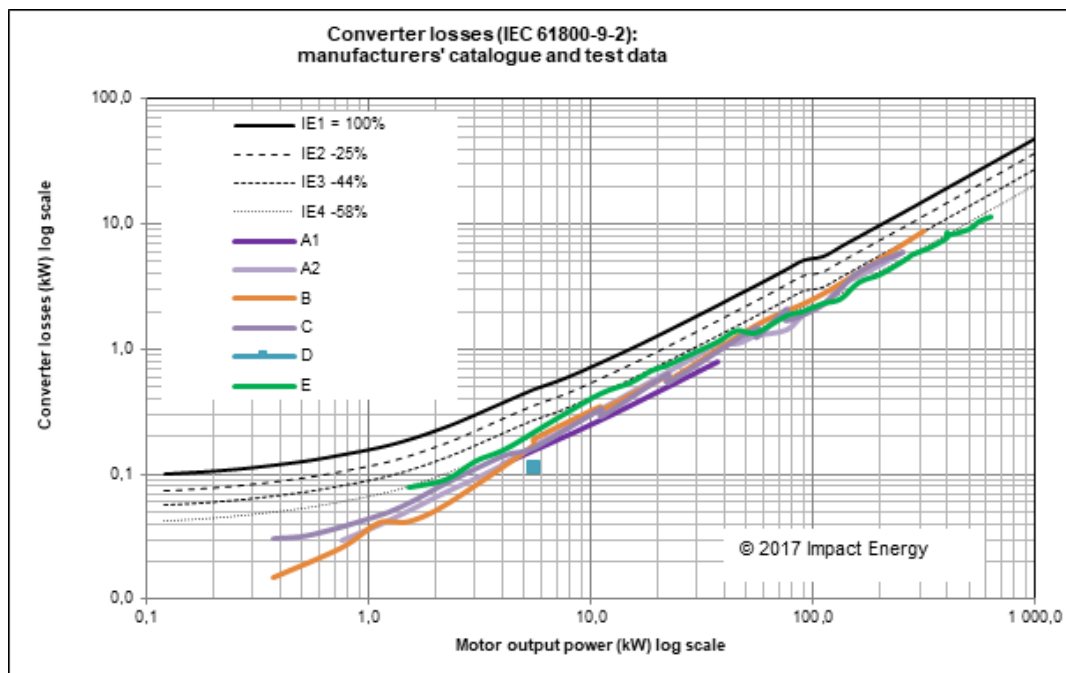

Figure 1 - VSD losses: Manufacturers' and test and catalogue data, total 5 manufacturers and 97 products (0.37 to 630 kW). Published in EEMODS 2017: New technology needs new policy - From component to systems; Anibal de Almeida, Conrad U. Brunner, et al.

Furthermore, **VSD standby consumption** (no load losses) vary greatly and has a high impact on the electricity consumption of such equipment. We believe this information should be **included in the information requirements for VSDs**.

Support identification and reuse of rare earth permanent magnet motors

Resource aspects have been left to the next revision, which is a missed opportunity and not in line with the Circular Economy strategy of the European Union. At the very least, action needs to be taken on permanent magnet motors, that can contain rare earth elements which have been identified as critical materials in the medium-term based on supply risk, demand growth and recycling restrictions. Devices with rare earth magnets are hard to identify as such without a very specific technical know-how or without conducting intensive testing/dismantling of devices.

Reuse and recycling should be facilitated by:
- a mandatory and standardised marking of products containing rare earth magnets, including information on their localisation, information on the applied type (e.g. SmCo, FeNdB) and their extraction process.
- a clause ensuring the ease of disassembly of permanent magnets when they contain rare earth elements, as proposed in other regulations in discussion.

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