CEMEP

European Committee of Manufacturers of Electrical Machines and Power Electronics

02nd CEMEP CONFERENCE

7th and 8th July 2022 in Milan, Italy

CEMEP sustainable products, systems & services

European Commission

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CEMEP second conference

Milan, July 7-8 2022

"CEMEP sustainable products, systems & services"

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1. Policy context

2. Electric motors & VSDs

3. Next steps

1. Policy context:

Need for action greater than ever !

- Climate change & Green deal (Dec 2019): EU carbon neutral by 2050
- Circular economy & CEAP (Mar 2020)
- Fit for 55 package (Jul 2021): 55% reduction CO_2 emissions by 2030 + 9% additional energy savings in the recast of the EED
- Current crisis: EU Energy security and energy prices

  On *18 MAY 2022 Commission adopted its REPowerEU Plan: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition*
- **Ecodesign and energy labelling** are key instruments.
- **30 Mar 2022** Commission adopted:
  - Ecodesign and energy labelling Working Plan 2022-24
  - Proposal for a new '*Ecodesign for Sustainable Products*' Regulation

Ecodesign and energy labelling Working Plan

- **Current status:** 50 legal acts covering 31 product groups, representing about 50% of EU consumption. Regularly updated.
- **Impact estimates** (2020 vs BaU):
  - 10% cut in EU primary energy use and GHGs (for products in scope), growing !
  - € 60 bn/y in consumer expend. (€ 210/household, based on pre-2021 energy prices!)
- **Plan 2016-2019:** great achievements, but work far from completed: 40% of items rolled over.

"a key lesson learned […] is that harvesting the full benefits of this policy area will require a better match between ambition and resources, both for policy implementation at EU level and when it comes to Member States' efforts in market surveillance."

- **Plan 2022-2024:**
  - **38 reviews due by end 2024** incl. motors & VSDs, fans, pumps, ventilation units, etc.
  - **New:** +/- 15 new products to investigate,
  - **Horizontal:** Focus on Contributions to the circular economy, Market surveillance, international collaboration, standardisation etc.

https://ec.europa.eu/info/news/ecodesign-and-energy-labelling-working-plan-2022-2024-2022-apr-06_en

Ecodesign and circular economy (based on working plan)

- Already before the ESPR enters into force, new product-specific requirements on material efficiency aspects can and will be explored.
- While energy efficiency has been the natural focus of ecodesign work, other aspects have increasingly been progressively integrated e.g. with respect to durability, availability of spare parts, reparability, and end-of-life information.
- At Commission request, CEN-CENELEC has finalised horizontal standards on material efficiency, covering durability, recyclability, ability to repair, reuse and upgrade, recycled contents etc. They can be the basis for developing product-specific material efficiency standards for energy-related products.
- Based on the standard on the ability to repair, reuse and upgrade (EN 45554) the Commission's Joint Research Centre has developed a repair score system. The Commission is exploring the potential of introducing it for relevant products, e.g. as information on the energy label for products such as smart phones and tablets.
- The Methodology of Ecodesign for Energy-related Products (MEErP) is currently being revised to introduce a more systematic way of covering circular economy aspects when performing ecodesign studies on specific products.
- In the upcoming work, the trend towards increased emphasis on circular economy will continue. New aspects like recycled content, durability, firmware and software and environmentally relevant and critical raw materials will further be explored.

Proposal for a new '*Ecodesign for Sustainable Products*' (ESPR) Regulation

- Will **replace** the current Ecodesign directive aiming at energy-related products ("ErPs").
- Will enable setting of performance & information requirements **for almost all categories of physical good**s placed on the EU market.
- **Wide range** of requirements, including:
  - product durability, reusability, upgradability and reparability
  - presence of substances that inhibit circularity
  - energy and resource efficiency
  - recycled content, remanufacturing and recycling
  - carbon and environmental footprints
  - information requirements, including through a Digital Product Passport
- Will **improve** the current framework on various aspects (e.g. market surveillance etc.)
- **Transitional measures** for regulations adopted under the current framework
- Negotiations with EP & Council about to start (**long process**)

https://ec.europa.eu/info/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products_en

2. Electric motors & Variable speed drives

The new motors & VSDs Ecodesign Regulation (EU) 2019/1781 adopted 1 Oct 2019

Replaces former regulation (EU) 640/2009 on ecodesign for electric motors

- Entered into application 01/07/2021
- Modified by 'Omnibus' Commission Regulation (EU) 2021/341 of 23 February 2021:
  - Applies since 01/07/2021
  - Minor technical fixes
  - Consolidated version available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02019R1781-20210701
- Technical corrigendum of the German language version ongoing: problematic translation of the term (electric) 'grid'.

Main highlights of the new Motors Regulation:

Since Jul 2021

- ❑ Electric motors 0,75 – 375 kW: Mep 'IE2+VSD or IE3' => **IE3**
- ❑ Scope expansion:
  - 0,12 kW < 0,75 kW: **IE2** - 375 kW <= 1000 kW: **IE3**
  - Includes 8 poles motors & 60 Hz motors
  - Specific exclusions revised/added
- ❑ VSDs 3 phases input, rated for operating with 0,12 kW-1 000 kW motor: **IE2**

From Jul 2023

- ❑ Single phase motors & Ex eb increased safety motors: **IE2**
- ❑ 3-phase motors 75-200 kW with 2, 4, or 6 poles: **IE4**

(which are not brake motors, Ex eb motors, or other explosion-protected motors)

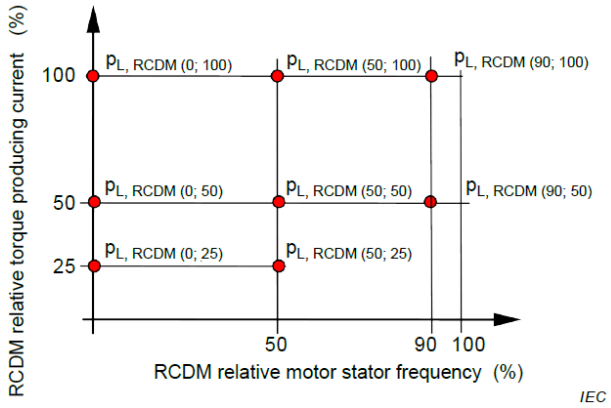
Estimated benefits (by 2030)*: on top of the previous Regulation*

- ➢ Energy savings: 10 TWh/a
- ➢ Greenhouse gas (GHG) emission savings: 3,2 $MtCO_2eq./a$
- ➢ Annual end-user expenditure savings: EUR 1,3 billion (2018 prices !)

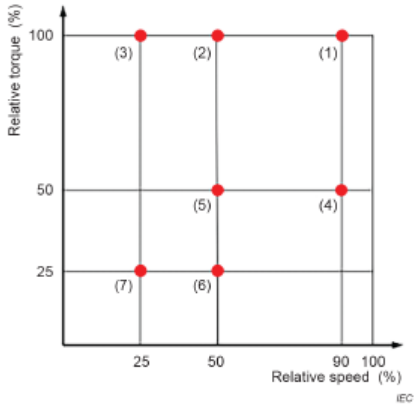
Information requirements at part load/speed

=> Enables calculation and optimisation of motor systems efficiency at different load and speed

8 Points for VSDs
(IEC 61800-9-2)



7 points for motors
(IEC 60034-2-3:2020)



From 01/07/2022

4. Next steps

Review of the motors & VSD Regulaiton (EU) 2019/1781

Art 9: Draft revision proposal presented to the Consultation Forum by **14 Nov 2023**, addressing the appropriateness of:

(1) resource efficiency requirements, incl. identification of rare earth in PM motors;

(2) the level of verification tolerances;

(3) setting stricter requirements for motors and VSDs

(4) setting MEPs for motors > 1000 V;

(5) setting requirements for combinations of motors and VSDs placed on the market together & integrated variable speed drives (compact drives);

(6) the exemptions

(7) adding other types of motors to the scope, incl. PM motors.

Next steps (cont)

Additional topics for the motors review:

- For motors: include information requirements on efficiency in the 'field weakening zone' (> 100% speed)
- For VSDs: Address system losses directly associated with the VSDs, in particular losses induced upstream in the grid when the input current is not sinusoidal, and harmonic losses induced downstream in the motor;

To start when resources allow for it

Thank you for your attention!

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