

Ecodesign — June 2020

Get ready for updated energy requirements in EU

HOYER
MOTORS

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Updated energy requirements for electric motors on the way

On 1 January 2021, the EU Ecodesign rules are expanding with new and more ambitious energy requirements for electric motors. The requirements are being implemented with the aim of phasing out the least energy-efficient motors in the market, and there is great potential for reducing CO2 emissions.

In this white paper we explain what you should be aware of regarding the updated energy requirements for electric motors. We outline the key points of the Ecodesign Directive and describe how we at Hoyer Motors are at your disposal with inspiration and advice for more energy-efficient applications.

To limit European energy consumption and climate impact, the EU implemented a number of energy requirements in 2009 under the name Ecodesign. A new and more ambitious directive which will cover more types of electric motors is now on the way. The directive officially enters into force on January 1 2021 and will be implemented in three phases: July 1 2021, July 1 2022 and July 1 2023.

The new rules mean that all electric motors with a power output of 0.75 kW - 1000 kW must have an energy class corresponding to at least IE3. Motors from 0.12 kW - 0.75 kW must be IE2. Most OEMs both within and outside Europe will therefore be affected by the EU directives.

As part of the global manufacturing industry, we at Hoyer are aware of our social responsibility and environmental footprint. Improving energy efficiency in the industry is one of the fastest, cheapest and cleanest ways to reduce CO2 emissions.

By offering more energy efficient motors and VFD solutions, we can help our customers to energy optimise their applications and thereby help reducing industry emissions. There will often be financial gains for the end user as well, which can only support the potential of increased energy efficiency.

Happy reading.

Hoyer Motors

Ecodesign streamlines industrial energy

Electric motors are huge energy consumers. Thus, tightening energy requirements will make energy consumption more efficient at the industrial level, and the benefits of greater energy efficiency are enormous, both for businesses and for the climate.

Improving energy efficiency is a key theme in the EU's energy policy. Energy efficiency is one of the fastest and most cost-effective ways to reduce CO2 emissions and make companies more competitive.

Focus on energy efficiency

Ecodesign is the name of the energy and environmental requirements the EU sets for products, with the intention of removing the least energy-efficient products from the market. In practice, this means that the Ecodesign requirements are invisible to consumers, as this is not a brand but a requirement for manufacturers.

Ecodesign helps streamlining the energy consumption at the industrial level in the EU. The requirements are the same for all EU and EEA countries. Products which do not meet the requirements may not be used in new applications on markets in the countries concerned. Likewise, replacement of older motors must also meet these new requirements.

The largest energy consumer in the industry

The benefits of higher energy efficiency are many. In the EU alone there are around eight billion electric motors, and globally it is estimated that they are accountable for more than half of all industrial energy consumption.

The EU therefore wishes to improve industrial emissions in a cost-effective way and this is among others enabled by making electric motors more energy efficient.

"Ecodesign is an important step towards more efficient energy consumption. From a climate perspective it's important that all EU countries take action now, and this legislation helps make sure it happens. At Hoyer Motors we are part of the green transition, and the majority of our products are covered by ecodesign," says Thomas Vase, Product and Application Specialist at Hoyer Motors.

Facts about Ecodesign

Introduced in 2009.

Ecodesign requirements include a wide range of products from windows, coffee machines, light sources and computers to electric motors.

The requirements have been established in order to implement standards to reduce energy consumption across the entire EU.

By 2021, all electric motors with a power output from and including 0.75 kW - 1000 kW must have an energy class corresponding to at least IE3.

By 2021, all electric motors with a power output from and including 0.12 kW - 0.75 kW must have an energy class corresponding to at least IE2.

Ecodesign changes up to 2023

The new ecodesign directive, which enters into force on 1 January 2021, applies to induction motors for continuous duty operation which have 2, 4, 6 or 8 poles and a power output from and including 0.12 kW - 1000 kW. The directive will be implemented in three phases during the period July 1 2021 to July 1 2023.

Companies should especially pay attention to below points in relation to the new rules:

- The current scope is extended from 0.75 kW – 375 kW to 0.12 kW – 1000 kW.
- 8-pole motors are now also included and ecodesign will now apply to 2, 4, 6 and 8 poles.
- Industrial brake motors, EX eb motors and single phase motors are now also covered by the rules.
- Today, motors supplied by frequency converters (VFD) only need to be IE2, even though the requirement is actually IE3. This VFD exception will be removed on July 1 2021.

Changes phase by phase:

- **From July 1 2021:**
All electric motors with a power output from 0.12 kW - 0.75 kW must be of energy class IE2, while 0.75 kW - 1000 kW must be IE3 at minimum.
- **From July 1 2022:**
Motor suppliers will be required to test all electric motors based on different speeds and loads, unlike the current situation, in which testing is only performed at full speed and with different loads. This is because more and more VFD-controlled applications running at widely different speeds and loads are entering the market.
- **From July 1 2023:**
Ex eb increased safety motors from 0.12 kW - 1000 kW and single phase motors from 0.12 kW and upwards must meet the IE2 requirements as minimum. All standard motors with 2, 4 and 6 poles from 75 kW - 200 kW must be IE4.

Integrate the new requirements into product development

As an OEM manufacturer, you should already now be aware of incorporating the stricter energy requirements into new designs as well as the possibilities it entails.

The Ecodesign Directive has been published a long time before it is put into force but Hoyer Motors recommends that the industry does not wait with the integration of more energy-efficient motors into the development of new product designs.

"As an OEM, you should already now be conscious of introducing this in your designs. It would be a shame to spend thousands of engineering hours developing an application that cannot be sold on the market in 2021 because it is designed with a motor with too low efficiency," says Thomas Vase, Product and Application Specialist at Hoyer Motors.

Test requirements increase focus on VFD operation

As an OEM manufacturer, it is worth noting that from July 1 2022 all electric motors must be tested at different speeds and loads and not only at maximum speed, as is the case today.

"This change reflects the growth of VFD-controlled applications, which can run at different speeds and loads. The increased focus and the updated test requirements will inevitably influence motor suppliers' designs, making it even more attractive for OEMs to integrate VFD usage into their designs," says Thomas Vase.

Focus on total cost of ownership – efficiency is good business

The increased awareness of energy efficiency also means that more end-users are considering the correlation between purchase price and the operating costs when investing in new applications such as pumps, ventilation and hydraulics. Improved motor efficiency can provide a significant competitive advantage here.

"Based on a lifetime of 10-15 years, the average purchase price of a motor does not even represent 5% of the total cost of ownership in a standard application such as a pump. Whereas energy consumption accounts for by far most of the total cost of ownership. And in many cases, the lifetime of the motor is even longer. This serves to illustrate the solid basis, besides environmental considerations, for choosing more energy efficient motors," says Thomas Vase.

Stay ahead of legislation

It pays to be more ambitious than the minimum legal requirements and Hoyer Motors is ready with motors and VFD solutions that not only meet but also exceed the Ecodesign requirements. New motor technologies that can support the development towards more energy efficient industrial solutions are constantly being considered.

When developing new product designs there is good reason to set the bar higher than that required by the Ecodesign rules. End-users' demands for more sustainable and cost-effective solutions are currently a strong driver of demand for more energy efficient applications.

In many cases, end-users' financial and environmental priorities go way beyond the legal requirements, which offers opportunities for OEMs that opt to be at the forefront. As an example, Hoyer Motors has already supplied IE4 motors to various large-scale projects and has chosen to stock a broad IE4 program in Europe.

About Hoyer Motors

Hoyer Motors is an international supplier of high-end electric motors, drives and controls. Headquartered in Denmark and China, we are represented through sales offices and distributors worldwide.

We pride ourselves on being an elite manufacturing enterprise with the highest attention to service and flexibility – a company where dedication, competitiveness and reliability are second to none.

We have a focus on selected industrial markets including Marine, HVAC, Industrial Pumps, Oil & Gas, Wind and HPU. Through strong partnerships with leading OEMs within these markets, we offer a unique set-up and industrial insight. We add supply chain value by understanding the business and markets of our customers.

Together with our business partners, we strive to improve industrial energy efficiency and thereby reduce emissions.

Contact us

We are ready to assist you in the implementation of the updated Ecodesign requirements. Please contact us if you have further questions, whether you would like to learn more about the current demands or explore your potential energy savings.

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