Are you compliant with the Eco-Design Directive?

How to Comply with Implementing Measures for Electric Motors and other IMs
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>The Eco-Design Directive in Brief</td>
<td>3</td>
</tr>
<tr>
<td>Regulation (EC) No 640/2009 Eco-Design Requirements for Electric Motors</td>
<td>7</td>
</tr>
<tr>
<td>Important Dates</td>
<td>8</td>
</tr>
<tr>
<td>Verification Procedure for Market Surveillance Purposes</td>
<td>8</td>
</tr>
<tr>
<td>How to comply with the Eco-Design Directive</td>
<td>9</td>
</tr>
<tr>
<td>Green Leaf Certification</td>
<td>9</td>
</tr>
<tr>
<td>Summary</td>
<td>10</td>
</tr>
</tbody>
</table>

**About Intertek** ............................................................................................. 10
Introduction

The Eco-design Directive for Energy-related Products (ErP) 2009/125/EC – formerly known as Energy-using Products (EuP) requires manufacturers and importers to demonstrate compliance with the Directive’s product category specific requirements outlined in the Implementing Measures (IMs). The ErP Directive is CE Marking legislation, but differs from other EU legislation as it is intended to encompass the entire life cycle of energy related products.

The directive’s Implementing Measures provide the specific compliance requirements, segmented by approximately 30 product categories with more product categories to be identified in the future.


This regulation covers electric motors (0,75 – 375kW) that can also be equipped with a variable speed drive.

The Eco-Design Directive in brief

As of November 20, 2009 the European Commission repealed the Eco-Design Directive for Energy-using Products (EuP) 2005/32/EC, and replaced it with the more comprehensive Energy-related Products (ErP) Directive 2009/125/EC. According to the European Commission energy-related products are; “any goods having an impact on energy consumption during use." These include all energy-using products (televisions, microwaves, refrigerators), plus energy-conserving products (windows, insulation materials and water using products, like shower heads).

The new ErP Directive encompasses both the products covered under the former EuP Directive – those that use, generate, transfer or measure energy – and those that can contribute significant energy savings during use. The ErP Directive was implemented in each member state’s national law in fall 2010.
As of November 20, 2009, the new Directive requires that manufacturers refer to the ErP Directive – not the EuP Directive – when marking products with a CE label. The so-called Implementing Measures, which laid out the actual product requirements to be met by product category for the EuP Directive, are still applicable.

The EU Directive on Eco-design entered into force in August 2007 (then known as the EuP Directive) and applies throughout the EU. The Eco-Design Directive aims to reduce the energy use and other negative environmental impacts throughout the life cycle of products powered by electricity, fossil or renewable fuels as well as energy-related products.

According to the EU’s Official Journal, energy-related products account for a large portion of the consumption of natural resources and energy in the community. Furthermore, many energy-related products have a significant potential for being improved in order to reduce environmental impacts and to achieve energy savings through better design which also leads to economic savings for business and end-users.

The Directive means that manufacturers must take into account energy use and other environmental factors in the product design. Both producers and importers will be affected by the Directive. In order to use the CE mark to label products, and thus sell the products on the European market, the Directive requires adaptation of your products to meet the "Implementing Measures" that are currently being developed for different products. The first phase of the ErP Directive involves around 30 product categories and more are likely to be affected in the future.


The Directive applies to all products and/or product groups that require energy in order to function as intended (excluding vehicles that transport humans or goods - cars, trains, ships, and airplanes) as well as energy-related products such as windows, insulation materials and water using products, like shower heads. The products should fulfill the following criteria in order to be included in an action or to be self-regulating:

1. The product should represent a significant volume of sales and trade within the EU, namely, exceeding 200,000 market units across all manufacturers.
(this applies to the entire product group rather than individual products or models, or market volume of an individual manufacturer).

2. The product should, in view of the quantities put on the market and/or used, have a substantial environmental impact within the EU.

3. There should be significant opportunities for improving the product’s environmental impact without incurring unreasonable costs, in view of the fact that:
   a. There is no other relevant common legislation for dealing with the problem in a suitable manner and it cannot be solved by market forces.
   b. There is a large difference in the environmental performance of different Energy using Products on the market with equivalent functions.
   c. A special method is used to assess whether and to what extent different Energy-related Products fulfill these criteria and to outline which eco-design requirements can be established for each specific product.

The basic elements of the Eco-design requirement are compiled by a number of groups of experts engaged by the EU Commission, which then put forward proposals for product requirements. The Commission reviews these on a product-by-product basis and sends its proposals for product requirements in a custom document to all EU Member States. The Implementing Measures will be introduced for each product group either through national law or through a daughter directive under the Eco-design Directive for Energy-related Products (ErP).

**Eco-Design Directive Adoption**

The first Implementing Measures to be adopted were as follows, standby/off mode, simple set top boxes, street and office lighting, non-directional household lamps and external power supplies.

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1 A simple set top box is a stand-alone device which has the primary function of converting standard or high definition, free-to-air digital broadcast signals to analogue broadcast signals suitable for analogue television or radio without conditional access and may or may not have recording functions based on non-removable media storage.
On July 22nd, 2009 the European Commission adopted four new eco-design regulations to improve the energy efficiency of 1) industrial motors, 2) circulators, 3) televisions, 4) refrigerators and freezers. According to the European Commission’s website, the four new energy efficiency requirements will save about 190 TWh per year by 2020, which is comparable to the combined annual electricity consumption of Sweden and Austria. In total nine eco-design Implementing Measures have been adopted.
Regulation (EC) No 640/2009 Eco-Design Requirements for Electric Motors

Electric motors within EU has an annual electricity consumption amounting to 1,067 TWh in 2005, corresponding to 427 Mt of CO2 emissions. In the absence of measures to limit this consumption, it is predicted that energy consumption will increase to 1,252 TWh in 2020. It has been concluded that the life-cycle energy consumption and the use-phase electricity consumption can be improved significantly, in particular if motors in variable speed and load applications are equipped with drives.

The Regulation should increase the marketability of technologies that improve the life-cycle environmental impact of electric motors, leading to estimated life-cycle energy savings of 5,500 PJ and electricity savings of 135 TWh by 2020, compared to the situation where no measures are taken.

The first requirement for electric motors comes into effect on June 16th 2011. The type of electric motor covered under the regulation is the so-called induction motor, which is the most common motor type, accounting for 90 percent of electricity consumption of all electric motors in the power range from 0.75 to 375 kW. These electric motors are primarily found in fans, pumps and compressors as well as in air conditioner motors used in apartment buildings.

Definition of Motors
Motor means an electric single speed, three-phase 50 Hz or 50/60 Hz, squirrel cage induction motor that:

- has 2 to 6 poles
- has a rated voltage of U N up to 1,000 V
- has a rated output P N between 0.75 kW and 375 kW
- is rated on the basis of continuous duty operation
**Additional Considerations**

Only motors that are put on the market for the first time are subject to the requirements. It does not apply to motors that have previously been placed on the market and now have gone through reparation, unless the reparations are so extensive that it renders the product as practically new.

**Important Dates**

Beginning June 16, 2011 electric motors shall not be less efficient than the IE2 efficiency level, the engines should then also have visible technical marking with among other things nominal efficiency, efficiency level, information relevant for disassembly, recycling or disposal at end-of-life.

Beginning January 1, 2015, motors with a rated output of 7,5-375 kW shall not be less efficient than the IE3 efficiency level or meet the IE2 efficiency level if the motor is equipped with a variable speed drive (VSD). In the future, VSD too will have eco-design requirements.

Beginning January 1, 2017 all motors with a rated output of 0,75-375 kW shall not be less efficient than the IE3 efficiency level or meet the IE2 efficiency level if the motors are equipped with a variable speed drive.

**Verification Procedure for Market Surveillance Purposes**

1. The authorities shall test one single unit.

2. The model shall be considered to comply with the provisions set out in the regulation, if in the nominal motor efficiency ($\eta$), the losses ($1-\eta$) do not vary from the values set out in Annex I (ECODESIGN REQUIREMENTS FOR MOTORS) by more than 15 % on power range 0,75-150 kW and 10 % on power range > 150-375 kW.

3. If the result referred to in point 2 is not achieved, the market surveillance authority shall randomly test three additional units, except for motors that are produced in lower quantities than five per year.

4. The same model shall be considered to comply with the provisions set out in this Regulation, if in the average of the nominal efficiency ($\eta$), the losses ($1-\eta$) of the three units referred to in point 3 do not vary from the values set out in
Annex I by more than 15 % on power range 0,75 to 150 kW and 10 % on power range > 150-375 kW.

5. If the results referred to in point 4 are not achieved, the model shall be considered non-compliant with the Regulation.

How to comply with the Eco-Design Directive

The Eco-design directive is an expansive environmental legislation. Intertek’s experts in environmental legislation and product compliance have untangled the ErP Directive for you.

We can assist you throughout the entire ErP compliance application process – including independent testing, environmental management systems support and other requirements for specific products – helping you to reach European markets smoothly.

Intertek’s ErP solutions for electric motors are:

ErP Compliance Verification: Receive full verification of the Electric Motors Implementing Measure and we will deliver a test report for your product’s technical file and Statement of Compliance for legal CE Marking.

Green Leaf Certification

Intertek’s Green Leaf Mark is proof that a product has been independently tested and found to conform to multiple existing environmental regulations, such as the Eco-Design Directive, RoHS laws, REACH and other requirements through one mark rather than multiple marks.

The Green Leaf Mark is used on product packaging, in point of purchase displays, product advertising and literature to explain a product’s environmental credentials. Contact your local office for more information.

Intertek’s other ErP solutions are:

ErP Training & Consulting: Learn what your quickest and most cost-efficient compliance options are. We’ll tell you if, when, and how ErP will affect your product.

ErP Software Analysis: Let Intertek perform an analysis of your product’s Ecological profile according to the ErP directive specifications.
**ErP Pre-Compliance Verification:** Learn how your product measures up against proposed and future ErP regulations for R&D purposes, compliance planning and to determine market readiness.

*Intertek services also cover other electric motor products.*

**Summary**

Compliance with the Eco-Design Directive is a priority for all manufacturers and producers working with energy-related projects. If you would like to know how Intertek can partner and help you establish ErP solutions, please contact Intertek today at 1-800-WORLDLAB or icenter@intertek.com.

**About Intertek**

Intertek is a leading provider of quality and safety solutions serving a wide range of industries around the world. From auditing and inspection, to testing, quality assurance and certification, Intertek people are dedicated to adding value to customers’ products and processes, supporting their success in the global marketplace. Intertek has the expertise, resources and global reach to support its customers through its network of more than 1,000 laboratories and offices and over 26,000 people in more than 100 countries around the world. Intertek Group plc (ITRK) is listed on the London Stock Exchange in the FTSE 100 index.