Eco-Design Directive (EuP): Analysis of the External Power Supplies Implementing Measure
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Eco Design Directive 2005/32/EC
European Commission Regulation no 278/2009

• External Power Supplies

Introduction


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

The European Commission has adopted the eco-design requirement for External Power Supply (EPS) on April 6th 2009 and it came into force on April 27th 2009. The implementing measure (IM) for EPS will be enforced in two stages with different minimum requirements. The first stage comes into effect on April 27 2010 and stage two on April 27 2011. The regulation includes most stand-alone AC/AC and AC/DC devices with a rated power up to 250 Watts.

1. The EuP Directive in a brief

The EU Directive on Eco-design also known as the EuP Directive (Energy using Products) 2005/32/EC, entered into force in August 2007 and applies throughout the EU. The 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.

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

- Reduce Energy Consumption
- Reduce Negative Environmental Impacts
- Promote a Sustainable Environment

**EuP Scope: Product, Market, Process**

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). 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, in other words involve over 200,000 market units (this applies to the entire product group rather than individual products, models or companies).

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:

   - There is no other relevant common legislation for dealing with the problem in a suitable manner and it cannot be solved by market forces.
   - There is a large difference in the environmental performance of different Energy using Products on the market with equivalent functions.
   - A special method is used to assess whether and to what extent different Energy using Products fulfil 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 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 consultation 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 using Products (EuP).
**EuP Adoption**

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

On July 22nd, 2009 the European Commission adopted four new eco-design regulations to improve the energy efficiency of industrial motors, circulators, televisions, 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.

The Commission has also put forward a proposal to extend the Eco-design Directive to what it refers to as “energy-related products.” This would include products which affect energy consumption without themselves using energy, such as double glazing windows, taps and showerheads.

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**Timeline: Eco design directive (EuP)**

- **Measures adopted by the Commission in 2008**
  - Stand-by and off-mode losses

- **Measures to be submitted for Committee Vote in 2009**
  - Water heaters

- **Measures adopted by the Commission in 2009**
  - Simple set top boxes
  - Street and office lighting
  - Electric motors
  - External power supplies
  - Domestic lighting
  - Electric circulators
  - Refrigerators and freezers for household use

- **Measures to be adopted by the commission in 2009**
  - Dishwashers and washing machines for household use

**Product Categories with Implementing Measures in Development**

- Boilers (gas, oil, electricity)
- Personal computers and monitors
- Imaging equipment (copiers, faxes, printers, scanners)
- Air conditioning
- Electric pumps
- Electric ventilation fans
- Refrigerators and freezers for commercial use
- Boilers for solid fuels
- Tumble dryers
- Vacuum cleaners
- Complex set top boxes
- Radiators and fan heaters
- Appliances for room-heating using hot-air, ovens for household and commercial use
- Cooking ranges and grills for household and commercial use
- Coffee machines, network stand-by, UPS (uninterruptible power supply) for household use

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2. Regulation EC 278/2009 for External Power Supplies

The Regulation EC 278/2009 lists products identified by the Council and the European Parliament as priorities for the Commission for implementation, including consumer electronics and office equipment. Such equipment is often powered by external power supplies, which convert electricity from the mains power source to power specific to ‘primary load products’ (e.g. notebook computers, mobile phones, MP3 players).

The power conversion efficiency of external power supplies is an important aspect for the energy performance of primary load products, thus external power supplies are one of the priority products groups considered for implementing measures under the Eco-design Directive.

The objective of the EC 278/2009-Regulation is to trigger the market transformation needed to realise significant energy efficiency improvements. Compared to a business-as-usual scenario it is estimated that the proposed Regulation will lead to annual use-phase electricity consumption savings (EU-27) of about 9 TWh by 2020, corresponding to an annual reduction of 3.6 Mt of CO2 emissions. The improvement in use-phase electricity consumption will also lead to life cycle-primary energy savings of 118 PJ and reduce waste, because use-phase efficiency improvements are achieved to a large extent with technologies using less material input.

The Implementing Measure covers products with the following characteristics:

- Converts AC Power from mains into low voltage DC or AC output
- Only one DC or AC output voltage at a time
- A separate device that constitutes the primary load
- Contained in a physical enclosure separate from the device
- With removable or hard wired male/female connection, cable, cord, etc.
- Rated output power less than 250W
- Intended for use with electrical and electronic household and office equipment in EC No. 1275/2008

Products not covered under the regulation:

- Voltage converters - converting 230V to 110V without characteristics change
- Un-interruptible power supplies - providing automatic backup power
- Battery chargers - connecting directly to a removable battery
- Halogen lighting converters - used for extra low voltage tungsten halogen lamps
- External power supplies for medical devices
- External power supplies placed on the market no later than 30 June 2015 as a service part or spare part when no later than one year after this regulation has come into force (27 Apr, 2010)
IM Effective Dates and Eco-Design Requirements

The requirements are introduced in two steps and are increased accordingly. The first step is after one year (27 April 2010) and the second step after 2 years (27 April 2011) from the entry into force of this IM.

The requirements can be divided into:

- The power consumption at no-load and average active efficiency at different load conditions.
- Information requirements (for the technical documentation):

The technical documentation that shall be provided by the client shall contain a number of different parameters (like output voltage, input power, power consumed and so on) at relevant load conditions (100%, 75%, 50%, 25% and 0% of Po). According to the EU’s Official Journal the requirements are:

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Stage 1 27 Apr 2010</th>
<th>Stage 2 27 Apr 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>No Load Power Consumption ≤</td>
<td>0.5 W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5W for Po ≤ 51W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5W for Po &gt; 51W</td>
</tr>
<tr>
<td>1.2</td>
<td>The average active efficiency &gt;</td>
<td>0.5 * Po, for Po &lt; 1W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.48 * Po + 0.140, for Po ≤ 1W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.09 * In(Po) + 0.5, for 1W ≤ Po ≤ 51W</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.85, for Po &gt; 51W</td>
</tr>
</tbody>
</table>

Note:
“Nameplate output power” (Po) means the output power as specified by the manufacturer.
Average active efficiency means the average of the active mode efficiencies at 25%, 50%, 75%, and 100% of Po.
Applicable test method
For the moment there exist no harmonized standard to this regulation. In the mean time the Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies can be used.


3. EuP Services

The EuP Directive is expansive environmental legislation. Intertek’s experts in environmental legislation and product compliance have untangled the EuP Directive for you.

Intertek can assist you throughout the entire EuP 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 EuP External Power Supply solution is:
EuP Compliance Verification: Receive full verification of the External Power Supply Implementing Measure and we will deliver a test report for your product’s technical file and Statement of Compliance for legal CE Marking.

Intertek’s other EuP solutions are:
EuP Training & Consulting: Learn WHAT your quickest and most cost-efficient compliance options are. We’ll tell you IF, WHEN, and HOW EuP will affect your product.

EuP Eco Software Analysis: Let Intertek perform an analysis of your product’s Ecological profile according to the EuP directive specifications.

EuP Pre-Compliance Verification: Learn how your product measures up against proposed and future EuP regulations for R&D purposes, compliance planning and to determine market readiness.
For More Information

If you have any questions or would like to start a new project, please visit www.intertek.com/electrical/eup-directive or call one of our EuP Testing Centers:

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