

## Ecodesign for electric motors

**6<sup>th</sup> Ecodesign Implementing Measure published in OJ the 23<sup>rd</sup> of July 2009**



**CODDE**

On 22 July 2009, the European Commission adopted the ecodesign regulation No 640/2009 on electric motors. The regulation sets requirements on motor efficiency which should result in electricity saving of 11% by 2020, compared to the situation without taking any measures.



The regulation will enter into force the 10<sup>th</sup> of August 2009.

### Scope of Products

#### Electric Motors

(1) 'Motor' means an electric single speed, three-phase 50 Hz or 50/60 Hz, squirrel cage induction motor that:

- has a rated voltage of UN up to 1000 V;
- has a rated output PN between 0,75 kW and 375 kW;
- has either 2, 4 or 6 poles;
- is rated on the basis of continuous duty operation.

(2) 'Variable Speed Drive' means an electronic power converter that continuously adapts the electrical power supplied to the electric motor in order to control the mechanical power output of the motor according to the torque-speed characteristic of the load (being driven by the motor), by adjusting the three-phase 50 Hz power supply to an variable frequency and voltage supplied to the motor.

(3) 'Squirrel cage motor' means an electric motor with no brushes, commutators, slip rings or electrical connections to the rotor.

(4) 'Submersible pump' means a pump designed to operate under water.

*Out of the scope:*

(a) *motors designed to operate wholly immersed in a liquid;*

(b) *motors completely integrated into a product (for example gear, pump, fan or compressor) of which the energy performance cannot be tested separately from the energy performance of that product;*

(c) *motors specifically designed to operate:*

(i) *at altitudes exceeding 1 000 meters above sea-level;*

(ii) *where ambient air temperatures exceed 40 °C;*

(iii) *in maximum operating temperature above 400°C;*

(iv) *where ambient air temperatures are less than -15 °C for any motor or less than 0 °C for a motor with air cooling;*

(v) *where the water coolant temperature at the inlet to a product, is less than 5 °C or exceeding 25 °C.*

(vi) *in potential explosive atmospheres as defined in Directive 94/9/EC of the European Parliament and of the Council*

(d) *brake motors*

### Specific Requirements and Timescales

#### MOTOR EFFICIENCY REQUIREMENTS

- **From 16 June 2011:** motors shall meet the **IE2** efficiency level.
- **From 1 January 2015:** motors with a rated output of **7,5 – 375 kW** shall either meet the **IE3** efficiency level **or** meet the **IE2** efficiency level and be **equipped with a variable speed drive**.
- **From 1 January 2017:** motors with a rated output of **0,75 – 375 kW** shall either meet the **IE3** efficiency level, **or** meet the **IE2** efficiency level and be **equipped with a variable speed drive**.

## Nominal limits (%) for EI2 and EI3 efficiency level (50 Hz)

P <sub>N</sub> (kW)	Number of poles					
	2		4		6	
	EI2	EI3	EI2	EI3	EI2	EI3
0,75	77,4	80,7	79,6	82,5	75,9	78,9
1,1	79,6	82,7	81,4	84,1	78,1	81,0
1,5	81,3	84,2	82,8	85,3	79,8	82,5
2,2	83,2	85,9	84,3	86,7	81,8	84,3
3	84,6	87,1	85,5	87,7	83,3	85,6
4	85,8	88,1	86,6	88,6	84,6	86,8
5,5	87,0	89,2	87,7	89,6	86,0	88,0
7,5	88,1	90,1	88,7	90,4	87,2	89,1
11	89,4	91,2	89,8	91,4	88,7	90,3
15	90,3	91,9	90,6	92,1	89,7	91,2
18,5	90,9	92,4	91,2	92,6	90,4	91,7
22	91,3	92,7	91,6	93,0	90,9	92,2
30	92,0	93,3	92,3	93,6	91,7	92,9
37	92,5	93,7	92,7	93,9	92,2	93,3
45	92,9	94,0	93,1	94,2	92,7	93,7
55	93,2	94,3	93,5	94,6	93,1	94,1
75	93,8	94,7	94,0	95,0	93,7	94,6
90	94,1	95,0	94,2	95,2	94,0	94,9
110	94,3	95,2	94,5	95,4	94,3	95,1
132	94,6	95,4	94,7	95,6	94,6	95,4
160	94,8	95,6	94,9	95,8	94,8	95,6
200 up to 375	95,0	95,8	95,1	96,0	95,0	95,8

**PRODUCT INFORMATION REQUIREMENTS ON MOTORS**

Requirements applicable from 16 June 2011. For more information see <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:191:0026:0034:EN:PDF>

**Opportunity  
for  
Environmental  
Impact  
Improvement**

It is estimated that annual use-phase electricity consumption in 2005 related to electric motors amounts to **1067 TWh**, corresponding to **427 Mt of CO<sub>2</sub>** emissions. In the absence of specific measure this consumption is predicted to increase to **1252 TWh in 2020**. This regulation will lead to annual use-phase electricity consumption savings (EU-27) of about **135 TWh** by 2020.

The savings are comparable to Sweden yearly electricity consumption, and correspond to approximately **54 Mt of avoided CO<sub>2</sub>** emissions per year.

**What Now?**

Bureau Veritas CODDE, has been a key partner in the development of many of the Preparatory Studies for the implementation of the EuP Directive. Our Bureau Veritas Environmental Impact experts worldwide can work with you to carry out the conformity Assessment according to internal design control system:

- Result of relevant environmental assessments (Life Cycle Assessment): Footprint using our EIME software
- Results of measurements: Energy Consumption Test

We can also advise on how to develop your process to comply with the EuP Directive and the many benefits of environmental impact assessment and improvement.

**CONTACT US**

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