

Title of the measure:	EU 65 Ecodesign for electric motors
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General description

COMMISSION REGULATION (EC) No 640/2009 of 22 July 2009 implementing Directive 2005/32/EC (“Energy-using Products”, EuP) of the European Parliament and of the Council establishes ecodesign requirements for the placing on the market and for the putting into service of motors, including where integrated in other products.

Electric motors are the most important type of electric load in industries within the Community where motors are used in the production processes. The systems in which these motors are operated account for about 70 % of the electricity consumed by the industry. There is a total potential for cost-effective improvement of the energy efficiency of these motor systems by about 20 % to 30 %. One of the major factors in such improvements is the use of energy efficient motors. Consequently, motors in electric motor systems represent a priority product for which ecodesign requirements should be established.

The preparatory study shows that electric motors are placed on the Community market in large quantities, with their use-phase energy consumption being the most significant environmental aspect of all life-cycle phases, and their 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 1252 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 ecodesign requirements for motors are set out in Annex I of the directive.

Each ecodesign requirement shall apply in accordance with the following timetable:

1. from 16 June 2011, motors shall not be less efficient than the IE2 efficiency level, as defined in Annex I, point 1;
2. from 1 January 2015:
 - (i) motors with a rated output of 7,5-375 kW shall not be less efficient than the IE3 efficiency level, as defined in Annex I, point 1, or meet the IE2 efficiency level, as defined in Annex I, point 1, and be equipped with a variable speed drive.
3. from 1 January 2017:
 - (i) all motors with a rated output of 0,75-375 kW shall not be less efficient than the IE3 efficiency level, as defined in Annex I, point 1, or meet the IE2 efficiency level, as defined in Annex I, point 1, and be equipped with a variable speed drive.

The product information requirements on motors are as set out in Annex I.

Impact evaluation

SEC(2009) 1013 and SEC(2009) 1014 analyzes the impact of policy options on energy savings of electric motors and accompany the regulation. Following policy options were analyzed;

1. **IE2:** IE2 mandatory from 2011;
2. **IE2+IE3:** IE2 mandatory for all motors from 2011 and IE3 from 2015 for motors > 7,5 kW;
3. **IE3:** IE2 mandatory for all motors from 2011 and IE3 from 2015 for all motors;
4. **VSD/IE3 II:** IE2 mandatory for all motors from 2011 and either IE2+VSD or IE3 for motors 7.5-375 kW from 2015 and either IE2+VSD or IE3 for motors 0.75-375 kW from 2017.

Impact of these results in terms of energy savings and usage in 2020 has been calculated as;

Table 1. Electricity Savings 2020 in TWh vs. BaU:

	Use	Savings	
	TWh/a	TWh/a	%
BaU	1252		
IE2	1207	45	3,6%
IE2+IE3	1209	43	3,5%
IE3	1188	65	5,2%
VSD/IE3	1114	139	11,1%

CO2 savings for 2020 have been calculated as;

Carbon (CO2 eq) Savings 2020 vs. BaU

	Emissions	Savings	
	Mt CO2 eq/a	Mt CO2 eq/a	%
BaU	574		
IE2	553	21	3,7%
IE2+IE3	554	20	3,6%
IE3	544	30	5,3%
VSD/IE3	510	64	11,5%

References

- COMMISSION REGULATION (EC) No 640/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for electric motors, Official Journal of the European Union L191, 23/07/2009 P.0026-0034
http://www.eup-network.de/fileadmin/user_upload/Electric_motors_regulation_090723.pdf
- http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/ecodesign/electric_motors_en.htm
- http://www.eup-network.de/fileadmin/user_upload/Regulation_4-20141_00220140107en00010002.pdf

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- http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2009/sec_2009_1013_en.pdf
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