

Milan, July 22th, 2010

Secretary - AP

**SUBJECT: Regulation 640/2009/EC on Electric Motor Efficiency requirements
Applicability to monobloc, submersible and deep well pumps**

Introduction: from Directive EuP to EC Motor Regulation

Directive 2005/32/EC (Eco-design Directive for Energy-using Products - EuP) establishes a framework for the setting of general eco-design requirements to be fulfilled by energy-using products in view of increasing the energy efficiency of the products and the level of protection of the environment.

Within the framework of the Directive, specific Regulations have been issued for the setting of design and energy efficiency requirements, applicable to the products included in the scope of the Directive. Amongst these, Regulation 640/2009 EC establishes eco-design requirements for electric motors and their drives, in terms of energy efficiency levels.

Subject matter and scope

Regulation 640/2009 EC is applicable to electric motors, the type and size of which are defined in Article 2.1: single speed, three-phase, squirrel cage induction motors, with 2, 4 or 6 poles, rated voltage up to 1000V, rated power output between 0,75 to 375 kW (rating based on continuous duty).

Motors designed to operate wholly immersed in a liquid and motors completely integrated into a product of which the energy performance cannot be tested independently from the product, as well as motors for special applications (e.g. potentially explosive atmospheres - ATEX) are not included in the scope of the Regulation.

It follows that:

- submersible motors for deep well pumps are excluded because they are designed to operate wholly immersed in water;
- submergible motors, although capable of operating not wholly immersed, are excluded because they are completely integrated into the pump. Also, there are neither recognised methods nor European standards defining test configurations and limits of acceptance for this type of motors. Therefore, quoting the efficiency level of submergible motors alone (separate from the pump end) with reference to Regulation 640/2009 would be an arbitrary statement, not supported by adequate and recognised methodologies;
- surface pumps are excluded from the Regulation when the motor is fully integrated into the pump-end. However, many of these pumps (called "monobloc") are driven by a standard motor with special shaft extension and/or special inboard cover. It is the opinion of Assopompe that these motors fall under the scope of Regulation 640/2009 EC.

It is of the outmost importance to realise that technical and commercial documents, related to motors not included in the scope of Regulation 640/2009 EC (or even more so, documents referring to motor components), shall not make reference to the Regulation, to avoid conveying misleading messages to the market.

New efficiency levels

Today's efficiency levels have been adopted by European countries as a result of a voluntary agreement based on testing methods and limits of acceptance defined under the IEC 60034-2: 1996.

Efficiency levels, presently in use, are defined in function of the index of nominal efficiency as for power and poles number, as follows:

- EFF3 = low efficiency level
- EFF2 = standard efficiency level
- EFF1 = high efficiency level

New efficiency levels have been defined in standard IEC 60034-30:2008, based on test methods and limits of acceptance indicated under IEC 60034-2-1:2007, as follows:

- IE1 = standard efficiency (similar to EFF2)
- IE2 = high efficiency (similar to EFF1)
- IE3 = Premium Efficiency

Efficiency levels in accordance to IEC 60034-30:2008 and in compliance with IEC 60034-2-1:2007, are listed in Annex I of the Regulation for levels IE2 and IE3.

The new IEC standard on electric motor efficiencies is already applicable, even if the previous edition will expire in November 2010.

Eco-design requirements and timetable

Eco-design requirements for electric motors shall be applied in accordance to the following timetable:

1. from June 16th, 2011: motors shall not be less efficient than the IE2 level;
2. from January 1st, 2015: motors with a rated output of 7,5 - 375 kW shall not be less efficient than IE3 or meet IE2, if equipped with a variable speed drive;
3. from January 1st, 2017: all motors with a rated power of 0,75 - 375 kW shall not be less efficient than IE3 or meet IE2, if equipped with a variable speed drive.

Conclusion

EuP Directive and Regulation 640/2009 EC are applicable to standalone electric motors.

Pumps where the electric motor is fully integrated into the pump-end, submersible motors and motors for deep well pumps, as well as motors designed for special applications (e.g. potential explosive atmospheres ATEX) are excluded from the Regulation.

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