



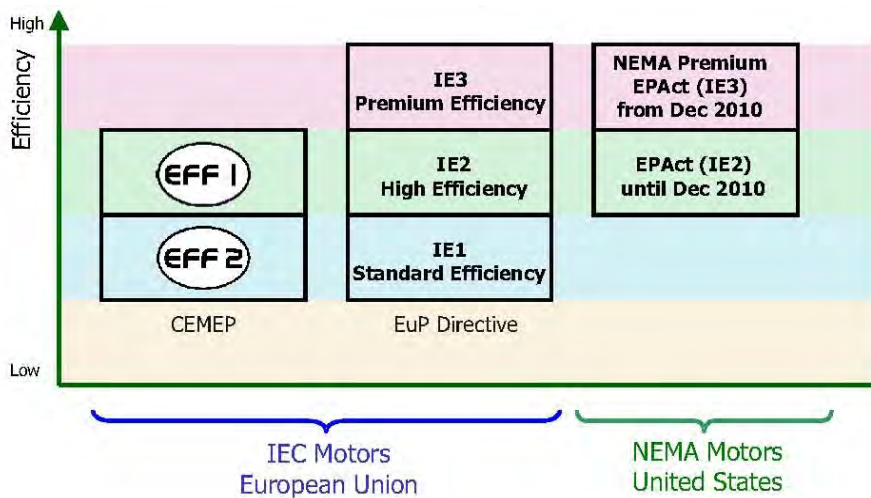
## New Efficiency Standards For Low Voltage Motors

A new directive has been drawn-up to provide a unified worldwide efficiency standard for induction motors

There will be three new efficiency classes:

- IE1 (standard efficiency) currently EFF2.
- IE2 (High efficiency) currently EFF1.
- IE3 (Premium efficiency).

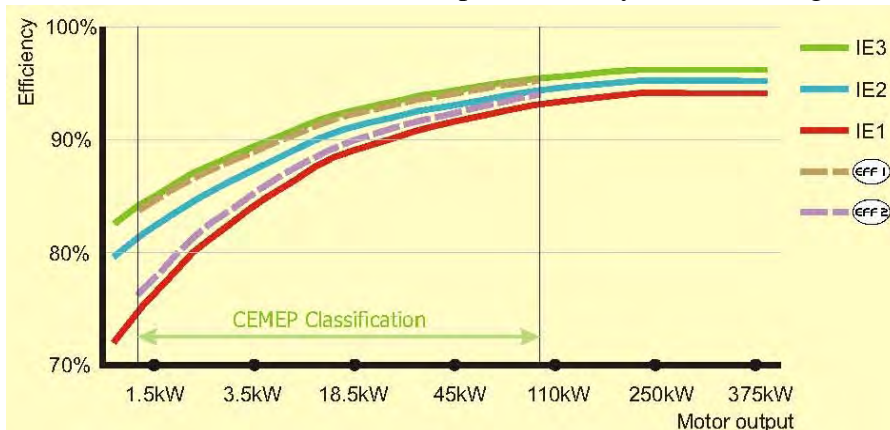
The estimated saving is 135Twh in the EU by 2020 (this represents the entire electricity consumption of Sweden).



This new directive means that from:

- 16th June 2011—IE2 will be the minimum efficiency of a motor allowed into the market.
- 1st Jan 2015—IE3 minimum efficiency for motors from 7.5kW-375kW.
- 1st Jan 2017—IE3 will be the only efficiency motor allowed into the market.

However IE2 standard motors are allowed provided they are run through a frequency inverter





It should also be noted that losses can no longer be added as a fixed percentage but need to be measured with new testing methods. For this reason nominal efficiencies will often decrease from EFF1 to IEC2 and from EFF2 to IEC1 although no technical or physical changes have been made to the motor.

**As an example, the efficiency values for 3 motors according to the new and the old loss determination methods are shown in the following table.**

	Old EFF measuring methods (incl. fixed percentage losses) EN/IEC 60034-2: 1996 50Hz	New loss determination methods according to IEC 60034-2-1: 2007 50 Hz	New loss determination methods according to IEC 60034-2-1: 2007 60Hz
5.5 kW 4-pole	89.2%	88.2%	89.5%
45 kW 4-pole	93.9%	93.1%	93.6%
110 kW 4-pole	Not Defined	94.5%	95.0%

Exclusions from the Directive:

Brake motors, motors built-in machines, ATEX explosion proof motors

Motors designed for operation: at altitudes above 1000m, operation above 40°c