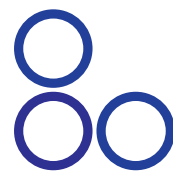


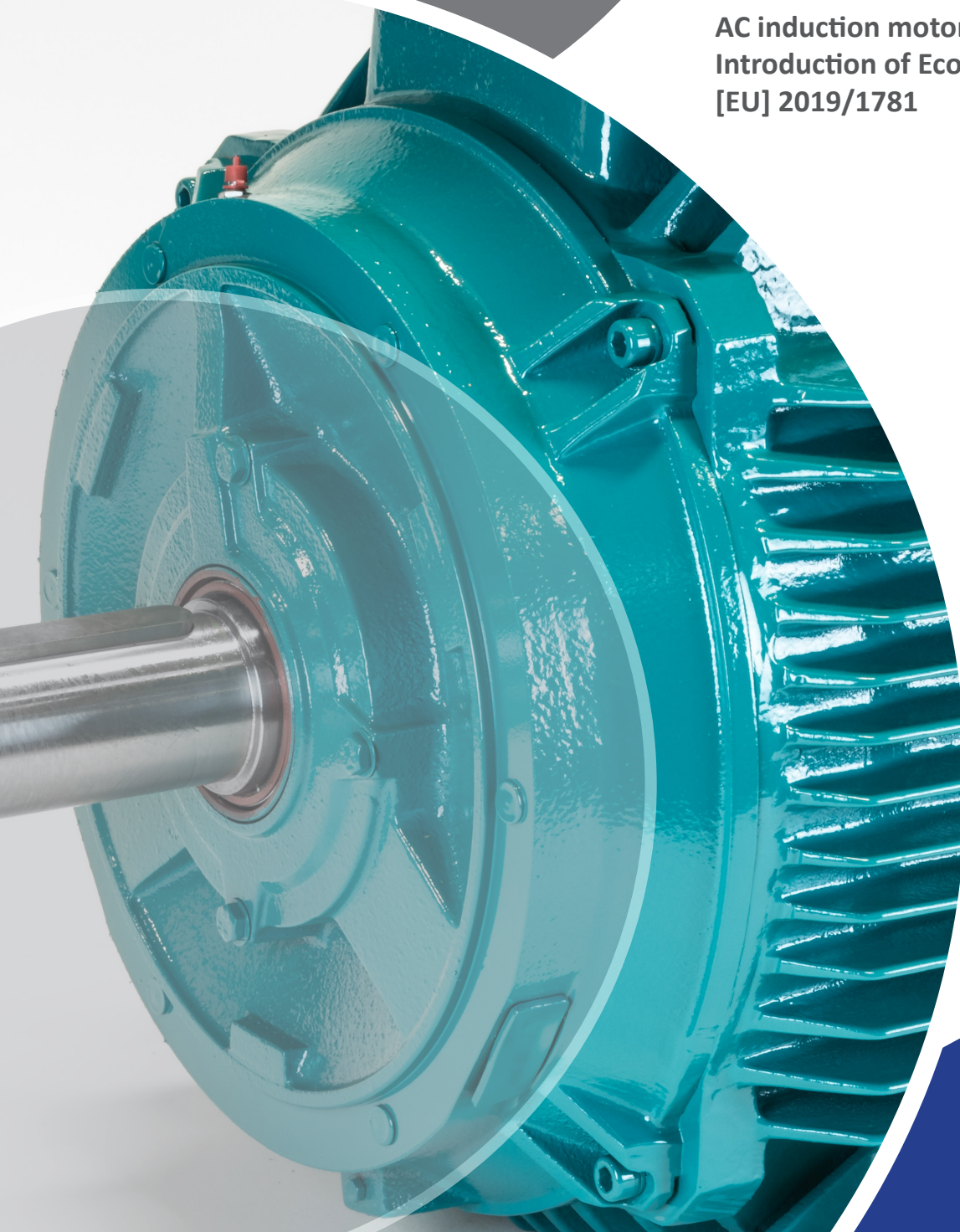
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Ecodesign requirements

AC induction motors
Introduction of Ecodesign regulation
[EU] 2019/1781



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Ecodesign Regulation (EU) 2019/1781

The current Ecodesign Regulation [EC] 640/2009 expires on the 30th June 2021 this is to be replaced by Ecodesign Regulation [EU] 2019/1781.

This leaflet shows the impact of this new regulation on the energy efficiency requirements for AC induction motors.

Current regulation (EC) 640/2009

The current regulation (EC) 640/2009, which will expire on the 30th June 2021, stipulates that induction motors (single speed, 3-phase 50Hz or 50/60Hz squirrel cage induction motor for continuous duty) must meet IE3 efficiency values or IE2 efficiency values when used with a variable speed drive, for outputs from 0.75kW to 375kW, in 2, 4 or 6 poles.

The exemptions to this are: ATEX motors meeting Directive 2014/34/EU (for explosive atmospheres), brake motors and submersible motors. See chart 1 for an overview.

Ecodesign regulation (EU) 2019/1781

The current Ecodesign Regulation [EC] 640/2009 expires on the 30th June 2021 this is to be replaced by Ecodesign Regulation [EU] 2019/1781.

This leaflet shows the impact of this new regulation on the energy efficiency requirements for AC induction motors.

Stage one

Stage one comes into effect on the 1st July 2021. This stage introduces efficiency requirements for motors 0.12 to 0.74kW, which must now meet IE2 efficiency levels. Previously the IE3 efficiency requirement stopped at 375kW, this has now been increased to 1000kW.

In addition to the efficiency level changes above, the following motor types are to be introduced in stage one: 8 pole speeds, brake motors, hazardous area motors: Ex ec, Ex tb, Ex tc, Ex db & Ex dc. Totally Enclosed Air Over motors and motors with duty cycles: S1, S3 ≥ 80%.

Please note: IE2 +VSD is no longer applicable.

Motors exempt from the new regulation: high voltage motors; mining motors and Totally Enclosed Non-Ventilated (TENV) motors

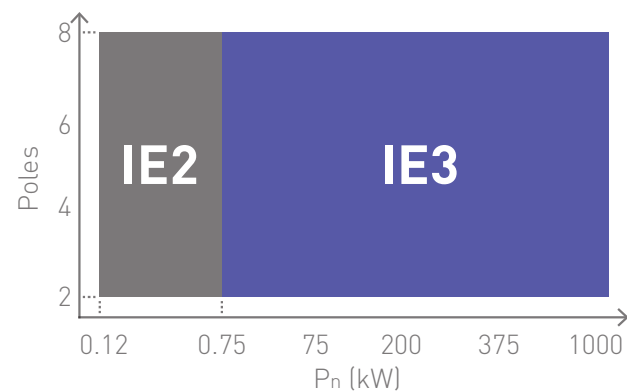
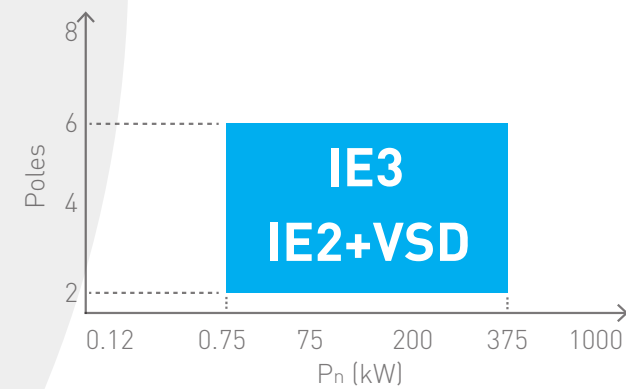
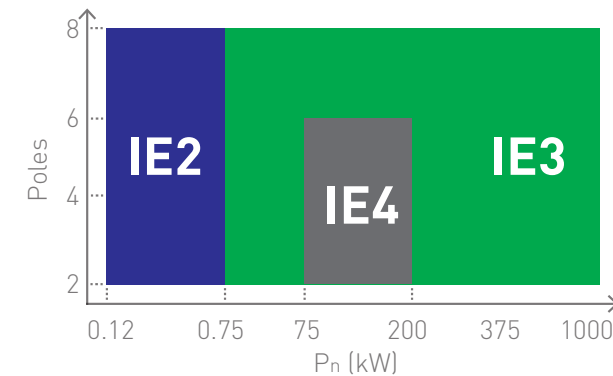


Chart 1



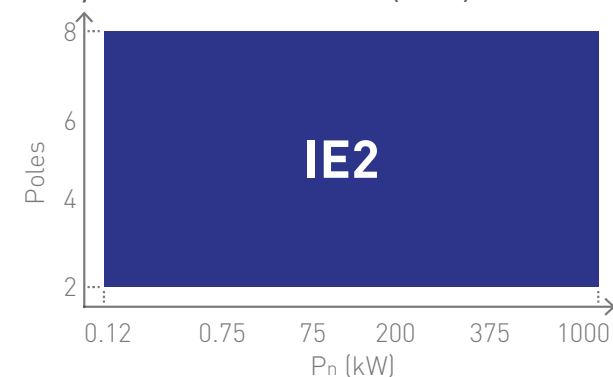
Stage two:

Stage two comes into effect on the 1st July 2023. IE4 is introduced, this will be mandatory for motor outputs 75kW to 200kW in 2, 4 & 6 poles. This is applicable to all the motors listed in stage one.



Stage two also introduces a minimum efficiency value of IE2 for single phase motors and Ex eb (increased safety) motors.

As in stage one, the following motors are exempt: high voltage motors, mining motors and Totally Enclosed Non-Ventilated (TENV) motors.



Timelines

Ecodesign		Year and minimum efficiency requirements		
Induction motor ≥ 50V to ≤ 1000V		Until 30th June 2021	From 1st July 2021	From 1st July 2021
≥ 0.12kW to < 0.75kW	3 phase - 2/4/6 pole ¹	-	IE2	
	3 phase - 8 pole ¹	-	IE2	
≥ 0.75kW to < 75kW	3 phase - 2/4/6 pole ¹	IE2 + VSD or IE3	IE3	
	3 phase - 8 pole ¹		IE3	
≥ 75kW to ≤ 200kW	3 phase - 2/4/6 pole ¹	IE2 + VSD or IE3	IE3	IE4 ²
	3 phase - 8 pole ¹	-	IE3	
> 200kW to ≤ 375kW	3 phase - 2/4/6 pole ¹	IE2 + VSD or IE3	IE3	
	3 phase - 8 pole ¹	-	IE3	
> 375kW to ≤ 1000kW	3 phase - 2/4/6 pole ¹	-	IE3	
≥ 0.12kW to ≤ 1000kW	3 phase - 2/4/6/8 pole Ex eb (Increased safety)	-		IE2
≥ 0.12kW to ≤ 1000kW	1 phase - 2/4/6/8 pole	-		IE2
High voltage motors, DC motors, mining motors, pole change motors & Totally Enclosed Non Ventilated (TENV) motors.			Excluded	

¹ Includes: Brake motors, motors for explosive atmospheres: Ex ec, Ex tb, Ex db & Ex dc. Motors rated for duty class: S1, S3 > 80%, S6 > 80% and Totally Enclosed Air over (TEAO) motors.

² Exempt: ATEX motors according to 2014/34/EU. Brake motors

See page 4 for minimum efficiency values

Questions

Question	Answer
Are motors manufactured outside the EU included?	The Ecodesign regulation includes motors imported and sold in the European Union.
Are motors for export included?	Does not apply for motors exported outside of the EU, however, care must be taken to observe any regulations on efficiency for that region. ie MEPS, NEMA Premium, etc
I am replacing a motor that doesn't meet the latest Ecodesign regulations, can I source a 'like for like' design?	From the 1st July 2021 to 30th June 2029, an identical replacement motor may be supplied, if it was placed on the market before 1st June 2022. The replacement motor must show that it is to be used as a replacement and package accordingly.
Can I still stock motors to the old Ecodesign regulation?	This regulation covers placing on to the market (by import or sale to a distributor / OEM). After the relevant date motors not meeting the Ecodesign regulation must NOT be marketed.

Minimum efficiency level at rated output power (P_N) for each energy efficiency class

50 Hz								
kW	IE2 - high efficiency				IE3 - premium efficiency			
	2 pole	4 pole	6 pole	8 pole	2 pole	4 pole	6 pole	8 pole
0.12	53.6	59.1	50.6	39.8	60.8	64.8	57.7	50.7
0.18	60.4	64.7	56.6	45.9	65.9	69.9	63.9	58.7
0.20	61.9	65.9	58.2	47.4	67.2	71.1	65.4	60.6
0.25	64.8	68.5	61.6	50.6	69.7	73.5	68.6	64.1
0.37	69.5	72.7	67.6	56.1	73.8	77.3	73.5	69.3
0.40	70.4	73.5	68.8	57.2	74.6	78.0	74.4	70.1
0.55	74.1	77.1	73.1	61.7	77.8	80.8	77.2	73.0
0.75	77.4	79.6	75.9	66.2	80.7	82.5	78.9	75.0
1.1	79.6	81.4	78.1	70.8	82.7	84.1	81.0	77.7
1.5	81.3	82.8	79.8	74.1	84.2	85.3	82.5	79.7
2.2	83.2	84.3	81.8	77.6	85.9	86.7	84.3	81.9
3.0	84.6	85.5	83.3	80.0	87.1	87.7	85.6	83.5
4.0	85.8	86.6	84.6	81.9	88.1	88.6	86.8	84.8
5.5	87.0	87.7	86.0	83.8	89.2	89.6	88.0	86.2
7.5	88.1	88.7	87.2	85.3	90.1	90.4	89.1	87.3
11	89.4	89.8	88.7	86.9	91.2	91.4	90.3	88.6
15	90.3	90.6	89.7	88.0	91.9	92.1	91.2	89.6
18.5	90.9	91.2	90.4	88.6	92.4	92.6	91.7	90.1
22	91.3	91.6	90.9	89.1	92.7	93.0	92.2	90.6
30	92.0	92.3	91.7	89.8	93.3	93.6	92.9	91.3
37	92.5	92.7	92.2	90.3	93.7	93.9	93.3	91.8
45	92.9	93.1	92.7	90.7	94.0	94.2	93.7	92.2
55	93.2	93.5	93.1	91.0	94.3	94.6	94.1	92.5
75	93.8	94.0	93.7	91.6	94.7	95.0	94.6	93.1
90	94.1	94.2	94.0	91.9	95.0	95.2	94.9	93.4
110	94.3	94.5	94.3	92.3	95.2	95.4	95.1	93.7
132	94.6	94.7	94.6	92.6	95.4	95.6	95.4	94.0
160	94.8	94.9	94.8	93.0	95.6	95.8	95.6	94.3
200 - 1000	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6

50 Hz				
kW	IE4 - super premium			
	2 pole	4 pole	6 pole	8 pole
0.12	66,5	69.8	64.9	62.3
0.18	70,8	74.7	70.1	67.2
0.20	71.9	75.8	71.4	68.4
0.25	74.3	77.9	74.1	70.8
0.37	78.1	81.1	78.0	74.3
0.40	78.9	81.7	78.7	74.9
0.55	81.5	83.9	80.9	77.0
0.75	83.5	85.7	82.7	78.4
1.1	85.2	87.2	84.5	80.8
1.5	86.5	88.2	85.9	82.6
2.2	88.0	89.5	87.4	84.5
3.0	89.1	90.4	88.6	85.9
4.0	90.0	91.1	89.5	87.1
5.5	90.9	91.9	90.5	88.3
7.5	91.7	92.6	91.3	89.3
11	92.6	93.3	92.3	90.4
15	93.3	93.9	92.9	91.2
18.5	93.7	94.2	93.4	91.7
22	94.0	94.5	93.7	92.1
30	94.5	94.9	94.2	92.7
37	94.8	95.2	94.5	93.1
45	95.0	95.4	94.8	93.4
55	95.3	95.7	95.1	93.7
75	95.6	96.0	95.4	94.2
90	95.8	96.1	95.6	94.4
110	96.0	96.3	95.8	94.7
132	96.2	96.4	96.0	94.9
160	96.3	96.6	96.2	95.1
200 - 249	96.5	96.7	96.3	95.4
250 - 314	96.5	96.7	96.5	95.4
315 - 1000	96.5	96.7	96.6	95.4