

AC Induction Motors

Summary of proposed Triple E eligibility criteria changes.

To facilitate a refinement of the eligibility criteria for AC Induction Motors it is proposed to make the following amendments:

Commissions Regulation (EU) 2019/1781 sets out Ecodesign requirements for electric motors and variable speed drives. The Regulation makes for the provision and use of super high-efficiency IE4 motors with a timetabled introduction of the required use of this product.

This use of IE4 motors is an additional feature of the proposed new Triple E document, which also refers to the latest EU regulations superseding legislation prescribed in the current published AC Induction Motors eligibility criteria document.

- Condition 3 – Inserts a new Condition on motor efficiency for IE4 motors rated from 75kW to 200kW, according to EU Commission Regulation: (EU) 2019/1781.
- Updated Table 1 & Table 2 - minimum efficiency for IE3 Motors.
- Updated Table 12 - minimum efficiency for IE4 Motors.

New Eligibility and test standards:

- Ecodesign Directive : 2009/125/EC
- EU Commissions Régulation : (EU) 2019/1781

The proposed eligibility criteria document is contained on the following pages.

Please follow this [link](#) to view the currently published eligibility criteria.

Triple E Eligibility Criteria

Category: Motors and Drives

Technology: AC Induction Motors

An AC Induction Motor is an asynchronous electric motor that meets high efficiency (IE3) standards or super efficiency (IE4) standards. Such motors are typically designed and constructed in a manner as to reduce load losses (copper losses, rotor and stray load losses) and standing losses which are independent of the load (iron core, windage and friction losses). They can be considered either as standalone motors or as part of other equipment.

Eligibility Criteria

In order to be included on the Triple E Register an AC induction motor must meet *all* of the requirements set out below

Note: Supporting documentation that clearly demonstrates Triple E compliance according to the conditions below will be required as part of the Triple E checking process. Detailed information on the types of documents accepted can be found in the separate Supporting Documentation guidelines.

No.	Condition
1	Be a totally enclosed 3-phase induction motor with a power rating of greater than or equal to 1.1kW
2	Meet the efficiency requirements, according to EU Commission Regulation: (EU) 2019/1781, shown in Table 1, for IE3 motors rated from 1.1kW to 1,000kW.
3	Meet the efficiency requirements, according to EU Commission Regulation: (EU) 2019/1781, shown in Table 2, for IE4 motors rated from 75kW to 200kW.
4	All products and/or components must be CE marked as required by the specific EU directive.
5	Appropriate operating and maintenance manuals must be available to the end-user in order to optimise the achievements of any potential energy efficiency gains.

Table 1
Minimum efficiencies η_n for IE3 efficiency level at 50 Hz (%)

Rated output power P_N [kW]	Number of poles			
	2	4	6	8
1.1	82.7	84.1	81.0	77.7
1.5	84.2	85.3	82.5	79.7
2.2	85.9	86.7	84.3	81.9
3	87.1	87.7	85.6	83.5
4	88.1	88.6	86.8	84.8
5.5	89.2	89.6	88.0	86.2
7.5	90.1	90.4	89.1	87.3
11	91.2	91.4	90.3	88.6
15	91.9	92.1	91.2	89.6
18.5	92.4	92.6	91.7	90.1
22	92.7	93.0	92.2	90.6
30	93.3	93.6	92.9	91.3
37	93.7	93.9	93.3	91.8
45	94.0	94.2	93.7	92.2
55	94.3	94.6	94.1	92.5
75	94.7	95.0	94.6	93.1
90	95.0	95.2	94.9	93.4
110	95.2	95.4	95.1	93.7
132	95.4	95.6	95.4	94.0
160	95.6	95.8	95.6	94.3
200 up to 1 000	95.8	96.0	95.8	94.6

Table 2

Minimum efficiencies η_n for IE4 efficiency level at 50 Hz (%)

Rated output power P_N [kW]	Number of poles			
	2	4	6	8
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	89.1	90.4	88.6	85.9
4	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 up to 249	96.5	96.7	96.3	95.4
250 up to 314	96.5	96.7	96.5	95.4
315 up to 1 000	96.5	96.7	96.6	95.4

Notes:

1. Motors must be tested in accordance with IEC/EN 60034-2-1:2007 or scientific equivalent, where additional load losses are determined using low uncertainty methods.

2. Where a particular motor size is not listed, the required minimum efficiency level for the next size up must be met.
3. Testing for motors rated 400 kW and above must be certified by a body qualified and approved to test to IEC/EN 60034-2-1:2007 standard or equivalent. Detailed test results must be submitted, and these results must be to the reasonable satisfaction of SEAI.

----- End of Triple E eligibility criteria -----

Guidance on product details and supporting documentation

NOTE: The following information is not part of the official criteria document published within the relevant Statutory Instrument. It has been added here for guidance purposes only in order to help you to provide (a) product details and (b) the required supporting documentation.

All information contained in this guidance document is subject to change without notice.

Technical information required in product submission

The following are the specific technical values required as part of the product submission for this technology:

Size of Motor, Output rating (kW)

The output power rating in kW of the motor is required as a value f. It must be entered as whole number only (do not include kW symbol). There should also be no spaces or full stops after the number submitted. The figure must comply with the criteria requirements for minimum power rating values.

Efficiency

The efficiency of the motor product is required as a value f. It must be entered as number only (do not include units). There should also be no spaces or full stops after the number submitted. The figure must comply with the criteria requirements for minimum efficiency values.

Number of Poles

You must select which type of number of poles your product has. It must be entered as number only (do not include units or spaces).

Supporting documentation required

Described below is the list of documents that are accepted as proof of compliance for the specific condition.

Note: This information will only be requested AFTER you submit your product's basic details online

Important Notes to Product Providers

Please ensure that you read the "Important Notes to Product Providers" section at the end of this document prior to submitting documentation.

	Condition	Supporting Documentation Requirements
1	Be a totally enclosed 3-phase induction motor with a power rating greater than or equal to 1.1kW	Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition. The submitted documentation should confirm that the product is an AC induction motor and that its rated output is greater than 1.1kW
2	Meet the efficiency requirements, according to EU Commission Regulation: (EU) 2019/1781, shown in Table 1, for IE3 motors rated from 1.1kW to 1,000kW.	Official and published manufacturer's technical data sheet or brochure that shows the efficiency value of the motor at full load conforms with the conditions requirements, and that it is according to EU Commission Regulation: (EU) 2019/1781
3	Meet the efficiency requirements, according to EU Commission Regulation: (EU) 2019/1781, shown in Table 2, for IE4 motors rated from 75kW to 200kW. This requirement applies from 1 July 2023.	Official and published manufacturer's technical data sheet or brochure that shows the efficiency value of the motor at full load conforms with the conditions requirements, and that it is according to EU Commission Regulation: (EU) 2019/1781
4	All products and/or components must be CE marked as required by the specific EU directive.	Official and published manufacturer's technical data sheet or brochure that demonstrates CE marking compliance. OR A copy of an official signed declaration on headed paper which confirms CE marking compliance. Official declarations should explicitly state the product for which CE marking is being confirmed (i.e. do not provide a letter simply stating general compliance with the relevant Triple E Condition). Where a document is used to demonstrate conformance for a number of products or range of products it should clearly specify each individual product covered by that document.
5	Appropriate operating and maintenance manuals must be available to the end-user in order to optimise	A copy of an official signed declaration on headed paper which confirms that the appropriate operating and maintenance manuals are provided.

	<p>the achievements of any potential energy efficiency gains.</p>	<p>Where possible, a link to technical documentation available to download online should be included.</p> <p>NB: A signed declaration is required to comply with this condition in all cases. Submitting copies of user manuals is not sufficient and not required by this condition.</p>
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Important Notes to Product Providers

General

There should be a clear link between all supporting documentation supplied and the product being submitted. This will typically take the form of a product code or product name that can be cross referenced between the submitted product and relevant supporting documentation. If product codes / names have been changed since publication of the supporting documentation, then official evidence of this must be provided with the supporting documentation supplied.

Any deviation from these requirements will result in the supporting documentation not being considered adequate for the purposes of demonstrating compliance with the criteria conditions. This will in turn delay the submission and/or result in the product not being considered eligible.

Where the Triple E criteria or help documentation references compliance to appropriate rather than specific standards, the onus is on the product provider to ensure that supporting documentation supplied references recognised standards that apply to the submitted product, i.e. the product must be covered under the scope of a recognised standard.

If any product submitted is later found not to meet the performance or specification criteria, then this product will cease to be considered eligible for the Triple E.

Note: When supplying the supporting documentation through the online process you must ensure that the correct page number(s) of the document is referenced when demonstrating compliance with the relevant condition. An explanatory note should also be given where more than one page number is referenced.

Test Report

A test report must include an outline of the complete test, including:

- √ Introduction
- √ Details on test conditions
- √ The specific model details of the product tested
- √ The steps taken in the test
- √ The results
- √ Graphical representations
- √ Conclusion

All documents should be on headed paper and the document should be officially signed off.

All documentation must be in English or include adequate translation.

Certification

Where certificates are provided, all tests must be carried out by an organisation that is accredited by a national accreditation body recognised via the European Cooperation for Accreditation (preferred) or the International Accreditation Forum.

All documentation must be in English or include adequate translation.

Scientific Equivalence

Some Triple E criteria conditions allow for scientifically equivalent tests and/or standards to be used. In the event that a product has not been designed, manufactured or tested to the specific standard named, then documentation relating to an equivalent internationally recognised standard may be used (where the phrase 'Or scientific equivalent' is included in the Triple E condition or help documentation). In such applications, the onus will be on the product submitter to demonstrate satisfactory equivalence of the standards. However, submissions which reference such supporting documentation may take longer to process, and if the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for the Triple E register.

All documentation must be in English or include adequate translation.

Note: Where specific standards are cited in a condition or in the Triple E help documentation, then documentation demonstrating that the relevant products have been designed, manufactured or tested to these specific standards is preferred. Scientific equivalence is considered the exception rather than the norm.