

Accelerated Capital Allowances Eligibility Criteria

Category: Motors and Drives

***Technology:* Permanent Magnet Motors**

A Permanent Magnet Motor (PMM) is electric synchronous motor with a 3-phase wound stator, and a rotor that incorporates permanent magnets. When the wound stator is energised by a 3-phase alternating current, it creates a rotating magnetic field that causes the rotor to rotate synchronously with it, i.e. the rotor and the rotating electric field in the stator move at the same speed.

Eligibility criteria

To be included on the ACA Specified List, a permanent magnet motor must meet *all* of requirements set out below.

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

No.	Condition
1	Must be a sinusoidally commutated, 3-phase permanent magnet synchronous motor with a rated shaft output of at least 0.75 kW
2	The motor must meet the efficiency requirements listed in Table 1
3	All equipment and/or components must be CE-marked as required by the specific EU directive(s).
4	Appropriate operating & maintenance manuals must be available to the end-user in order to maximise the achievement of any potential energy-efficiency gains

Table 1: Minimum Efficiency Criteria for Permanent Magnet Motors at 100% of max. continuous speed rating

Power Rating (kW)	Maximum continuous speed rating					
	Up to 325 rpm	326 rpm to 749 rpm	751 rpm to 1,000 rpm	1,001 rpm to 1,500 rpm	1,501 rpm to 3,000 rpm	Over 3,000 rpm
0.75	71.7	75.3	78.9	82.5	80.7	78.9
1.1	74.8	77.9	81.0	84.1	82.7	81.3
1.5	76.9	79.7	82.5	85.3	84.2	83.1
2.2	79.5	81.9	84.3	86.7	85.9	85.1
3.0	81.4	83.5	85.6	87.7	87.1	86.5
4.0	83.2	85.0	86.8	88.6	88.1	87.6
5.5	84.8	86.4	88.0	89.6	89.2	88.8
7.5	86.5	87.8	89.1	90.4	90.1	89.8
11.0	88.1	89.2	90.3	91.4	91.2	91.0
15.0	89.4	90.3	91.2	92.1	91.9	91.7
18.5	89.9	90.8	91.7	92.6	92.4	92.2
22.0	90.6	91.4	92.2	93.0	92.7	92.4
30.0	91.5	92.2	92.9	93.6	93.3	93.0
37.0	92.1	92.7	93.3	93.9	93.7	93.5
45.0	92.7	93.2	93.7	94.2	94.0	93.8
55.0	93.1	93.6	94.1	94.6	94.3	94.0
75.0	93.8	94.2	94.6	95.0	94.7	94.4
90.0	94.3	94.6	94.9	95.2	95.0	94.8
110.0	94.5	94.8	95.1	95.4	95.2	95.0
132.0	95.0	95.2	95.4	95.6	95.4	95.2
160.0	95.2	95.4	95.6	95.8	95.6	95.4
200.0	95.4	95.6	95.8	96.0	95.8	95.6
>200.0	95.4	95.6	95.8	96.0	95.8	95.6

Notes:

Where a particular motor size is not listed, the required minimum efficiency level for the next size up must be met.

----- End of ACA eligibility criteria -----

Please see next section for guidance on:

- 1. Technical details required in product submission**
- 2. Supporting documentation required**

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 for the product submission. 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 as a percentage is required as a value for the product submission. It must be entered as number only (do not include the % sign). 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.

Maximum continuous speed rating (rpm)

The Maximum continuous speed rating of the motor in revolutions per minute (rpm) is required as a value for the product submission. It must be entered as number only (do not include units). There should also be no spaces or full stops after the number submitted.

Supporting documentation required

Described below is the list of documents that are accepted as proof of compliance for the specific motor 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 for Product Providers" section at the end of this document prior to submitting documentation.

No.	Condition	Supporting Documentation Requirement
1	Must be a sinusoidally commutated, 3-phase permanent magnet synchronous motor with a rated shaft output of at least 0.75 kW	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 a Permanent Magnet Synchronous Motor according to the definition given and that its rated output is greater than or equal to 0.75 kW.
2	The motor must meet the efficiency requirements listed in Table 1	<p>Accredited certification that the equipment has been tested or manufactured according to a recognised international standard. The document must show the efficiency of the motor at rated maximum continuous speed and the test method used</p> <p>OR</p> <p>Evidence of official testing by manufacturer or independent test lab, carried out according to the principles outlined in a relevant standard. Test reports should be of the format described in the 'Important notes for product providers' section of this document.</p> <p>Motors must be tested using a method documented in a recognised international standard such as IEC60034-2-1:2007</p>
3	All equipment and/or components must be CE-marked as required by the specific EU directive(s).	<p>Official and published manufacturer's technical data sheet or brochure that demonstrates CE marking compliance</p> <p>OR</p> <p>A copy of an official signed declaration on headed paper that 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 ACA 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.</p>

No.	Condition	Supporting Documentation Requirement
4	Appropriate operating & maintenance manuals must be available to the end - user in order to maximise the achievement of any potential energy-efficiency gains	<p>A copy of an official signed declaration on headed paper that confirms that the appropriate operating & maintenance manuals are provided. 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 <i>all</i> cases. Submitting copies of user manuals is not sufficient (and not required) for this condition.</p>

Important notes for product providers

General

There should be a clear link between the product submitted and all supporting documentation. This will typically take the form of a *product code* or *product name* that can be cross-referenced between the submitted product and the relevant supporting documentation.

If product codes/names have been changed since publication of the supporting documentation, then you must provide official evidence of this with the supporting documentation supplied.

If there is any deviation from these requirements, the supporting documentation will not be 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 ACA criteria or help documentation makes reference to compliance with appropriate rather than specific standards, the onus is on the product provider to ensure that the 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 it is subsequently found that any product submitted does not meet the performance or specification criteria, it will cease to be considered eligible for the ACA.

Note: When supplying the supporting documentation through the online process, you must ensure, when demonstrating compliance with the relevant condition, that the correct page number(s) of the document is referenced. When referencing more than one page number, add an explanatory note.

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 ACA criteria conditions allow for scientifically equivalent tests and/or standards to be used.

If 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 ACA condition or help documentation.

In such applications, the onus is on the product submitter to demonstrate satisfactory equivalence of the standards. Submissions which reference such supporting documentation may take longer to process. If the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for the ACA. **All documentation must be in English**, or include adequate translation.

Note: Where specific standards are cited in a condition or in the ACA 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.

Representative testing

Where test information is required for a range of technically similar products (e.g. configurations of one base product), then – in exceptional instances – a form of representative testing may be used once *agreed in advance* with SEAI.

Such testing is where only representative products are tested from a technically similar group or range of products. Representative testing may form an acceptable basis for supporting documentation if:

- A clear correlation can be demonstrated between the tested product and a technically similar non-tested product
and
- Such a correlation clearly demonstrates the compliance of the non-tested product

Note: Where representative testing is used for a group or range of products, if the tested or representative product is removed from the list of eligible products then all related products are also removed.