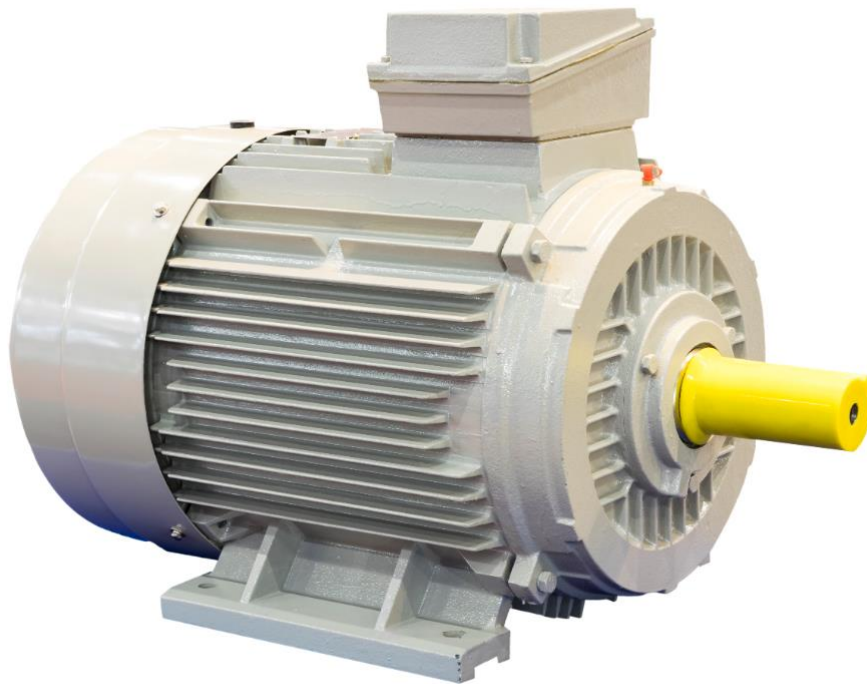


Three-phase Cage Induction Motors



Information Sheet



(Image shown is for illustration purposes only)

Three-phase cage induction electric motors (motors, or electric motors) sold or hired in New Zealand must, by law, comply with [Minimum Energy Performance Standards \(MEPS\)](#) requirements. This document outlines the requirements and how to meet them if you import or manufacture electric motors in New Zealand.

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This document is intended as a guide only, please refer to the regulations and applicable standards.

What do I need to do to comply with law?

Importers and manufacturers of three-phase electric motors are required to:

[Step-1](#) ensure each electric motor model has been tested to AS/NZS 1359.5:2004 (test method A or B) and ensure each motor model meets or exceeds the minimum energy performance levels specified in AS/NZS 1359.5:2004.

[Step-2](#) register each electric motor model through the energy rating website.

[Step-3](#) provide EECA with product sales data each year.

Why have MEPS for three-phase electric motors?

Three-phase cage induction electric motors are typically purchased based on capital costs and technical specifications rather than lifetime energy costs. Minimum Energy Performance Standards (MEPS) ensures that end-users have better performing systems, saving on running costs, and reduce greenhouse gas emissions over the life of the product.

Which three-phase electric motors are included?

MEPS covers New Zealand new three-phase cage induction electric motors and **three-phase cage induction electric motors incorporated into machines with:**

- rated output $\geq 0.73\text{kW}$ & $< 185\text{kW}$,
- in 2, 4, 6 and 8-pole configurations, and
- voltages rated up to 1100V (AC).

Which three-phase electric motors are excluded?

MEPS do not apply to:

- motors that are designed to operate submersed in a liquid (not including motors which are water proof),
- motors integral with the equipment that cannot be separated, for example some gear motors. If the motor is operable when removed, then it is considered to be within the regulations (electric motors in compressors and pumps may be included, please send EECA a cross section diagram of the compressor or pump),
- motors that run on different speeds by using switchgear to reconfigure the connection of windings (variable or multi-speed motors, that do not use frequency or voltage to control the speed),
- motors rated 'S2' (under IEC 60034-12) for short duty applications, such as hoists and roller doors, or
- rewind motors (except when the supplier claims it meets one of the efficiency levels in the standard)
- torque motors.

Which standards and regulations apply?

AS/NZS 1359.5:2004: Rotating electrical machines—General requirements—Three-phase cage induction motors—High efficiency and minimum energy performance standards requirements.

Test method A or test method B in AS/NZS 1359.5:2004: Rotating electrical machines—General requirements—Part 5: Three-phase cage induction motors—High efficiency and minimum energy performance standards requirements.

There are two distinct test methods, test method A or test method B in AS/NZS 1359.5:2004 specified in the regulations:

Method A: As per requirements of AS/NZS 1359.5:2004 where measured in accordance with sections 5 to 7 of AS/NZS 1359.102.3:2000 or sections 4 to 6 of IEC 61972 or test method B in IEEE 112:2004.

Method B: As per requirements in clauses 1,3 and 5 of AS/NZS 1359.102.1.1-1997 or sections 5,6 and 8 of IEC 60034-2-1.

Energy Efficiency (Energy Using Products) Regulations 2002:
<http://www.legislation.govt.nz/regulation/public/2002/0009/1atest/DLM108730.html#DLM109302>

What are MEPS requirements for three-phase electric motors?

There are different MEPS levels depending on the test method used. Motors tested to Method A – The minimum energy efficiency levels that must be met are specified in AS/NZS1359.5:2004 table A2 as per the table below:

Rated Output kW	Minimum Efficiency %			
	2-pole	4-pole	6-pole	8-pole
0.73	78.8	80.5	76.0	71.8
0.75	78.8	80.5	76.0	71.8
1.1	80.6	82.2	78.3	74.7
1.5	82.6	83.5	79.9	76.8
2.2	84.1	84.9	81.9	79.4
3	85.3	86.0	83.5	81.3
4	86.3	87.0	84.7	82.8
5.5	87.2	87.9	86.1	84.5
7.5	88.3	88.9	87.3	86.0
11	89.5	89.9	88.7	87.7
15	90.3	90.8	89.6	88.9
18.5	90.8	91.2	90.3	89.7
22	91.2	91.6	90.8	90.2
30	92.0	92.3	91.6	91.2
37	92.5	92.8	92.2	91.8
45	92.9	93.1	92.7	92.4
55	93.2	93.5	93.1	92.9
75	93.9	94.0	93.7	93.7
90	94.2	94.4	94.2	94.1
110	94.5	94.7	94.5	94.5
132	94.8	94.9	94.8	94.8
150	95.0	95.2	95.1	95.2
<185	95.0	95.2	95.1	95.2

For intermediate values of rated output, the efficiency shall be determined by linear interpolation

Motors tested to Method B - The minimum energy efficiency levels that must be met are specified in AS/NZS1359.5:2004 table B2 as per the table below:

Rated Output kW	Minimum Efficiency %			
	2-pole	4-pole	6-pole	8-pole
0.73	80.5	82.2	77.7	73.5
0.75	80.5	82.2	77.7	73.5
1.1	82.2	83.8	79.9	76.3
1.5	84.1	85.0	81.5	78.4
2.2	85.6	86.4	83.4	80.9
3	86.7	87.4	84.9	82.7
4	87.6	88.3	86.1	84.2
5.5	88.5	89.2	87.4	85.8
7.5	89.5	90.1	88.5	87.2
11	90.6	91.0	89.8	88.8
15	91.3	91.8	90.7	90.0
18.5	91.8	92.2	91.3	90.7
22	92.2	92.6	91.8	91.2
30	92.9	93.2	92.5	92.1
37	93.3	93.6	93.0	92.7
45	93.7	93.9	93.5	93.2
55	94.0	94.2	93.9	93.7
75	94.6	94.7	94.4	94.4
90	94.8	95.0	94.8	94.7
110	95.1	95.3	95.1	95.1
132	95.4	95.5	95.4	95.4
150	95.5	95.7	95.6	95.7
<185	95.5	95.7	95.6	95.7

For intermediate values of rated output, the efficiency shall be determined by linear interpolation

What are the marking plate requirements for three-phase electric motors?

AS/NZS1359.5:2004 section 1.5 requires motor rating plates to be marked in accordance with Section 9 of AS/NZS 1359.101:

- manufacturer's name or mark,
- Manufacturer's serial number, or identification mark,
- rated output(s),
- rated voltage(s) range of voltages,
- rated speed(s) range of rated speeds,
- IP code,
- number of phases,
- class(es) of rating of the machine if designed for other than rating for continuous running duty S1
- rated frequency or range of rated frequency.

For a full list of marking requirements see the standards.

What are the test report requirements for three-phase electric motors?

Note: if you are importing the electric motor or a product that contains the electric motor, the manufacturer should have a test report

A test report will not be accepted if it does not clearly identify the following requirements in English:

- test standard including version (year) of test standard.
- test report on test laboratory letter-head, dated and signed,
- brand and model number of motor tested (as per the rating plate),
- 50%, 75%, and 100% load efficiency and power factors,
- number of poles,
- kW rating,
- voltage,
- duty – type of motor,
- rated frequency Hz (50 Hz in NZ).

How do I register an electric motor on the Energy Rating website?

If the electric motor you are about to register is already registered you are not required to register it.

To check, search for the model using the Energy Rating database:

reg.energyrating.gov.au/comparator/product-types

If it is not already registered, download our quick start guide at:

www.eeca.govt.nz/resource/online-product-registration-guide

If you haven't used the energyrating.gov.au website before, follow these instructions:

Step 1 open the registration accounts page: reg.energyrating.gov.au/accounts/register. Apply for an account (normally processed in 24 hours, but may take up to a week).

Step 2 once your account has been created you will receive an email confirming your account has been created and you can log in.

Step 3 create an applicant if your organisation has not registered products in the past. If you create an applicant this is normally processed in 24 hours but may take up to a week. If your organisation has registered products in past then the Authorizing Officer must invite you to join the applicant. If this is not possible then you can contact the Energy Rating Team for assistance, using the 'contact us' tab in the E3 system.

Step 4 once you are part of an applicant, create a new product registration (you will need a test report that clearly states the Standard the test report meets).

Step 5 select 'Electric motor (EM)'.

Step 6 follow the steps until all fields are completed, and then submit it to the regulator.

Step 7 after submission, you will be e-mailed a Registration ID. Record this as you will need it to provide sales data each year. The product is not registered until it has been approved by the Regulator (normally processed in 24 hours, but may take up to a week).

If the product's model and/or brand is different on the test report when compared to what you sell the product as (model and brand on application), then you will also need to upload a declaration from the manufacturer stating that the product being registered is the same as the product in the test report.

To register in New Zealand the applicant must be based in New Zealand with New Zealand contact details.

An Applicant is defined as the company or organisation submitting product registration applications to the regulatory authorities.

Note: The 'Help' tab in the E3 registration system is full of useful videos and tutorials for registering your products.

Note: If you need any assistance during this process, use the 'Contact Us' tab in the E3 registration system or contact EECA: compliance@eeca.govt.nz

Note: A range of electric motor models, manufactured in multiple styles, may be registered as a product "family" if the family definition (as follows) is met.

What is a family of models?

A range of electric motors may be registered under a single registration if they have the same brand, have identical energy performance characteristics which MEPS is assessed on, and rely on the same test report for purposes of registration.

What information do I need to provide to EECA each year and how do I do it?

Importers and manufacturers are required, by law ([regulations here](#)), to provide statistical information on sales data annually to EECA. This data is provided through our online tool and is kept confidential.

Data needs to be submitted every year by 1 August, for the period 1 April to 31 March. For example, data from 1 April 2015 to 31 March 2016 must be received by 1 August 2016. The information is submitted through the EECA website (between 1 April and 1 August) where you need to:

Step 1 request a user account at: www.eeca.govt.nz/webform/request-user-account. Normally processed in 24 hours but may take up to a week.

Step 2 once your account has been set up you will receive an email and can log in at: <https://www.eeca.govt.nz/Security/login>

Step 3 when logged in follow the links and instructions for the EECA sales data tool.

Step 4 enter your product data - you will need the products Registration ID number - the following information is required for each registration ID (model):

- Sales in New Zealand between 1 April and 31 March for the previous year,
- If you are still selling that particular product.

What if I want to import electric motors and sell them in both Australia and New Zealand?

This information sheet applies to New Zealand only. If you wish to import and sell an electric motor in both Australia and New Zealand then the product must be registered in Australia. The electric motor needs to meet the MEPS requirements outlined by the Greenhouse Energy Emission Standard (GEMS) Determinations. Information on the GEMS Determinations can be found here:

<https://www.legislation.gov.au/Details/F2019L00968>

Where do I get additional information?

More information about regulated products and how to meet your legal obligations can be found at www.eeca.govt.nz/product-standards.

There is also information on the Energy Rating website at www.energyrating.gov.au.

If you have any questions, please email us at compliance@eeca.govt.nz, or phone EECA on 0800 358 676.