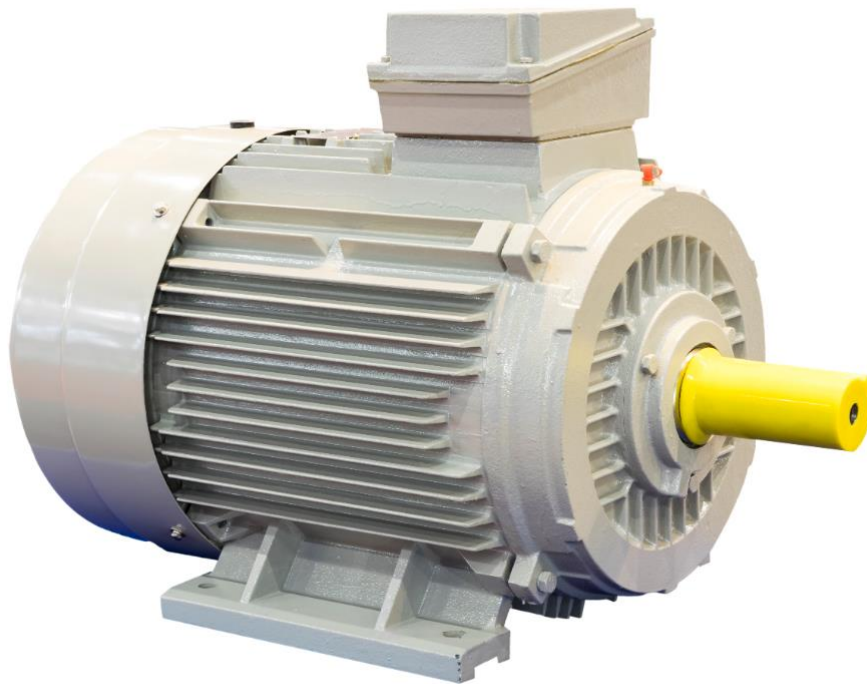


# Three-phase Cage Induction Motors



New Regulations 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 and how to meet them if you import or manufacture motors in New Zealand.

## Contents

What you need to know first.....	3
What are the main differences between the current and new regulations?.....	3
What is the same between the old and new regulations? .....	3
Which standards and regulations apply? .....	4
Which three-phase electric motors are included?.....	4
Which three-phase electric motors are excluded? .....	4
What are MEPS requirements for three-phase electric motors?.....	5
What is a family of models? .....	7
What are the changes to the registration system? .....	7
What if I want to import electric motor and sell them in both Australia and New Zealand? .....	7
Where do I get additional information?.....	8

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

---

## What you need to know first.

It is anticipated that the amended regulations will be approved and come into force in late 2020. An exact date cannot be provided at this time as the process of amending the regulations is dependent on a number of regulatory and administrative requirements, but in the interim you must either:

- Meet the current regulation requirements, or
- meet the new regulation requirements voluntarily.

A minimum of 6 months' notice will be provided before the amended regulations come into force. Once the regulations become mandatory and all three-phase electric motors will have to meet the new requirements.

Our information sheet on the current regulation for electric motors can be found here:

<https://www.eeca.govt.nz/assets/Uploads/Information-sheet-2019-Three-phase-electric-motors.pdf>

To understand the new regulation requirements, please read the rest of this document.

---

## What are the main differences between the current and new regulations?

There have been a number of changes:

- clarification of scope,
- MEPS levels have aligned with IEC2 levels (IEC3 for high efficiency),
- test methods have been simplified to,
  - IEC 60034-2-1 Ed. 2.0 (Method 2-1-1B)
  - IEEE 112:2004 (USA) (Method B), or
  - IEEE 112:2017 (USA) (Method B).

---

## What is the same between the old and new regulations?

- You must still provide sales data annually. To see the requirements of providing sales data please see: <https://www.eeca.govt.nz/assets/Uploads/Information-sheet-2019-Three-phase-electric-motors.pdf>
- You must still register your models before sales commence

---

## Which standards and regulations apply?

### New Regulations

The new NZ regulations are currently being drafted, but will have the same scope as the Australian determination:

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

### Current Regulations

Energy Efficiency (Energy Using Products) Regulations 2002:

<http://www.legislation.govt.nz/regulation/public/2002/0009/1/atest/DLM108730.html#DLM109302>

---

## 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:**

- 50 and 60 Hz motors,
- rated output  $\geq 0.73\text{kW}$  &  $< 185\text{kW}$ ,
- 2, 4, 6 and 8-pole configurations, and
- voltages rated up to 1100V (AC).

---

## Which three-phase electric motors are excluded?

MEPS does ***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).

## What are MEPS requirements for three-phase electric motors?

There MEPS levels have changed to align with IEC2. Three-phase electric motors must meet the efficiency's outlined in the table below at either their rated load or 75% of their rated load.

Rated output power (kW)	50 Hz motors				60 Hz motors			
	Minimum efficiency (%)				Minimum efficiency (%)			
	2-pole	4-pole	6-pole	8-pole	2-pole	4-pole	6-pole	8-pole
0.73	77.4	79.6	75.9	66.2	75.5	78.0	73.0	66.0
0.75	77.4	79.6	75.9	66.2	75.5	78.0	73.0	66.0
1.1	79.6	81.4	78.1	70.8	82.5	84.0	85.5	75.5
1.5	81.3	82.8	79.8	74.1	84.0	84.0	86.5	82.5
2.2	83.2	84.3	81.8	77.6	85.5	87.5	87.5	84.0
3	84.6	85.5	83.3	80.0	87.5	87.5	87.5	85.5
4	85.8	86.6	84.6	81.9	87.5	87.5	87.5	85.5
5.5	87.0	87.7	86.0	83.8	88.5	89.5	89.5	85.5
7.5	88.1	88.7	87.2	85.3	89.5	89.5	89.5	88.5
11	89.4	89.8	88.7	86.9	90.2	91.0	90.2	88.5
15	90.3	90.6	89.7	88.0	90.2	91.0	90.2	89.5
18.5	90.9	91.2	90.4	88.6	91.0	92.4	91.7	89.5
22	91.3	91.6	90.9	89.1	91.0	92.4	91.7	91.0
30	92.0	92.3	91.7	89.8	91.7	93.0	93.0	91.0
37	92.5	92.7	92.2	90.3	92.4	93.0	93.0	91.7
45	92.9	93.1	92.7	90.7	93.0	93.6	93.6	91.7
55	93.2	93.5	93.1	91.0	93.0	94.1	93.6	93.0
75	93.8	94.0	93.7	91.6	93.6	94.5	94.1	93.0
90	94.1	94.2	94.0	91.9	94.5	94.5	94.1	93.6
110	94.3	94.5	94.3	92.3	94.5	95.0	95.0	93.6
132	94.6	94.7	94.6	92.6	95.0	95.0	95.0	93.6
160	94.8	94.9	94.8	93.0	95.0	95.0	95.0	93.6
185	95.0	95.1	94.9	93.3	95.4	95.0	95.0	93.6

For intermediate values of rated output, the efficiency shall be determined by clause 5.4.5 or 5.4.6, as appropriate, of IEC 60034-30-1 Ed. 1.0.

High efficiency levels are now aligned with IEC3. For three-phase electric motors to claim high efficiency they must meet the efficiency's outlined in the table below at either their rated load or 75% of their rated load.

Rated output power (kW)	50 Hz motors				60 Hz motors			
	Minimum efficiency (%)				Minimum efficiency (%)			
	2-pole	4-pole	6-pole	8-pole	2-pole	4-pole	6-pole	8-pole
0.73	80.7	82.5	78.9	75.0	77.0	83.5	82.5	75.5
0.75	80.7	82.5	78.9	75.0	77.0	83.5	82.5	75.5
1.1	82.7	84.1	81.0	77.7	84.0	86.5	87.5	78.5
1.5	84.2	85.3	82.5	79.7	85.5	86.5	88.5	84.0
2.2	85.9	86.7	84.3	81.9	86.5	89.5	89.5	85.5
3	87.1	87.7	85.6	83.5	88.5	89.5	89.5	86.5
4	88.1	88.6	86.8	84.8	88.5	89.5	89.5	86.5
5.5	89.2	89.6	88.0	86.2	89.5	91.7	91.0	86.5
7.5	90.1	90.4	89.1	87.3	90.2	91.7	91.0	89.5
11	91.2	91.4	90.3	88.6	91.0	92.4	91.7	89.5
15	91.9	92.1	91.2	89.6	91.0	93.0	91.7	90.2
18.5	92.4	92.6	91.7	90.1	91.7	93.6	93.0	90.2
22	92.7	93.0	92.2	90.6	91.7	93.6	93.0	91.7
30	93.3	93.6	92.9	91.3	92.4	94.1	94.1	91.7
37	93.7	93.9	93.3	91.8	93.0	94.5	94.1	92.4
45	94.0	94.2	93.7	92.2	93.6	95.0	94.5	92.4
55	94.3	94.6	94.1	92.5	93.6	95.4	94.5	93.6
75	94.7	95.0	94.6	93.1	94.1	95.4	95.0	93.6
90	95.0	95.2	94.9	93.4	95.0	95.4	95.0	94.1
110	95.2	95.4	95.1	93.7	95.0	95.8	95.8	94.1
132	95.4	95.6	95.4	94.0	95.4	96.2	95.8	94.5
160	95.6	95.8	95.6	94.3	95.4	96.2	95.8	94.5
185	95.7	95.9	95.7	94.5	95.8	96.2	95.8	95.0

For intermediate values of rated output, the efficiency shall be determined by clause 5.4.5 or 5.4.6, as appropriate, of IEC 60034-30-1 Ed. 1.0.

---

## 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 the same frame code,
- have identical energy performance characteristics (on which compliance with MEPS is assessed),
- rely on, and use the same test report data for registration purposes.

---

## What are the changes to the registration system?

Products are still registered through the Energy Rating website: <https://reg.energyrating.gov.au/accounts/login/?next=/>

To register a product to the current regulations or understand how to register a product please see:

<https://www.eeca.govt.nz/assets/Uploads/Information-sheet-2019-Three-phase-electric-motors.pdf>

There is now 2 different options when registering a product:

- New Zealand – AS/NZS 1359.5:2004
- New Zealand - New requirements (Three Phase Electric Motors) 2019

The first option is to register to the current regulations, while the second option is to register to the new requirements.

---

## 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](http://www.eeca.govt.nz/product-standards).

There is also information on the Energy Rating website at [www.energyrating.gov.au](http://www.energyrating.gov.au).

If you have any questions, please email us at [compliance@eeca.govt.nz](mailto:compliance@eeca.govt.nz), or phone EECA on 0800 358 676.