

Specifying Induction Motors for Harsh Environments | TECO

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Technical Articles

How to Specify an Induction Motor for Harsh Industrial Environments: What Engineers Need to Know

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In heavy industrial sectors across Australia and New Zealand, from mining and construction to food processing, HVAC, and water infrastructure, electric motors must meet stringent requirements for reliability, environmental resistance, and long-term cost-efficiency.

The three-phase induction motor continues to be the preferred solution for many of these applications. Its robustness, minimal maintenance demands, and compatibility with modern drive systems make it ideal for both continuous and variable-duty cycles.

At TECO Australia and New Zealand, we supply high-performance induction motors , including squirrel cage, flameproof (Ex d), and cast iron electric motor variants — engineered for demanding conditions and supported by local stock and modification capabilities.

Why Three-Phase Induction Motors Dominate in Industrial Applications

In environments where downtime carries a high cost, such as mining conveyors, irrigation pumping stations, and HVAC air-handling units, the three-phase induction motor offers the following advantages:

Mechanical simplicity: With no brushes or commutators, it is inherently low-maintenance.

Reliable performance under load

Durability: TECO Electric Motors are available with IP66 ingress protection , Class H insulation, and tropicalised windings.

Where only single-phase supply is available — in rural or agricultural settings — single-phase induction motors are used for light-duty tasks such as pumps, fans, or compressors.

Key Selection Criteria for Industrial Induction Motors

Drive System Integration: Is the motor paired with a variable speed drive (VSD)?

Environmental Conditions: Choose IP66 electric motors for washdown or dusty environments.

Mounting and Enclosure: Consider cast iron electric motors for high durability.

Common Applications of Induction Motors in Australia

The following industry segments illustrate how induction motors are specified, applied and supported in demanding environments — and how critical it is to match motor design to application duty and conditions.

Mining and resources

Drives include conveyors, crushers, dewatering pumps, flotation cells and ventilation fans. These loads demand large torque, frequent start/stop or reversing, high ambient temperatures, dust ingress and washdown service. TECO's heavy-duty induction motors (IP66, Class H insulation, service factor 1.2) are engineered to meet such conditions.

Water & wastewater / irrigation Motors drive large submersible or surface pumps, aerators and slurry handling equipment. These applications often require corrosion-resistant construction, high ingress protection, compatibility with VSDs for flow control, and lifecycle cost optimisation. Australian and New Zealand regulation emphasises energy efficiency in these applications.

Manufacturing & process industries Variable loads, high duty cycles and precision speed control are common (e.g. mixers, extruders, CNC drives). Specifying the right induction motor involves selecting correct frame size, balancing for VSD use, determining thermal margin, and ensuring compatibility with automation systems. TECO's range supports these via high-efficiency models and local engineering support.

Construction / site equipment Portable or semi-fixed systems such as site cranes, mixers, large ventilation fans require motors that can handle rough handling, irregular power supply, frequent starts and stops, and moderate duty. While smaller in size than heavy industrial drives, reliability and ease of maintenance remain critical.

HVAC & utilities Large fan drives, blowers, compressors in commercial buildings and utility plants. These applications prioritise energy efficiency (IE3/IE4), smooth operation, and integration with building management or automation systems. Australian energy regulation specifically references industrial cage induction motors in these sectors

TECO's Range of High-Performance Induction Motors

At TECO, our range of three-phase motors includes induction motors, and these include:

TECO MAXe3 (Mining High Efficiency , Premium Severe Duty , AFJE , and AFJN models)

TECO IE2 and IE3 Flameproof (Exd)

TECO Squirrel Cage Cast Iron Electric Motor

Need help deciding on the right induction motor for your application? Browse our range on our website or mobile application, including our hazardous area motor , for more information about the electric motors we have available.

For further assistance, do not hesitate to contact us or email sales@teco.com.au

Partner with TECO Australia for Electric Motors

Induction motors are the backbone of any modern industry. And when you back them up with TECO's range and support, you've got a solution that's built to last in Australian conditions.

Contact us today for more information.

Previous Next Related posts Where electric motors fail: heat, supply, bearings, water and dust

Most industrial motor failures end in a winding or a bearing issue, and most of them start to fail months earlier, in the specification, the installation or the maintenance routine.

[Read more Three-phase induction motor selection: frame size, duty, IP rating and efficiency class for Australian sites](#)

[Specify and select a three phase motor in this order: load and duty, then the drive arrangement, then the site, and only then the efficiency class and the frame. Wrong](#)

[Read more What is a variable speed drive?](#)

[A variable speed drive \(VSD\) is a power electronic controller that sets the speed of an AC motor by varying the frequency and voltage it supplies, instead of running the](#)

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