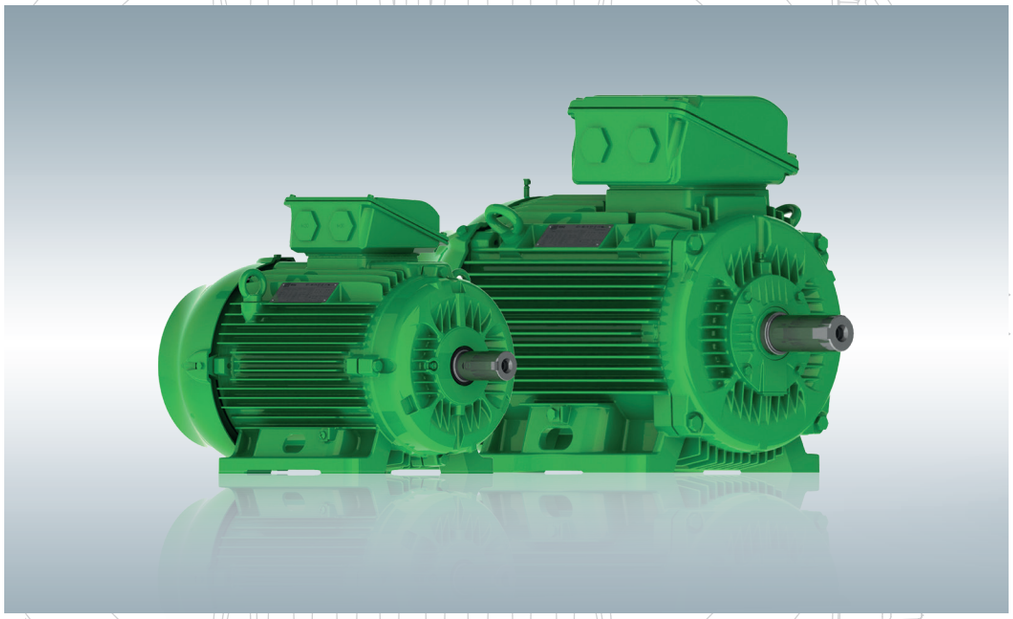
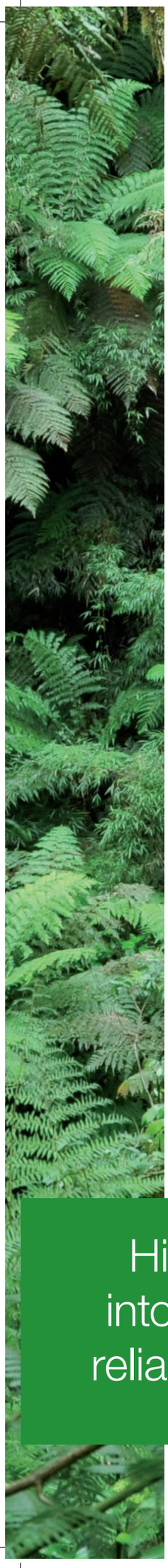
Motors | Automation | Energy | Transmission & Distribution | Coatings

W22 Super Premium

Three-phase Induction Motor

Exceeds the IE4 Efficiency Levels





W22 Super Premium

Presenting the world's highest and widest efficiency level induction motor range

In the last two decades, global energy consumption has increased by 50% with forecast for that the next two decades will continue to see significant increases in this usage.

This increasing demand for electrical energy to sustain global development requires consistent heavy investments in power supply generation. However, in addition to complex medium and long term planning, these investments rely on natural resources, which are becoming depleted due to constant pressures upon the environment.

As a reflection of this scenario, electric energy costs are rising dramatically, and in comparison to other economic indicators, standing out negatively.

One of the main contributing factors to this increase in power consumption is in the industrial sector, which utilises around 30% of the electrical energy globally available. And, in industrial applications, electric motor driven systems represents around 68% of all energy consumption.

Furthermore, if we consider both industrial and domestic applications, including appliances in our analysis, electric motors account for more than 40% of the total energy consumed Globally.
This serves to emphasize the scale of worldwide electrical energy consumption by electric motors and the importance placed upon development of more and more efficient products, not only to fulfil but to reduce this increasing demand, and consequently achieve energy / financial savings and emissions reduction.

In response to this situation, several Government Authorities are implementing Minimum Energy Efficiency Performance Standards, in order to encourage greater utilization of high-efficient equipment.

In Europe it was no different, and motor systems were earmarked as a priority target in the Eco-Design Directive (2005), which has established requirements for Energyusing Products: "EuP Directive". As a result, EU Mandatory Minimum Energy-Efficiency Performance Standard (MEPS) for industrial electric motors entered into force from July 2009.

With this situation in mind WEG presents its W22 Super Premium efficiency motor line, exceeding the IE4 Efficiency Levels defined in the IEC Standard 60034-30-1 from March 2014.

The efficiency performance of these motors far exceed the IE2 or IE3 minimum efficiency levels required in Europe today. This enables customers to reduce their Total Cost of Ownership through the reduction in energy consumption and consequently their carbon footprint.

High overall performance which is translated into a lower Total Cost of Ownership, due to its reliability, easy maintenance and energy savings!

Total Cost of Ownership
Much more to be considered!

Industries Operating Costs

Industries require several resources to support their activities such as water, compressed air, steam, electrical energy, etc. And, these resources have a major affect on a company's results, since they impact directly on operating costs which in turn are reflected in the sales price, the bottom line and ultimate market competitiveness.
In the highly competitive Global economy, and the difficulty to reduce purchasing costs or even increase sales prices, a wise strategy may be to focus efforts on saving the resources during production process.
WEG developed the W22 Super Premium efficiency motor range to offer users significant reductions in their energy usage whilst maintaining the improved noise and vibration levels, high reliability and easier maintenance features of the W22 platform.

Total Cost of Ownership

However, a proper evaluation should consider all factors that are inherent in the "total cost of ownership" (TCO) of the equipment, which includes not only the initial capital cost, but also installation, maintenance, downtime and running costs.

Learn how you can further reduce your operating costs!

Typically, applications do not require electric motors to operate continuously at full load. Installing a variable frequency drive (VFD) can help save money by controlling the speed of the motor and adjusting it to the specific load demanded by the process. This is particularly true for variable torque applications such as pumps and fans.

Did you know?
The majority of electric motors consume the equivalent costs in energy to their initial purchase price in less than 6 months!

WEG Super Premium motors are based on the W22 mechanical platform, which offers:

- Reduced maintenance - lower bearing temperatures leading to extended lubrication intervals
- Low operating temperatures - reduced stress on the insulation and, consequently, extended motor lifetime
- Flexible terminal box design for frames 225 to 355 - same design permits either top or side location via simple modification, enabling reduction in motor inventory
- Solid and integrated feet - optimal mechanical strength allowing easier alignment and installation
- Oversized and diagonally split terminal box - faster and secure handling of connection cables, and improved ergonomics
- Provision for vibration detectors - motors in frames 160 and above are designed with flat surfaces at each end for placement of accelerometers
- Rubber drains – permit easy drainage of condensated moisture during periodic maintenance.

These features, in combination with the assured energy savings of W22 Super Premium motors, highlight the commitment of WEG to assist its clients achieve the lowest TCO.

Outstanding Performance

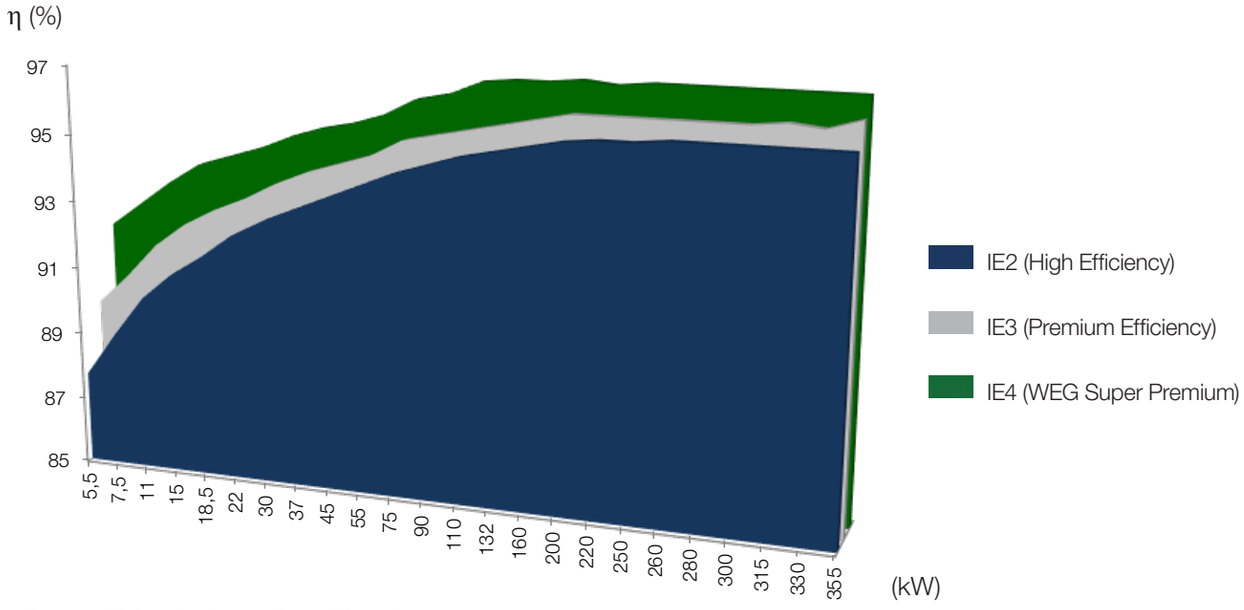


Figure 1 - Efficiency levels according to IEC 60034-30-1

Figure 1 above provides a comparison between the efficiency levels for 4-pole, IE2 and IE3 machines with the W22 Super Premium IE4 design, respecting the levels defined in the IEC standard 60034-30-1:2014.
Considering that electric motors can operate for thousands of hours every year, any gain achieved by installing higher efficiency motors will translate into considerable energy savings, which will in turn pay for the additional investment within a few years and, in some cases, even months.
The W22 Super Premium design, which presents from 20% to 40% lower losses when compared to equivalent IE3 and IE2 motors respectively, and offers the world's highest available efficiency levels for induction motor technology.
For this reason, the return on the additional investment to replace existing motors with W22 Super Premium machines, may be realized in a very short period of time, resulting not only in ongoing energy savings, but also in improved reliability and availability.
In fact, the potential energy savings may be even greater if the existing machine has been subject to repairs during its lifetime, as the the process of rewinding can, in some cases, further decrease the motor efficiency.

Calculate your savings

$$\textbf{Energy Savings kW} = \frac{\text{Output}_{\text{old motor}}(\text{kW})}{\left(\frac{\text{Efficiency}_{\text{old motor}}(\%)}{100}\right)} - \frac{\text{Output}_{\text{Super Premium}}(\text{kW})}{\left(\frac{\text{Efficiency}_{\text{Super Premium}}(\%)}{100}\right)}$$

Annual Energy Savings kWh = Energy Savings kW x Operating days per year x Operating hours per day

$$\textbf{Annual Savings (€)} = \textbf{Anual Energy Savings kWh x Energy Cost } \frac{€}{\text{kWh}}$$

The output versus frame size ratio for W22 Super Premium motors follows the DIN EN 50347 standard, thus allowing direct interchangeability with existing lower efficiency machines.

Technical data for **W22 Super Premium** efficiency motors, such as data sheets, performance curves and 2D and 3D CAD drawings, can be accessed through our online Electronic Catalogue at **http://ecatalog.weg.net**

Basic features

- Rated Output: 3 to 355 kW
- Frame sizes: 132S to 355A/B
- Number of poles: 2, 4, and 6
- Voltage: 400/690 V, 50 Hz

The online Electronic Catalogue is the most reliable source of technical data for WEG Products.

W22 IE4 Technical Data

	2 Poles		4 Poles		6 Poles	
Output (kW)	Frames Size	Full Load Efficiency %	Frames Size	Full Load Efficiency %	Frames Size	Full Load Efficiency %
3	-	-	-	-	132S	88,6
4	-	-	-	-	132M	89,5
5,5	132S	90,9	L132S	91,9	L132M/L	90,5
7,5	L132S	91,7	L132M/L	92,6	160M	91,3
9,2	L132M/L	92,2	160M	93,0	160L	91,8
11	160M	92,8	160M	93,3	160L	92,3
15	160M	93,3	L160L	93,9	180L	92,9
18,5	160L	93,7	L180M	94,2	200L	93,4
22	180M	94,0	L180L	94,5	200L	93,7
30	200L	94,5	200L	94,9	225S/M	94,2
37	200L	94,8	225S/M	95,2	250S/M	94,5
45	225S/M	95,2	225S/M	95,4	280S/M	95,2
55	250S/M	95,5	250S/M	95,7	280S/M	95,4
75	280S/M	96,3	280S/M	96,2	315S/M	96,2
90	280S/M	96,5	280S/M	96,4	315S/M	96,2
110	315S/M	96,5	315S/M	96,8	315L	96,3
132	315S/M	96,6	315S/M	96,9	315L	96,4
150	315S/M	96,8	315L	96,9	315L	96,4
160	315S/M	96,8	315L	96,9	315L	96,5
185	315L	96,8	315L	96,9	355M/L	96,5
200	315L	97,0	315L	97,0	355M/L	96,5
220	315L	96,9	355M/L	96,9	355M/L	96,5
250	315L	96,9	355M/L	97,0	355A/B	96,6
260	315L	96,9	355M/L	97,0	355A/B	96,6
280	355M/L	97,0	355M/L	97,0	355A/B	96,6
300	355M/L	97,0	355M/L	97,0	355A/B	96,6
315	355M/L	97,0	355M/L	97,0	355A/B	96,6
330	355A/B	97,1	355A/B	97,0	-	-
355	355A/B	97,1	355A/B	97,0	-	-

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