WEG Africa applauds energy standards that drive motor efficiency

The announcement by South Africa's government of its plans to introduce Minimum Energy Performance Standards (MEPS) is not a day too soon.

Fanie Steyn, Manager Electric Motors at WEG Africa, says the company has argued for these MEPS for many years. Steyn emphasises that this step will be important in helping to drive vital corporate and national priorities.

"Since 2018, WEG Africa has been involved in assisting in an in-depth study into the likely impacts of MEPS for electric motors in South Africa, and whether it would make sense to regulate these products," he explains. "The results and calculations confirmed that significant energy savings will be made by users – and by the power grid generally."

Research in South Africa indicates that about 200,000 electric motor units are sold each year, with almost 70% of them between the 0.75 kW and 11 kW size range. Up to half of these have no stated energy rating, which implies that they are the most inefficient motors available. The country's coal-fired energy base – which results in a high emission factor for its electricity of 0.9488 – means that low efficiency motors add substantially to carbon emissions.

"With the application of MEPS, the reduced power consumption will lead to a welcome decrease in greenhouse gas emissions," he says. "There has been a general consensus among stakeholders, who include users and suppliers, that the application of MEPS will be good for everyone and the environment."

On 5 October, the Department of Trade, Industry and Competition announced the intention to proceed with MEPS, subject to a month-long window public consultation. It is expected that the standards will be applied and enforced early in 2024.

"This will not affect the hundreds of thousands of motors already installed in industry, but will focus on the import channels," he says. "This will ensure that only motors with a minimum of IE3 – classified by the International Electrotechnical Commission as 'premium efficiency' motors – will be permitted into the country."

The products that will be affected are three-phase motors with ratings between 0.75 kW to 375 kW; these are predominantly two-pole, four-pole, six-pole and eight-pole motors. Steyn notes that the larger slower 10-pole motors will not fall into this specification. Most motors sold in the industry are on the smaller end of the scale – up to around 90 kW.

"Motors destined for hazardous locations – such as gas or petrochemical plants and coal mines – will also be required to comply with these efficiency standards," he says. "This includes flameproof motors, which for the first time will have a premium efficiency level."

He emphasises that MEPS is a win-win solution, as government is reducing the strain on the grid while supporting its climate change commitments, and companies can make immediate savings on their energy costs.

"While there is a small premium on the price of a more efficient motor, this pales into insignificance compared to the electricity it consumes over a year, let alone over its lifespan of up to 20 years," says Steyn.

Research conducted globally has shown that almost 97% of the total cost of owning and operating an electric motor comes from the electricity it consumes. Its purchase price makes up just 2.3% of its cost to the owner, while maintenance costs add up to only 1% on average.

For government, this is an important step in addressing South Africa's energy poverty, he adds. Once MEPS is applied, the country could save around 840 GWh per annum, as about 60% of power consumed by industry is through the use of electric motors.

"WEG Africa has for many years championed the benefits of high efficiency motors," he says. "We have made our customers aware of the saving on energy costs with an IE3 motor. With South Africa's steadily rising electricity prices, the payback period for these products is as little as nine or ten months."

To promote the use of IE3 motors, WEG Africa established dedicated assembly lines for these units at its Johannesburg facility. This facility will assist in meeting the rapid demand growth that will result from MEPS and facilitate easy access to these motors.

There is another reason why higher efficiency is beneficial as a feature of electric motors, he says, and that is longer life. Better efficiency means lower heat losses, as the heat of a motor gradually degrades the insulation on the copper windings. The more heat in a motor, the more the insulation will deteriorate – and high efficiency motors reduce this heat build-up considerably.

He also points out that other African countries such as Ghana and Mozambique are also looking at the application of MEPS within their boundaries. While low efficiency motors will still be sold into Africa for the near future, the trend is towards a more regulated environment to reduce unnecessary levels of power consumption.

"We applaud the step taken by government to apply MEPS to low voltage electric motors in the country," says Steyn. "While this does not force motor users to make any changes immediately, it encourages them to systematically replace old inefficient motors with those rated IE3 or above."

The clear financial incentive is the saving on their energy costs, so it makes sense for companies to upgrade their technology when older motors need repairing or rewinding. He concludes that this makes economic sense because the cost of rewinding can be up to 60% of the price of a replacement unit. When the lower operating cost is factored into the equation, the decision to upgrade to IE3 is not difficult.

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