WEG permanent Wmagnet motors reduce power usage by 33% & increase machine uptime by 80% for global textile manufacturer
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By replacing the standard induction motors used on its ring spinning machines with permanent WMagnet motors from WEG, Buettner, a textile manufacturer, has reduced its annual power consumption by 33% and increased its machine utilisation by 80%. These twin gains have delivered substantial savings in production costs and have also improved the company’s profitability in a highly competitive global market.

Buettner is a Brazilian company that has been active in the textile sector for over 100 years. The company currently produces more than two million bath towels each month for export to around 40 countries globally. The markets in which Buettner operates are highly competitive, and so the company is always looking for ways to increase efficiency and reduce costs.

It was with these twin objectives in mind that Buettner purchased three WMagnet motors from WEG, in order to assess their performance on the company’s ring spinning machines. The subsequent outstanding success of the motors means that WMagnet motors are now set to become standard fitment on all of the 45 ring spinning machines operated by the company. “Our goal is to replace all of our standard induction machines with WEG WMagnet motors within three years,” said Aires Fantoni, Electrical Maintenance supervisor at Buettner.

The ring spinning machines are where raw cotton is transformed into threads of the desired thickness for each product, and is then wound onto spools. Previously, the machines operated with standard induction motors, at two discrete speeds; this meant that it was necessary to stop the machine for each gear change – a process that resulted in substantial losses in production time.
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- Marek Lukaszczyk

Seeking to overcome this problem, WMagnet motors were installed; the motors were controlled by WEG frequency inverters which vary the machine revolutions from zero rpm to 1,800 rpm. “This arrangement means that our personnel no longer need to stop the machine to change gears,” said Aires Fontoni; “and we also benefit from the soft start provided by the WEG VFD, which reduces machine wear.”

The advantages of the motor replacement programme to Buettner are many. In addition to lower maintenance costs (practically zero), the variation of motor speed with constant torque and energy savings increases both the reliability and the performance of the company’s production line.

“We can deliver the same package of benefits with these motors across a wide range of applications – conveyors, compressors, elevators – anywhere where variable speed with constant torque and high efficiency are required,” said Marek Lukaszczyk, European Marketing Manager for WEG. “As demonstrated by the Buettner application, the WMagnet motors are ideal for applications where eliminating a gearbox is essential; the motors can do this because they can be operated self-ventilated over a wide speed range.”

“The space saved by gearbox removal is complemented by the size of the WMagnet motor itself. Compared to an equivalent induction motor, the volume of the PM motor is reduced by roughly 47%, resulting in a higher torque/volume ratio and a reduced weight by as much as 36%. Moreover, the PM motor is at least one frame size smaller than the induction motor; and in some cases it can be two frame sizes lower. Reducing the frame size, the cooling system is consequently reduced for the same torque/power ratio, resulting in a significant reduction of noise.”

“Finally, as regards energy efficiency, the high energy magnets in our WMagnet motors have lower Joule losses in the rotor, compared to conventional squirrel cage induction motors. As Joule losses account for a significant portion of the total losses in induction motors, replacing the squirrel cage construction with magnets ensures far greater efficiency – easily exceeding the requirements of new harmonised IE (International Efficiency) grading standards: IE2 and IE3 that will replace the current voluntary EFF labelling scheme (EN 60034-2:1996), around 2010.”
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