

MOVIGEAR: The all in one mechatronic drive

In light of a recently completed and highly cost-effective implementation at a bottling plant in Nigel, SEW-EURODRIVE sales manager Willem Strydom talks about the latest innovations embedded in the company's MOVIGEAR® mechatronic drive technology.

“What sets MOVIGEAR apart is that it is a decentralised drive system with the electronic drive and communications built into the gearmotor itself. It is the ultimate mechatronic system, combining highest efficiency IE5 motor technology; a simplified and efficient gearbox, an advanced electronic variable speed drive and all of the common digital communications protocols. These units are typically interconnected using our hybrid-power communication cable, for example, which runs the communications at high frequency along the 400 V ac power line,” Strydom begins.

Citing a recently completed expansion project for a beverage bottling plant in Nigel, he says that SEW-EURODRIVE has installed 53 MOVIGEAR units for an additional line. “These highly advanced units are now driving the main line conveyors and all of the in-feed and out-feed conveying systems,” he says.

At the start of this project, a comprehensive survey of one of the existing lines was completed to identify exactly what was needed in terms of the number of drives required and the specific speeds and

torques needed at each drive point. “The conventional system we examined was using 13 different standard gearmotor variants. We were able to deliver all the speeds and torques required to control every point on the system using only three variants of our MOVIGEAR solution,” Strydom tells *MechChem Africa*.

“This level of flexibility enabled spares stockholding to be substantially reduced. Where 13 different geared motor versions were used, we are down to two different mechatronic models: MOVIGEAR 2 and MOVIGEAR 4, and only one of these requires a different gear ratio,” he says, adding that, in total, only three different part numbers need to be managed by the spare's store.

Explaining how this is possible he says SEW's MOVIGEAR units use servo drive technology, which offers constant torque across the speed range, from zero to full rpm. “With standard gearmotors driven by asynchronous motors, the torque is dependent on speed, so more gearing has to be incorporated to ensure the motor can deliver enough torque at the required speed,” he says.

“The constant torque of the servo motor



enables us to achieve a number of different speeds and output torques with a single gear ratio,” Strydom explains.

On the mechanical side, the MOVIGEAR has an exceptionally efficient gearbox that also contributes to the IE5 efficiency rating of the unit. “The MOVIGEAR 2 offers up to 200 Nm of torque, while the MOVIGEAR 4 delivers up to 400 Nm.”

These are state-of-the-art units and, according to Strydom, it took some convincing for the company to adopt a system with a cost premium compared to a standard asynchronous gearmotor solution. “But while the upfront capital expenditure is larger, we were able to make a like-for-like comparison with respect to the energy savings that would accrue if using MOVIGEAR.

“The latest MOVIGEAR has an IE5 efficiency rating, the highest of any SEW-EURODRIVE products. Compared to the installed conventional system, we are

achieving a 38% energy saving on this project, not only due to the efficiency of the servo technology and the gearbox, but also because the electronics sit inside the unit, there is far less cabling, resulting in lower energy losses. Considering the electricity cost savings and reduced installation costs, the amortisation was estimated to be just under 13 months – based on the plant's own estimation. This completely obliterates the argument that modern MOVIGEAR systems are expensive compared to conventional systems,” Strydom points out.

While there is a size limitation with respect to torque output, MOVIGEAR technology is ideal for conveying and packaging lines in the food and beverage industries, as well as a host of other light and dynamic production line applications. “We have even had some success in the fruit packaging industry, which is notoriously price sensitive,” he adds.

A summary of the key features embedded in this integrated drive solution include:

- Simple to install: MOVIGEAR comes with a universal mounting system that enables the unit to be mounted in any position without having to worry about oil levels or angles.
- Compact design: The motor, gear unit and electronics are combined in one mechatronic drive system with a single line network installation. Only one cable has to be installed for energy and information transfer.
- Simplified system planning and design.
- Reduced number of variants due to the wider setting range and universal mounting positions, which lowers stockholding costs.
- High degree of protection with IP65 or IP66 ingress protection available.
- Hygienic surface design using SEW-EURODRIVE's HP200 coating for applications in hygienic areas.
- No air, dirt and germ swirls.
- Reduced energy costs due to the high efficiency of all interconnecting components (gearbox, motor, electronics and comms).
- High degree of reliability due to systematic development of all components.
- Reduced total and operating costs of the conveying/handling system.

- Flexibility in terms of communications with a built in safety stop (STO) technology.
- Embedded encoders to assist with accurate positioning – within a few microns – which is ideal for quality control lines, for example.

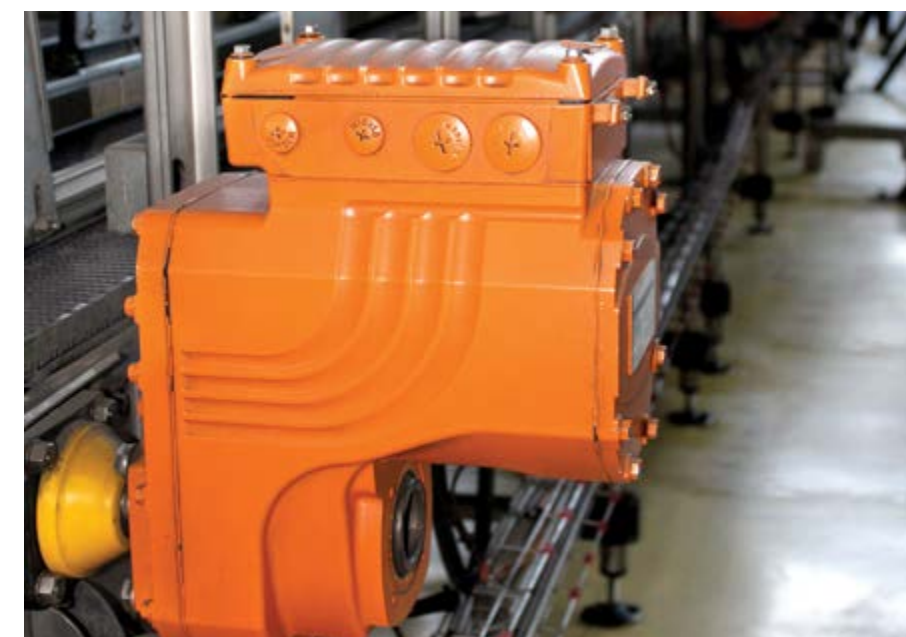
“These are 100% sealed units, so very little maintenance is generally required. We tend to recommend an oil analysis check once every two to three years, but we have MOVIGEAR units that have been running maintenance-free for over seven years. In terms of clean-in-place compatibility, IP65

units are being used in Nigel, and are suitable for the plant's water-based wash down procedures, while our IP66 version with the HP200 coating can tolerate pressure washing, which is being successfully done on 28 units at an abattoir in Vereeniging,” says Strydom.

The future? “As a well-established global standard to many large brands, we are currently in the process of negotiating contracts with a beverage group that could secure even wider use of SEW-EURODRIVE MOVIGEAR units for bottling lines across the African continent,” he concludes. □



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**ONE DRIVE
THAT SAVES
UP TO 50%
IN ENERGY
COSTS**



**CONTINUOUS IMPROVEMENT:
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