

Advanced geared drives for leaner times

MechChem Africa visits the Aeroton premises of SEW-EURODRIVE in Johannesburg and talks to South African MD, Raymond Obermeyer, about latest advances in drive technology and the local company's plans to be the assembly, supply, refurbishment and training hub for Africa.

The main focus of Hannover Messe 2019 earlier this year was on automation and Industry 4.0 and SEW-EURODRIVE participated with a heavy focus on its automation solutions for the automotive manufacturing industry. In addition, though, we launched a host of product facelifts on the power transmission side, which we are very excited about.

"Local industry needs a bit of good news and several improvements we have made to our industrial gear unit range means that existing units can now be replaced with smaller, less costly, units that meet performance specifications better than ever," Obermeyer begins.

He cites several products improvements incorporated into SEW-EURODRIVE's Generation X.e series helical and bevel helical industrial gear (IG) units.

- Contactless sealing systems: which neither cause nor are affected by wear at the input and output shaft. "The risk of loss of oil due to a seal failure is significantly reduced and operational safety is increased," he says, adding that this results in significantly longer maintenance intervals for the drive system.
- Thermally improved oil level: "There is a fine line between a reduced oil limit and optimal heat dissipation. Knowledge of how these interact has enabled us to optimally reduce the oil bath temperature, which results in increased operational safety, savings on resources and prolonged oil change intervals," Obermeyer tells

MechChem Africa, before reporting oil volume savings of up to 29%; increased oil service life by up to 110%; reduced churning losses by up to 87.5%; reduced oil bath temperatures by up to 8%; and an increased thermal limit rating of up to 32%.

- Optimised bearing preload: Establishing ideal bearing preload settings during assembly reduces the formation of heat spots, resulting in reduced compression and significantly increased bearing service life: by up to 220%. In addition, the bearing's thermal limit rating can be increased by up to 24% and the oil bath temperature reduced by up to 4%.
- Optimised gearing topology: The optimised tooth flank topology minimises displacement tendencies, enabling the unit to better tolerate meshing interference. This helps avoid downtime and increases system availability. These improvements allow for increased static overhung loads by up to 41% to accommodate unfavourable application angles. This gives higher operational safety of the drive when external forces effect the shafts and lower gear unit noise due to optimised tooth meshing.
- An improved bevel pinion housing enables optimised oil flow. This is the basis for the higher thermal rating and results in higher operational safety. Higher powers can also be transmitted without the risk of failure. Reported improvements include: a 30% reduction in system power loss; increased operational reliability and improved cold-



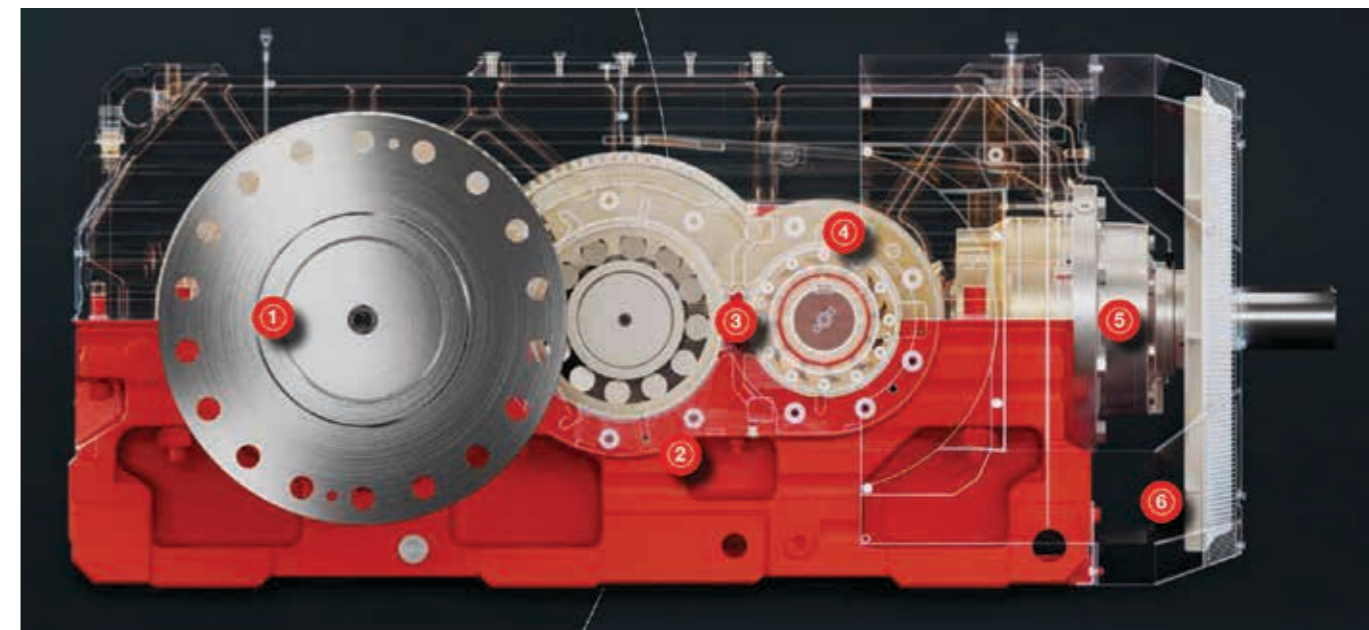
start behaviour; and increased overall limit rating – by up to 153%.

- Universal fan guard: The concept of SEW-EURODRIVE's universal fan guard is to allow various fan sizes (boost, balanced and silent) and fan types to be arranged under one cover. Not only does this enable the installation dimensions in a system to be standardised, it also allows for an optimal cooling, while enabling specified sound pressure limits to be met. This innovation reduces the oil bath temperature by up to 36%; increases thermal limit rating as compared to axial fan technology by up to 54%; and lowers the sound pressure by up to 7.0 dB(A).

"Combined, these improvements enable downsizing of Generation X.e IG units compared to competing technologies and installed units due for replacement," Obermeyer argues. This not only makes for much better reliability and substantially lower total costs of ownership, but the capital expense of smaller more efficient units can substantially lower capital infrastructure costs compared to systems dependent on larger previous generation gear units.

As part of the design revamp of the Generation X.e range, the number of separate assembly parts, part sizes and functions has also been reduced. "This is good news, too, especially in these difficult times. Stocking levels and total assembly times can be reduced, which enables us to respond more quickly to ordinary and emergency orders," Obermeyer says.

"When other gear unit manufacturers are closing down, these constant improvements are enabling SEW-EURODRIVE to meet new people and expand into new markets," he continues, citing particular successes in the sugar industry with the SEW-EURODRIVE planetary range. "These units are ideal for diffusers in the sugar industry, for example, and we have added the P-X series of planetary combos to our sugar range, which consist of two industrial gear units in one solution for meeting demands in the sugar industry," he notes.



SEW-EURODRIVE's Generation X.e Industrial gearboxes set new benchmarks in six areas. 1: Contactless sealing systems; 2: Thermally improved oil levels; 3: Optimised bearing preloads; 4: Optimised gearing topologies; 5: Improved bevel pinion housings; 6: Universal fan guards.



The P-X series combines compact planetary drives with robust bevel helical industrial gear units. Thanks to excellent performance and high operational reliability, these units are an ideal solution for drives in the medium to high torque range, particularly in demanding environments such as sugar mills. "Combo units deliver an optimum power to weight ratio and an improved thermal limit rating through the use of a shared oil chamber," Obermeyer explains.

P-X series advantages include: more flexible plant and machine optimisation with respect to efficiency, throughput and costs; substantial savings in time and costs from engineering through to startup thanks to the compact drive size; the modular industrial gear unit package; single sourcing of the different drive types; and maximum plant availability thanks to rapid on-site assistance via a comprehensive network of service support.

"We can now also attach our own motors to these drive packages and, while we are not well known for our combos or our motors, we are picking up a lot of new business in these areas," Obermeyer tells MechChem Africa.

While new projects remain scarce in the current economic climate, SEW-EURODRIVE is picking up significant amounts of repair and refurbishment work. "We have developed a good reputation for drop-in boxes, which enable us to replace legacy gearboxes from any of the commonly used

The weight-optimised design of SEW-EURODRIVE's P-X combo boxes opens up new opportunities for machine optimisation in terms of throughput, costs and operational safety.

OEMs in South Africa with modern SEW technology. We design and manufacture a conversion-plate that matches the existing structure, but allows our gearbox to be mounted and connected to the existing drive train – and these drop-ins are now also available for planetary and P-X combo boxes," says Obermeyer.

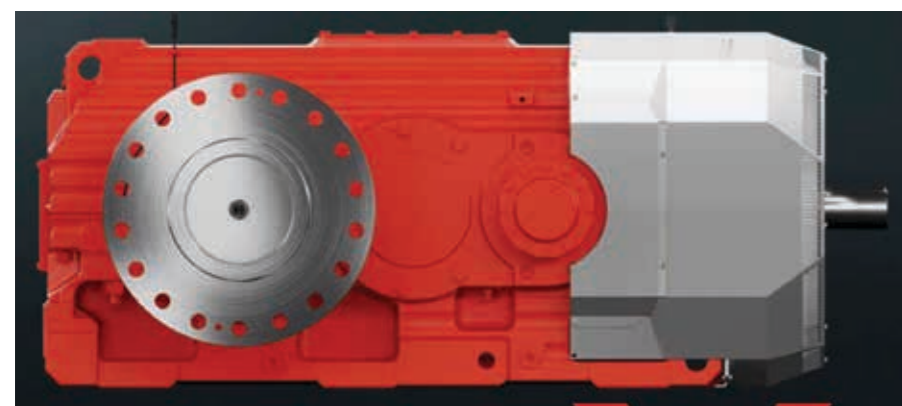
With respect to the expansion of its local facilities in South Africa, Obermeyer cites three ongoing initiatives: the move into new premises in Port Elizabeth to better service the automotive industry; the expansion of the Nelspruit facility into a dedicated gearbox refurbishing facility; and building a new assembly facility in Johannesburg.

"We have recently heard from our German parent that we will be building a new state-of-the art, Industry 4.0 assembly facility here in Aeroton, Johannesburg. This will be our African flagship for the local design, production and assembly of new standard units, customisations and custom designed drive train projects. This factory will be a rapid turnaround high-volume facility for servicing the whole of sub-Saharan Africa," he reveals.

"Nelspruit, which currently assembles large industrial gearboxes, will be re-equipped as our centre-of-excellence for refurbishments and we intend to extend this offering to any brand of box," he continues, adding that SEW-EURODRIVE's new Nelspruit facility will be able to rebuild between 150 and 350 industrial gear units per year, all to original-manufacturer specifications.

"We are a company that prefers to uplift our people from the inside, training and promoting our own staff into management positions and upskilling our shop floor workers to enable them to take on increasingly technical roles. We believe in the long-term, so we create our own family of skilled and loyal staff who might stay and grow with us.

"In spite of current challenges and with direct support from our mother ship, we have been able to make decisions quickly and remain on a steady growth path – and I am confident that we will again meet the growth commitments we made in November 2018," Obermeyer concludes. □



SEW-EURODRIVE products improvements include Generation X.e series helical and bevel helical industrial gear (IG) units.