Modular drives for power generation

To best meet urgent local needs and harsh conditions with massively improved lead times, SEW-EURODRIVE is on a mission to localise its modular drive concept. Jonathan McKey highlights a few of the advantages this presents the power generation sector.

SEW-EURODRIVE's expanded local capability from its new Aeroton facility will include the assembly of its latest X.e Series industrial gear units (IGs); its modular air-cooled condenser units (MACCs); standard, VSD- and servo-driven gearmotors; along with customer specific drive-train packages that, for the power industry, include: conveyor, cooling towers and ash drives; girth-gear solutions; fans, pump drives and a host of other purpose-built modern and modular solutions.

X.e Series gear units

Modular X.e Series units, the latest evolution of SEW-EURODRIVE's IG range, are now even more robust, reliable, efficient and easier to maintain than their predecessors. Significantly increasing the number of possible torque/speed combinations and fine-size graduations enables solutions to be custom-built to suit client specification precisely.

Additional modular features and options include: motor adapters; integral and load sharing backstops; various sealing and shaft systems; and many more, all of which add to the ease of use and reliability of X.e Series drive solutions.

"Conveyor drives in the power industry are often required to operate in extremely dusty and very hot or cold conditions. Due to the new thermally optimised housings, along with the contact-free taconite sealing system, the drives offer excellent reliability under these conditions," notes McKey.

The X.e series offers an optimised choice of gear unit sizes, reduced gear unit weight and sufficient centre distances. In addition, when the drive needs to be operated at low speed during maintenance, for example, the drive package can be equipped with a directly mounted slow speed auxiliary drive to advance the system while the main drive is switched off.

The new X.e range is also ideal for girth gear applications, where the new generation units have become the global standard for use with SEW-EURODRIVE's segmented mill drive solution.

MACC Series drives

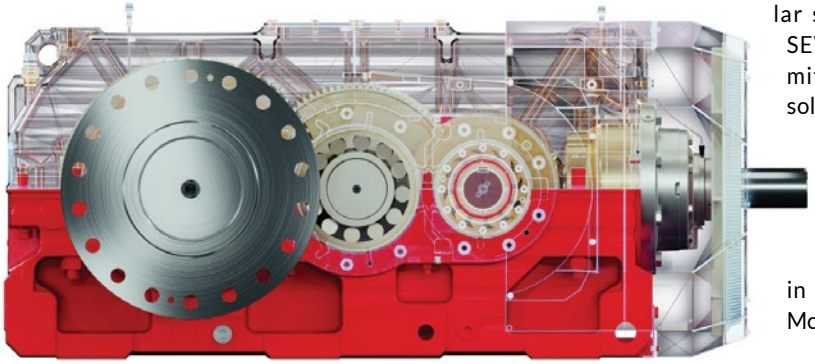
MACC drives from SEW-EURODRIVE are purpose-designed for driving the modern fan-based air-cooled condenser (ACC) systems used in steam-driven power generation plants.

ACCs need to generate huge air flows to cool and condense exhaust steam from turbines. "Our Modular Air Cooled Condenser (MACC) drives have specific optimisations to make them tailor-made to best suit these applications," McKey explains.

These include: a stiffer case with built-in cooling veins for improved cooling; and SEW-EURODRIVE's internal extended bearing distance (EBD) system, which better enables the gearbox bearings to accommodate the very high axial and radial forces transferred through the fan and the drive shaft.

"We have also built-in a maintenance brake so when servicing is required, wind from the outside can be prevented from turning the fan and the main shaft, making the boxes easier to maintain in-situ," says McKey.

These are compelling reasons for power stations to replace faulty ACCs with SEW-EURODRIVE MACCs. "To make this easier for plant operators, we build customised adapter plates to enable our design to be easily retrofitted as a direct replacement for any older-generation boxes currently in use. We also customise the output shaft length to perfectly match the ACC infrastructure onsite and to establish the ideal fan position for maximum efficiency," he adds. wThe typical lead time for imported large industrial gearboxes by most gearbox OEMs can range from 18 to 24+ weeks or more. Once SEW-EURODRIVE's assembly plant is complete and operational, it will be able to assemble most common modular designs locally at capacities of approximately 3 to 5+ per week.



Electric motors, gearmotors and VSDs

Supporting drive trains for the power generation and other industrial sectors are SEW electric motors, which are available in the power range 0.09 kW to 375 kW, and in efficiency classes IE1, IE3 and IE4. "Our IE3 DRN motors have replaced our IE2 range, and we can now also supply premium efficiency DRU motors which meet IE4 efficiency requirements if requested," notes McKey, adding that all of these motors are directly compatible with SEW-EURODRIVE's modular approach to drive packages, either in combination with an industrial gear unit – as directly coupled to a helical or bevel-helical gear unit or as part of a complete drive package on a base-plate – or fully incorporated into a gearmotor unit.

In a clean and static free area of the new Johannesburg factory, SEW-EURODRIVE's inverters, controllers and other electronic systems, including AGVs, will also be locally assembled. These are perfectly tailored to control the speed, torque and application specific functions of drive systems to get the most out of the company's modular drive trains and gearmotors, in terms of energy efficiency and functionality.

"Local assembly of these modular systems demonstrates SEW-EURODRIVE's commitment to being part of solving South Africa's long lead supply problems, while also attracting business from across the world from those experiencing long delays in meeting urgent needs," McKey concludes.

www.sew-eurodrive.co.za