

# Total plant maintenance for the sugar sector from BMG

Through its Riverhorse Valley regional workshop, its regional distribution centre (RDC), and branches across the country, BMG plays a critical role in the sugar sector: providing engineering solutions for growers and millers; a comprehensive range of products that suit the industry's intensive needs; and total plant maintenance capabilities.

**T**he sugar industry – in South Africa and in neighbouring African countries – is an important area of growth for BMG, begins Hylton Doyle, the company's engineering manager for KZN.

BMG operates the Riverhorse Valley regional service centre in KZN with specialist assembly, repair, maintenance and support, which offers combined technical expertise and value-added product solutions. "Our workshop's specialist services to the sugar sector include bearing and gearbox inspection, bearing and chain refurbishment, and large-size bearing assembly, alignment and balancing. The team also works on shredder lube systems, juice heater door hydraulics, mill roll hydraulics, mill bearing lubrication, shredder hook bar removal systems, as well as many customised product designs," says Doyle.

"We strive to offer customers dependable service, repair and delivery solutions; centralised technical support; and easy accessibility to BMG's comprehensive range of quality branded engineering components," he says, adding that Dorstener planetary gearboxes, for example, have been used successfully in the sugar industry for many years: on diffuser drives, mill drives and feeder tables, for example.

The KZN service centre and the field service team have recently been involved in several projects during off-crop seasons, as well as dealing with urgent breakdowns in sugar mills and refineries. Doyle cites a recently completed refurbishment, fabrication and replacement project on worn components of a gearbox in preparation for the high productivity growing season.

"In spite of tight time restrictions before the seasonal start-up of the mill, coupled with manufacturing challenges, BMG recently designed, fabricated and installed new carriers for these gearboxes, reducing the normal 24-week delivery period for OEM replacements to only four weeks, with cost savings of about 7.5 times those of the OEM parts.

Carriers, which connect the planet gears to the output shaft of a planetary gearbox, are normally manufactured from cast iron, which is extremely difficult to repair. In this case, there was the additional problem of bores positioned close together, with virtually no

wall thickness between the bearing journals – which was where cracking had occurred. Because of the harsh operating conditions of the mill and the high torque load of these units, BMG specialists recommended replacement of the carriers as the preferred option to repair and refurbishment.

The planet carriers were re-engineered and fabricated out of 355WA steel plate, which is not only stronger than the cast iron used in the original units, but also allowed BMG to manufacture them in a lead time of just three weeks.

The team was on a tight deadline to have drawings and designs approved and to ensure highly accurate dimensions for a perfect fit with clearances to accommodate the gear mesh. Welding challenges to maintain the structural rigidity of the system were overcome by machining interlocking tabs in the top and bottom main plates, as well as in the webs and side rings, to ensure a more precise assembly for welding, and less distortion. The webs and side plates were welded to the bottom ring and the entire assembly was then fitted onto the top ring. Slots were later filled with weld metal so that the webs formed an integral part of the structure.

"This success exemplifies BMG's total plant maintenance capabilities, which are geared to optimise productivity and enhance process plant reliability: making a real difference to

**BMG also supplies a wide range of robust cane carrier chain, the most critical of which is the reclaimer chain, which carries the bagasse for fuelling the boilers of the mill.**

operating efficiencies in the sugar sector," says Doyle.

## Power transmission solutions

"Through the provision, over decades, of power transmission solutions that ensure high productivity in cane fields and during processing and refinement, BMG boasts a depth of experience in the sugar sector," says Gavin Kirstein, BMG's Business Unit Manager for the Power Transmission division.

"Our power transmission division supplies and supports a wide range of products, which are carefully selected for dependable performance in demanding conditions of the sugar industry. These components include diffuser and mill gearboxes, carrier and diffuser chains, knife and shredder bearing housings, custom sprockets and gear couplings, as well as steam gaskets, heat exchangers and hydraulic tools. In addition, mill lubrication and hydraulic systems, form a critical part of our power transmission range.

An important service to the sugar sector is BMG's chain refurbishment facility in Durban, where chains are stripped, inspected and re-assembled, using new components where

necessary. This refurbishment service is often carried out under strict time restrictions, which requires advanced planning.

"Analysis of chain failures is also conducted at this facility. BMG specialists are able to advise customers on the expected remaining wear life of a chain and on what improvements need to be introduced to their systems," he adds.

"Other specialist services include bearing and gearbox inspection, bearing and chain refurbishment, large size bearing assembly, alignment and balancing, as well as customised product design. We also offer a troubleshooting and maintenance service, condition monitoring and training," Kirstein says.

Key sugar sector components from BMG's power transmission division, such as Tsubaki high performance chains, are well-suited to the harsh conditions in sugar processing and production, offering enhanced strength and reliability, a cleaner environment and extended operating life.

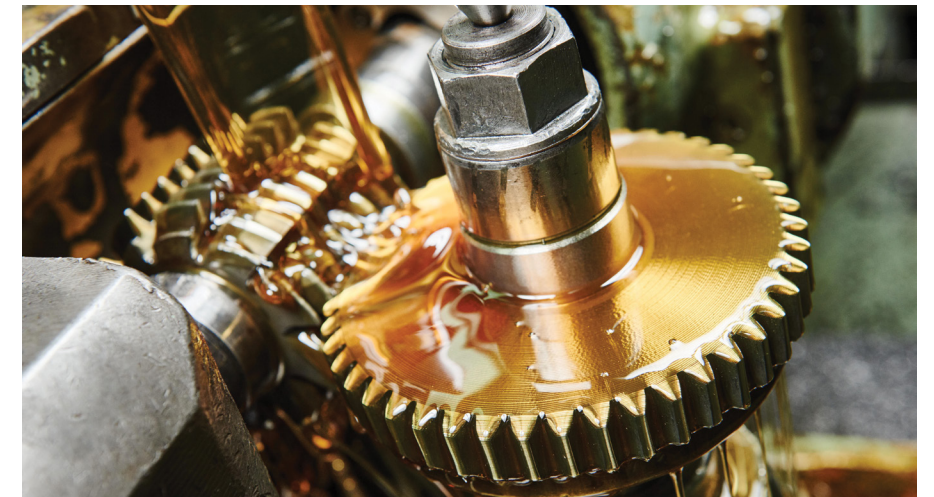
"BMG specialists are able to provide solutions for any problems our customers face when using conveyor chain. We can adapt the materials used and even the heat treatment of a chain's components, to match the specific application and operating environment – whether in the sugarcane field, or in the mill or refinery," explains Marthinus Janse van Rensburg, National Product Manager for Tsubaki at BMG.

"We also offer a range of chains with stainless steel components to protect against corrosion, which is especially problematic on bagasse carriers and elevators. Stainless steel components can be heat treated to provide wear and corrosion resistance, as well as additional strength.

"And on the agricultural side, BMG's Tsubaki cane harvester chains are manufactured at an ISO certified manufacturing facility in line with Tsubaki's exacting specifications. All components are shot-peened and the chain is also statically pre-loaded for enhanced wear life in the harsh conditions of cane fields," Janse van Rensburg says, adding that BMG supplies a wide range of robust cane carrier chain that provides excellent durability and wear resistance during operation in demanding conditions in sugar mills, the most critical of which is the bagasse reclaimer, which fuels the mill.

## High performance additives and lubricants

For the sugar industry, BMG also offers wide range of lubricants and additives including synthetic oils, lubricants and bespoke lubrica-



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**Cera Tec Ceramic additives improve reliability of industrial equipment, lower engine and transmission noise, minimise maintenance requirements and reduces downtime.**

tion systems. "We often see operators in the local sugar sector facing ongoing difficulties, for example with transmission gearing in conveyor systems under arduous conditions," explains Carlo Beukes, Business Development Manager for BMG's Agricultural, Automotive and Lubrication divisions. "This results in accelerated wear and higher temperatures. Problems occur where dust accumulates in the transmission, thus increasing friction between the gears and other components, accelerating wear," he adds.

Another problem in the industry is high ambient temperatures, which increase the temperature of the oil in the transmission. The risk of inadequate lubrication and excessive wear thus increases, adding the threat of failures and subsequent loss of production.

The BMG team has received positive feedback since last year's launch of the industrial wear protection additive called Liqui Moly Cera Tec, which is proving to be highly effective in protecting gears in sugar mills. Customers report there are now fewer operational problems, including improved dust control, lower maintenance

and replacement requirements and longer service life of critical components.

"Cera Tec Ceramic additives – with exceptional resistance to high temperature and pressure – improve reliability of industrial equipment, lower engine and transmission noise, minimise maintenance requirements and reduce downtime. Other benefits include energy savings, reduced risk of contamination, lower pollutant emissions and more efficient operating costs," notes Beukes.

BMG's Riverhorse Valley workshop, its field service teams, and branches across the country enable total plant maintenance solutions to be implemented for sugar mills and refineries in tight time frames by locally re-engineering and manufacturing replacement components or by incorporating BMG's broad range of quality-branded engineering components.

This plant maintenance capability is supported by a team of engineering specialists and 24-hour technical support services from competent teams to ensure ongoing reliability, efficiency, extended life and energy savings at sugar mills and on sugarcane plantations.

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**The BMG team works on a diffuser headshaft at the Riverhorse Valley regional workshop in KZN. The facility offers specialist inspection, assembly, refurbishment, alignment and balancing services to the sugar sector.**