



Engineered hydraulic solutions meet SA's needs

MechTech Africa visits the Wadeville premises of Axiom Hydraulics and talks to Eugene Tondolo about how the company's exclusive brands are custom engineered for the hydraulic systems that drive South African industry.

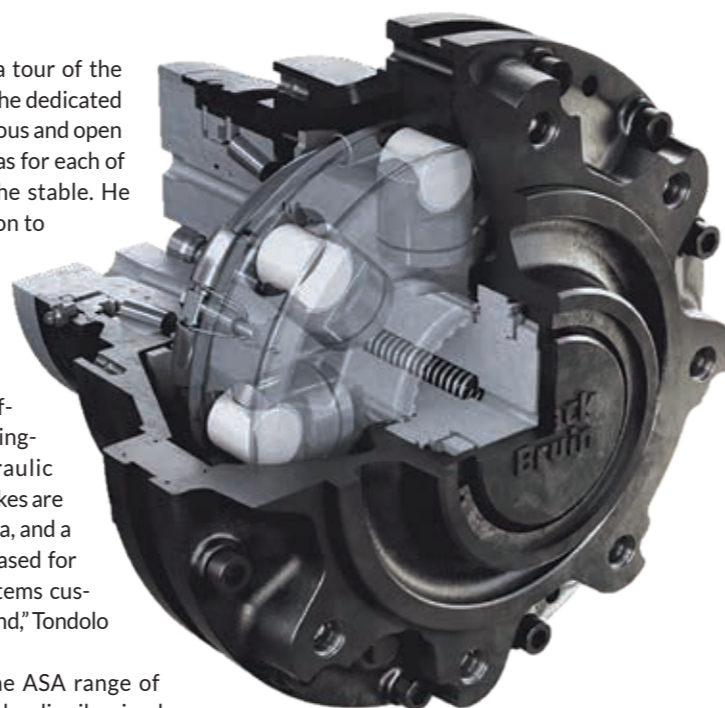
Since its inception in 1959, Axiom Hydraulics has been designing and installing hydraulic systems tailored to individual applications. "While we specialise in the design, supply, repair, reconditioning and servicing of a comprehensive range of hydraulic components and equipment, we are most proud of our custom-engineering capability," Tondolo says.

"On the service side, we have a large stockholding of the world's leading hydraulic brands, which reduces lead and delivery times for southern Africa's fluid power industry. In addition, though, we have state-of-the-art production, design and testing capabilities at our 5 500 m² Wadeville facility, enabling us to deliver intelligent solutions to our customers," he continues.

Following the 2016 move to Wadeville, Axiom is now settled and embedded in its new home. "This is an excellent site and we now feels like we have always been part of the Wadeville community," he says.

Taking *MechChem* on a tour of the facility, Tondolo starts at the dedicated warehouse, which is spacious and open with separate racking areas for each of the different brands in the stable. He points out the latest edition to Axiom's collection, the Ausco brand of braking systems. "Ausco comes from the USA and the company is a market leader in OEM brakes for off-highway vehicles. Its spring-applied multi-disc, hydraulic callipers and ball ramp brakes are widely used in South Africa, and a new design has been released for Land Cruiser braking systems customised for use underground," Tondolo tells *MechChem Africa*.

He next points out the ASA range of forced draft coolers for hydraulic oil, a simple radiator-based system with a range of fan



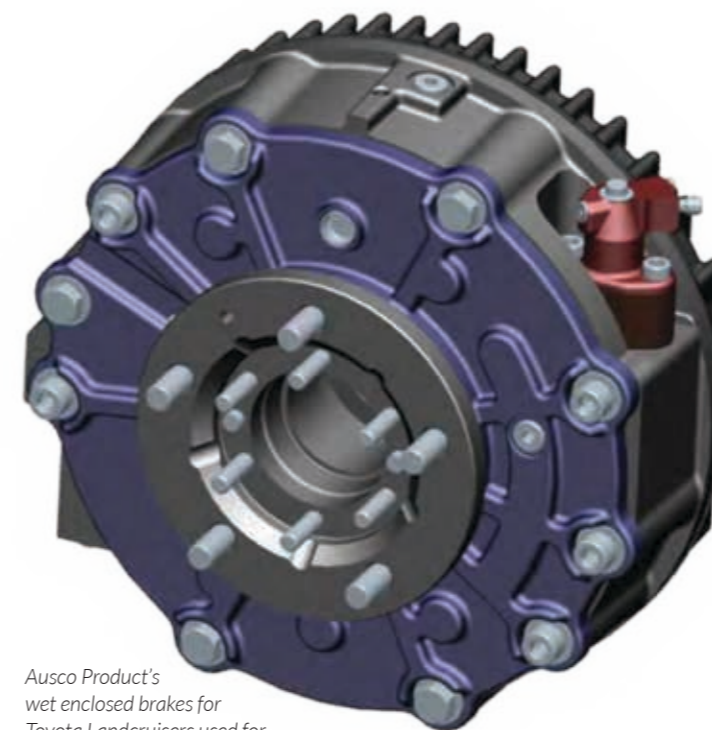
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drive options: 12 and 24 Vdc; 230 Vac; and hydraulic motor options. "These coolers are available in cell-phone sized units for small pilot systems all the way up to very large industrial units with 7.5 kW fan motors," he says, adding that, like car radiators, coolers are uncomplicated but essential and tend to be integrated into Axiom's custom-built systems.

A cornerstone of the Axiom Hydraulics range, however, is the Black Bruin range of low-speed, high-torque hydraulic motors, which have been an exclusive and successful product for the company for many years.

"We have recently had a lot of success with our Black Bruin motors on raise boring machines on an Anglo pilot project. These underground machines used our largest SD 15 litre hydraulic motor, which can deliver over 75 000 Nm of torque, to drill out the gold bearing reef between two parallel haulages, rather than having to drill and blast the rock face," Tondolo explains.

The mining industry is very excited by the possibilities of raise-boring technology, which significantly reduces the amount of waste



Ausco Product's wet enclosed brakes for Toyota Landcruisers used for underground mining are a new addition to Axiom's product range.

rock that has to be transported to the surface for processing. "This project used our motors to drill 800 mm cores directly into the gold bearing reef. The rock is removed as pellets, so it does not have to go through a crusher on the surface, and the hole through the reef is immediately filled with a special concrete, massively improving underground stability and safety," Tondolo notes.

Axiom helped to customise an existing raise boring machine for use with its Black Bruin hydraulic motor. "At speeds at low as 6 to 20 rpm on the drill, the SD produced fantastic results. Our Black Bruin motor outperformed competitor motors by 8 to 1 in terms of service and reliability," he says.

"Previously, the hydraulic motors had to be rebuilt every 3 000 hours. After fitting our motors on ten raise borers, the longest running unit ran for 20 000 hours. Even then, when we stripped it to have a look at its condition, there was no need to replace a single part. We simply reassembled the motor and put it back into service," he relates.

Raise boring, Tondolo believes, offers excellent opportunities for old and advanced mines for recovery from reef bearing support pillars. "The system can be operated by a single miner and the safety and productivity opportunities are fantastic," he says.

With respect to the Black Bruin motor range in general, he adds that Axiom's stockholding is a big advantage. "We even keep the big ones on our shelves, while our competitors tend to have lead times of up to a year on units of this size. And ours are cost-competitive, even before taking the extended life into account," Tondolo adds.

The units are gearbox free with soft start-

ing and load holding inherently built-in as a feature of the technology. Compared to electrically driven drives with gearboxes, Tondolo says that full torque is available from zero rpm. For big winches, apron feeders, conveyors or any machine where a large torque is required on start-up, these motors can simply be attached to the end of a shaft, connected to a torque arm and piped to a hydraulic pump. They fit into compact spaces and are very easy to install.

"With an electric motor driving through a gearbox, there is a massively increased power draw to overcome the startup torque. Hydraulic motors can generate very high torque at zero speed by running the pump at very low flow and maximum pressure, which minimises the kW's drawn from the pump motor.

"Also the holding/stall torque is excellent and we can ramp up or down gently and safely. When using a Black Bruin hydraulic motor, there will never be the need to dig all the material off a tripped conveyor system before restarting the motor," Tondolo argues.

For higher speed motor and pump applications, Axiom Hydraulics continues to champion Dana Brevini, which was branded S.A.M. Hydraulik when Axiom first won the distribution rights. S.A.M. was bought out by Brevini Fluid Power and then, in 2017, Brevini Group was bought out by Dana, the US automotive giant, to form DANA Brevini.

"For us, though, this is business as usual. We carry the Dana Brevini range of piston motors and pumps in size from 12 cc to 226 cc for use in every conceivable application and, with a host of different control options, these



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are used to drive the hydraulic systems on anything from small lawnmowers to large mobile and industrial application.

Supporting its hydraulic circuit design offering, Axiom relies on Sun Hydraulics' extensive range of cartridge valves. "Sun gives us the ability to design the brains behind hydraulic circuits. We can offer full proportional control from small pilot systems requiring 1.0 l/min of flow right up to heavy-duty systems delivering 1 100 l/min – and we can engineer hydro-electric proportional systems," he adds.

While the Sun Hydraulics cartridge valves on Axiom's shelves control the hydraulic systems designed by its engineers, housing these valves is a purpose-built manifold block. "We now have three state-of-the-art HAAS VF3 CNC machines that manufacture manifold blocks, all day every day, manufacturing new prototype blocks for any OEM equipment that uses Axiom-designed circuitry," he says.

From a business perspective, continues Tondolo, "Axiom is unique in that we see fellow hydraulic companies as partners and our competitors as customers. While we do service end-users, most of our customers are hydraulic service providers or OEM machine manufacturers. We routinely partner with anyone who needs a hydraulic system or has a better machine idea.

"While Axiom is still Axiom, we now have fantastic new facilities and capabilities and we are upbeat, doing well and striving to be more dynamic than ever," Tondolo concludes. □



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