

Locally engineered hydraulic, lubrication and pneumatic solutions

BMG's Regional Service Centres (RSC), which are situated in major cities and commercial nodes throughout the country, play a critical role by providing engineered hydraulics and pneumatics services to optimise productivity for local industries.

"Through the consolidation of BMG's regional workshop facilities and field services into centralised hubs, dedicated RSCs are able to assist customers who are faced with a lack of engineering expertise, costly machinery repairs and unnecessary downtime periods," explains Daniel Feiteira, BMG's Business Unit Manager for high pressure fluid technology.

"Our specialist service centres with assembly, repair, maintenance and support operations, offer combined technical expertise and value-added product solutions. These dedicated service centres, which focus on core BMG divisions – including hydraulics, lubrication and pneumatics, drives, gaskets and materials handling – operate closely with dedicated branches to meet each customer's specific requirements.

"Advantages for customers include improved service, repair and delivery efficiencies, centralised technical support and easy accessibility to BMG's comprehensive range of quality branded engineering components," says Feiteira.

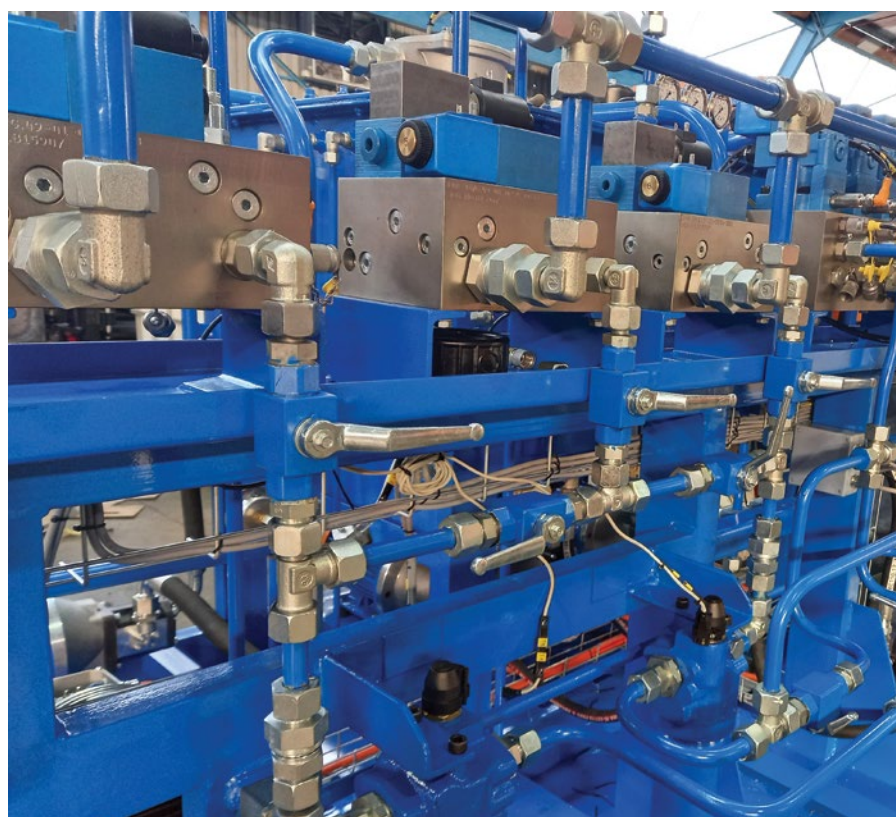
An important focus of BMG RSC's is on fluid technology services that integrate quality branded components, full turnkey engineering and contamination control, as well as test and repair services to ensure optimum performance and extended service life of all Fluid Technology hydraulic and lubrication systems.

"BMG is able to assist with design, manufacture and assembly of all hydraulic, lubrication and pneumatic systems, whether it is for a workshop, process upgrade or even a hydraulic system for an entire new plant," he tells *MechChem Africa*.

"Our highly-experienced teams work in consultation with customers to ensure the most efficient solution – from small multi-purpose power packs to large power packs for mining and industrial applications," he says adding that key industries in the region include sugar, agriculture, shipping, mining, automotive, power and petrochemical plants, manufacturing and general engineering."

BMG follows stringent ISO accredited procedures to ensure the integrity of every hydraulic system. Each repaired component is assessed by the company's testing facility and certificates are issued as assurance that equipment has passed the strictest performance standards.

These products include variable and fixed



A BMG hydraulic control unit for a furnace. BMG is able to assist with design, manufacture and assembly of all hydraulic, lubrication and pneumatic systems, whether it is for a workshop, process upgrade or even a hydraulic system for an entire new plant.

displacement pumps, industrial and mobile valves, low and high-speed motors, as well as cylinders and accumulators.

A critical element in any hydraulic system is contamination control. BMG's systemic approach to fluid analysis emphasises the benefits of a system that is maintained through the use of high-quality filtration equipment, coupled with a regular sampling and testing programme. An efficient fluid analysis service ensures improved performance, extended life of components and reduced maintenance costs.

The company's service to the hydraulics sector includes a mobile workshop that is fitted with tools, equipment and quality branded spares to enable tasks such as troubleshooting, on-site repairs, installations, commissioning and system flushing to be efficiently performed. This service also incorporates on-site fluid analysis and hose and pipe assembly.

Hydraulic power unit (HPU) and cylinder systems

The BMG Hydraulics Engineering team has

recently designed an HPU that will be used on a newly built furnace in Poland. With 10 pages of specifications and requirements presented by the customer, the challenging design process needed the engineering team to consider closely the unique hydraulic design, components and operational parameters for the system.

Design commenced with the decision between one HPU power pack for each of the two furnaces, or a shared system that could service both furnaces, which are situated 15 m apart.

This hydraulic system, which forms part of a 2.0 MW DC Furnace, controls the hydraulic cylinders that raise the furnace's baked graphite electrodes into position and then lowers them into the furnace. Two cylinders work together to steadily lower the electrodes, which are being consumed in the furnace, while new lengths of electrode are added from the top using a crane.

A clamping cylinder pressurises the electrode, while a lifting cylinder raises the new electrodes via an arm. Once the electrode is in place, the lifting cylinder steadily lowers under



Left: A BMG Hydraulics HPU and control system is being used to manage the electrodes of a 2.0 MW DC Furnace in Poland. Right: Two cylinders work together to steadily lower the electrodes, which are being consumed in the furnace, while new lengths of electrode are added from the top using a crane.

the mass of the arm and mast, while the electrode is consumed in the furnace below.

The control of the hydraulic system can be accomplished by a PLC, or managed by an operator in the control room or on the platform above the furnace. The HPU, which was designed by BMG for this prestigious project, conforms to stringent CE certification for operation in Europe. CE certification and conformity were carried out in conjunction with a third-party assessor, in order to precisely meet customer requirements. All relevant information was consolidated into a data pack by the Engineering department.

The HPU efficiently combines a number of motors, pumps, accumulators, directional and pressure relief valves, flow control and filtration components. This system demonstrates how common hydraulic components can be applied to smartly achieve fine control and regulated operation of two cylinders in an exceptional application, such as accurately and continuously managing electrode consumption in these furnaces.

Another recent success for BMG's hydraulic engineering team was the design and manufacture of a radial door hydraulic power unit (HPU) that was urgently required to operate an ore pass radial door at a processing plant in Zambia.

This large-scale project required a system that would open and close one cylinder with a stroke of just under 1.5 m using 15 m hoses, ensuring high performance, precision and control. BMG's solution, which included 56 unique components listed on the general assembly drawing, was an HPU system mounted on a large 630 l tank and supporting frame with two 525 V high-efficiency motor pump sets, three 55 l accumulators and two electrical control panels.

The system utilises various push buttons and switches to control key features – including oil level, temperature, pressure, power failure or emergency, as well as directional control. The

smart design of the system makes use of one 55 kW motor pump set to operate the cylinder, while a 4.0 kW motor pump set charges the accumulators and cycles oil through an auxiliary cooler.

In the event of an emergency, the operator can press the emergency stop button to switch off all pumps and lock the cylinder in place, or push the emergency stop button that will switch off all pumps and close the gate with the pressurised fluid stored in the accumulators. The latter action will also automatically take place in the event of a power failure.

The completed HPU and cylinder system, which was successfully installed in Zambia at the beginning of 2022, ensures that mined ore is passed efficiently through the materials movement channels by regulating the radial gate control.

Manufacturing and repair services

BMG has made substantial investments in manufacturing capabilities in order to efficiently service the hydraulic industry for manifold blocks and cylinder manufacture. There are dedicated hydraulic cylinder servicing workbenches for the repair, servicing and rebuilding of cylinders, as well as a facility for testing equipment at pressures of up to 700 bar, which uses Enerpac equipment.

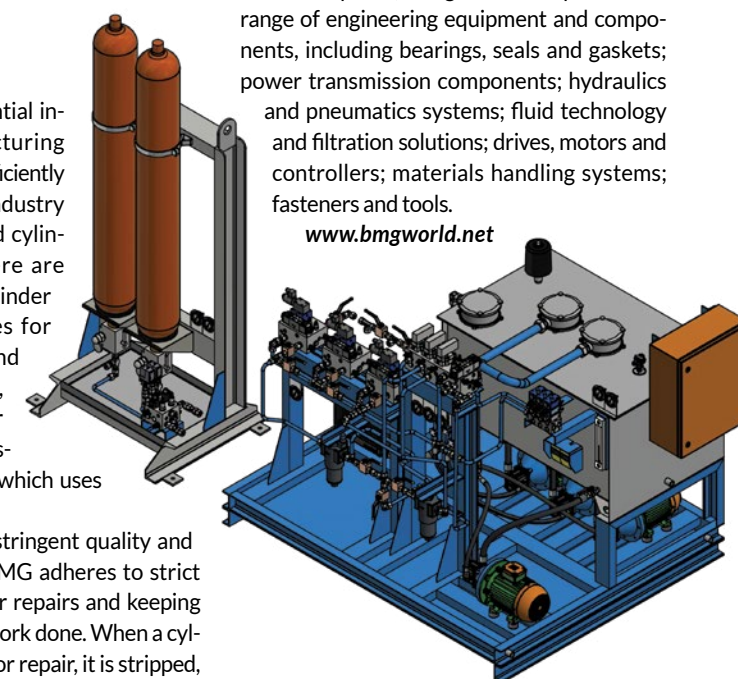
In accordance with stringent quality and safety specifications, BMG adheres to strict protocols for all cylinder repairs and keeping accurate records of all work done. When a cylinder comes into BMG for repair, it is stripped, washed and all components are tagged and hard-stamped for traceability. After components have been refurbished, they are inspected

before the unit goes to final assembly. All cylinders are tested and painted before delivery.

BMG enhances its manufacture and repair service with a total design solution, using the latest CAD and CAM software. This service encompasses expertise from manifold design, to manufacturing and assembly of a complete system. The company's 3-D modelling programmes clearly exhibit the interior and exterior of a manifold in a virtual environment, which enables the identification and amendment of possible design flaws before fabrication commences.

BMG provides a 24-hour customer process support for production efficiency and reliability centred maintenance throughout southern Africa. This service is enhanced by advanced technical and design support across all functional disciplines, along with a comprehensive range of engineering equipment and components, including bearings, seals and gaskets; power transmission components; hydraulics and pneumatics systems; fluid technology and filtration solutions; drives, motors and controllers; materials handling systems; fasteners and tools.

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A 3D design model of the HPU that BMG's Engineering team recently designed for use on a newly built furnace in Poland.