World class products
for all your mobile hydraulic requirements

pumps motors filters control valves

Not just a cast iron gear pump supplier

Commercial Shearing (Pty) Ltd

Tel: +27 (0)11 397 4264/5/6/7
Fax: +27 (0)11 397 3114
comshear@global.co.za
www.commercialshearing.co.za
10 Dartfield Road, Jet Park, Boksburg
OUR COVER 13

Specialising in hydraulics, pneumatics, electromechanics, fluid connection and filtration, Parker Hannifin can act as a single source for all automotive market requirements. The company is committed to helping customers become more productive and more profitable through its global offerings of motion and control products and systems. Parker’s global footprint ensures localised product and service, with more than 300 global factories and 13,000 distribution network locations. Read our cover story on page 13 to find out more about key products that Parker supplies to the automotive industry.

REGULARS

04 SAFPA news
05 News & events
14 New technology
39 Product news

FEATURES

Drives 16 Zest WEG Group, BMG, SEW-Eurodrive, Cummins Africa Middle East

Hydraulics 20 Hyflo, BMG, Hytec Services Africa, Axiom Hydraulics, Dosco Precision Hydraulics


MC in entertainment 30 Beckhoff Automation

IIoT 31 Siemens Digital Factory and Process Industries and Drives, Boulting Technology, Festo, SKF South Africa

Condition monitoring & predictive maintenance 35 Omron Electronics, Zest WEG Group Africa, Instrotech, Marthinusen & Coutts
Hope for the future

There is a tendency to think that IoT is an overseas phenomenon, but I was recently happily surprised to discover that things are happening here as well. I went to a high-level workshop held by the Society for Automation Instrumentation Measurement, the organisation represented by our sister magazine, SA Instrumentation & Control, speakers laid out how South Africa is responding to the fourth industrial revolution (4IR) through the Intsimbi Future Production Technologies Initiative (IFPTI) and its implementing agency, the New Technologies Implementation Platform (NTIP). This is a drive aimed at changing the face of automation in South Africa and is a partnership between government and industry.

According to a recent Accenture report, the disruptive technical environment created by 4IR will place one in three jobs in South Africa at risk, a total of 5.7 million jobs. Government is concerned about this decline in the manufacturing sector and has responded by creating a new Chief Directorate in the DTI, Intsimbi, to look at the future of manufacturing and develop a policy and strategy to deal with the challenges of the disruptive technologies that are part of 4IR. Intsimbi has a mandate to work in partnership with industry to build industrial capability and has full support from government – right up to presidency and cabinet level. Government has put substantial funding toward this programme and is actively looking at additional sources to upscale this project further.

The Intsimbi model has created innovative industry driven solutions that can be sustainably expanded. Dirk van Dyk is the CEO of NTIP and has been running the programme successfully for over a decade. He is passionate about NTIP. Developed for the tooling and machining industry, it was recently relaunched to reflect its rising importance and potential for expansion. He said that NTIP is a private nonprofit company and its job is to create a free technical education system for the future. It provides a platform for industry to develop enterprise competitiveness and technical skills training programmes and it focuses on capacity building through skills and enterprise development and innovative funding partnerships.

The hugely successful NTIP model now has seven facilities countrside equipped with the best technology money can buy. To date 2198 learners have enrolled, 98% from a previously disadvantaged background. NTIP works in clusters – through colleges, centres of excellence, international partners, industry and assessment centres – and has developed a whole range of qualifications aligned with SAQA, all the way up to a masters in tooling engineering. "We have widespread recognition locally and internationally and have proved that it can be done. The programme has succeeded in creating solutions that are sustainable and will prepare South Africa’s advanced manufacturing sector for 4IR," he says.

This issue of Motion Control also covers some other pioneering local contributions. For example an initiative driven by Schneider Electric offers courses to previously disadvantaged youngsters who are aspiring electrical artisans, in PLC automation labs equipped with the latest automation tools, including variable speed drives, instrumentation and robotics. The aim is to empower them with interface abilities, programming and basic electronics skills. Another example is Hytec, which has partnered with the Mandela Libraries Project to supply a containerised library to a school in Limpopo stocked with 2500 books.

There are also some great competitions out there aimed at getting youngsters interested in a tertiary education in science, technology, engineering and mathematics (STEM). Global aerospace company, Paramount Group, has launched a new robotics competition called Parabotics. This will include a year-long training programme for previously disadvantaged kids, where they will get support and training in electronics, programming and robotics. They will learn how to build and program a world-class desktop robot to navigate autonomously through a maze. This training in electronics and mechatronics will equip them with skills in automation and control, machine learning and artificial intelligence.

The Sasol Solar Challenge is another one. This competition pushes universities to develop new processes and equipment for home-built solar powered cars to achieve the efficiency needed to drive from Pretoria to Stellenbosch, and has triggered incredible ingenuity from the teams. This year there were even two high school teams.

And in more good news, a team of high school kids from Tshwane was placed sixth out of 180 teams from around the world participating in the annual FIRST Global Challenge Robotics Olympics in Mexico City. The teams were required to build and code their own robot. Team South Africa, which named itself The Springbots, also won the Walt Disney Award for Imagination and Creativity.

These are just a small selection of projects quietly going on out there that are creating hope for the future.
Driving force for the future

Association Objectives

- Raise the professional standards of the pneumatics and hydraulic industries
- Stimulate and promote education and training in the fluid power industry
- Build synergistic rapport between companies within the industry
- To promote, collect, collate, distribute data, ideas and knowledge
- To encourage the growth of the membership base

For more information visit our website www.safpa.org.za
or call +27 (0)11 888 7163

SAFPA membership certificate may be used to support tender applications, members are also welcome to use the SAFPA logo on all their advertising.
I recently had the privilege of attending the Hydac sales conference in Saarbrucken Germany – an eye opener in terms of a new directive in the fluid technology world. With the introduction of extremely stringent emission regulations in the European Union, numerous OEMs are developing rechargeable electric solutions within the traditional petroleum based industry – in areas such as earth moving equipment, shipyard and commercial forklifts and automotive. The impact is a paradigm shift into a new age of extremely high efficiency electro-hydraulic and pneumatic solutions and products that will start to influence the fluid power market going forward. Although South Africa is a long way from a sustainable green energy supply, this paradigm shift may help with the massive price hikes in traditional fossil based fuels. Agriculture and mobile machinery design will need to adopt this energy efficient product base to sustain a competitive edge.

For the SAFPA council, it has been a busy couple of months. SAFPA was able to enter into an agreement with the organisers of Electra Mining 2018, who graciously made a stand available to showcase its offerings to the mining and engineering community. The exhibition was well attended and as a council we appreciate the ongoing support from the organisers.

Our council Member Manny Vieira recently visited the UK and took time out of his schedule to meet with representatives from the British Fluid Power Association (BFPA), where he negotiated a contract for SAFPA to use the well defined and complete set of hose and safety training manuals. This has allowed the council to finalise a two-day hose safety training course that will be available next year. SAFPA encourages not only the fluid power industry, but also OEMs and end-users of hydraulic and pneumatic products, to send relevant staff members to be trained and exposed to the hazards of fluid conveyance within the industry to ensure they are equipped with the knowledge to mitigate the risks involved in their day to day activities. Watch this space and the SAFPA website for the next available hose safety training course. This will be a two-day course recognised by the Engineering Council of South Africa for CPD points.

With regard to the technical developments within SAFPA, a directive has been implemented to develop a database of the relevant standards and directives that apply to the fluid power industry, both hydraulic and pneumatic, with accompanying fields such as oil, filtration and safety of machinery standards. This will allow numerous technical presentations to be undertaken regarding different focal areas such as cylinders, hoses, oils, manifolds and pressure vessels. The current research has been carried out with the assistance of an OEM, Winder Controls (Brent Wedderburn). The council is appreciative of this input and would like to encourage the input of not only the fluid power product and service suppliers but also the OEMs and the end-users. A defined set of ISO/DIN/EN/SANS standards benefits the manufacturer, supplier and end-user by ensuring quality products are manufactured and delivered within the fluid power industry.

I would like to thank all our members for their involvement and continuing support and wish them a prosperous end to 2018.

From the President’s desk

SAFPA technical evening

At the recent SAFPA technical evening, Wesley Beukes from Hydac gave an interesting presentation on electrostatic buildup and discharge in hydraulic systems and the causes, consequences and measurement devices available for monitoring this phenomenon.

SAFPA at Electra Mining

SAFPA once again exhibited at Electra Mining Africa. Although it was slightly quieter than previous years, the exhibition was outstanding, offering a wide variety of products and stands, and the administration and preparation by Specialised Exhibitions was excellent. “We will definitely be attending the next exhibition,” said Brian Townsend from Cost Time Resources.

www.safpa.org.za
Tel: +27 11 888 7163 Fax: 086 503 4524 e-mail: ctr@safpa.org.za
The following training is offered by SAFPA member companies

<table>
<thead>
<tr>
<th>Name of Company and Contact Details</th>
<th>Course Description</th>
<th>Accredited with</th>
</tr>
</thead>
</table>
| Garnett Cross Hydraulic Courses | Garnett Cross | - Hydraulic Maintenance  
+27 11 453 8063 | Advanced Hydraulics | ECSA |
| Hannes Otto | Festo | - Basic-, Electro-, Maintenance- and Advanced Pneumatics  
Hannes Otto | - Basic-, Advanced-, Maintenance-, Proportional PID and Mobile Hydraulics  
+27 11 971 5626  
+27 82 781 2397 | - PLC, Servo/Stepper and Mechatronics  
Hannes Otto@festo.com | - Public courses in Johannesburg, Cape Town, Durban, Port Elizabeth, East London and Pretoria  
Hannes Otto@festo.com | - In-house courses available across South Africa, sub-Saharan Africa, Mauritius, Madagascar and Seychelles | MerSETA |
| Steve Prophet | Fluidpower Group | - Basic Hydraulics: 3 day course  
Fluidpower Group | Fluidpower Group | Basic Pneumatics: 3 day course  
+27 23 250 8713 | Available in-house or at location. | N/A |
| Allen van Gent | Hytec Group | - Unit Standard: 244690 - Demonstrate Basic knowledge of Hydraulic Components  
Hytec Group | Hytec Group | Unit Standard: 244691 - Demonstrate Basic Knowledge of Pneumatic Components  
+27 83 641 410 | Calender of training dates available. On-site training if required. | MerSETA |
| Walter Zimmerman | Hydraulic and Training Consultants | - Basic to Advanced Hydraulic Training Courses aimed at the artisan to engineer  
Hydraulic and Training Consultants | Hydraulic and Training Consultants | Basic Hydraulics: 3 day course  
+27 11 421 6696 | Walter Zimmerman@ibrust.co.za  
Walter Zimmerman@afrihost.co.za | Walter Zimmerman@ibrust.co.za  
Walter Zimmerman@afrihost.co.za | N/A |
| Wessie van der Westhuizen | Pirtek Southern Africa | - Individual unit standards  
Pirtek Southern Africa | Pirtek Southern Africa | Skills programme  
+27 11 608 2299  
+27 79 886 4358 | Wessie van der Westhuizen@pirtek.co.za | Wessie van der Westhuizen@pirtek.co.za | MerSETA |
| Riaan van Eck | SMC Corporation South Africa | - Basic Pneumatics: 3 day course  
SMC Corporation South Africa | SMC Corporation South Africa | Electro-Pneumatics: 3 day course  
+27 71 413 5807 | Basic Hydraulics: 3 day course  
Riaan van Eck@smcpneumatics.co.za | Electro-Hydraulics: 3 day course  
Riaan van Eck@smcpneumatics.co.za | Johannesburg, Cape Town, PE, Durban. In-house training anywhere else in RSA | MerSETA |
| Steve Prophet | SMC Corporation South Africa | - Individual unit standards  
SMC Corporation South Africa | SMC Corporation South Africa | Skills programme  
+27 71 413 5807 | Walter Zimmerman@ibrust.co.za  
Walter Zimmerman@afrihost.co.za | Walter Zimmerman@ibrust.co.za  
Walter Zimmerman@afrihost.co.za | N/A |

Hytec sponsors container library for Mandela Libraries Project

Hytec has partnered with the Mandela Libraries Project for the fifth time, to supply a fully-stocked and containerised library for the Papong Primary School in the Limpopo Province. Hytec’s R290 000 donation covered a 12x3 metre converted, insulated container with shelving, doors, windows and security. Hytec stocked the library with 2500 books, 200 of which are early readers in the local languages of the province, as well as chairs, floor mats and posters.

The ribbon-cutting was a strong community affair with the headmaster of Papong Primary School, the school’s governing body, and principals from four other local schools attending.

Hytec general manager, Mike Harrison said: “Education is a key pillar for success in Africa and Hytec is extremely proud to sponsor this library. By investing in local communities, and specifically children, we create a better future and broaden the horizons of young minds far beyond the local community.” He added that this container library means that local children are no longer only exposed to what they see locally. Now it can expand to what they read globally. It allows them to see the world in a more encouraging way.

The library brings much needed hope, educational support and social upliftment to this rural school of 520 primary school children. The library handover ceremony was well attended by the local community, as well as all the surrounding schools. Headmaster, Mr Maroga, committed to allowing all other schools access to the library’s resources.

For more information contact Mike Harrison, Hytec, +27 11 975 9700, mike.harrison@hytec.co.za, www.hytecgroup.co.za
Flender has changed

Flender now has a new face in South Africa. Previously the Mechanical Drives business unit within Siemens Process Industries and Drives, the company in August 2018 became a separate legal entity, Flender Pty Ltd. “We are still a Siemens company, and will continue to collaborate on projects and within the various business units to ensure integrated solutions are offered, whilst using the entrepreneurial freedom given by this change to drive strategies with our customers, providing value for them,” says CEO, Michael Cardoso. “An important aspect of the change is the visibility of the Flender branding and we have used the Electra Mining event as the launch of the Flender company.”

Couplings, gear units and service
Cardoso says that the Flender offering has three segments. Firstly, there is a comprehensive range of couplings catering for application requirements up to 10 million Nm torque in various configurations, so they can be adapted to almost any customer need.

Secondly, there is a range of industrial gear units. The FSG range is used to cater for standard applications such as conveyor drives and pump drives. In cases where the application is more complex, these standard units are adapted for customer-specific needs such as mixers and cooling towers. In addition there are specific ranges of planetary (Planurex) and application specific gear units used in specialised and large applications in the steel, mining and sugar industries.

“Thirdly, our aftersales service complements our product offering,” he continues. “We offer all the traditional services, such as repairs in our workshop or on the customer’s site, together with the provision of spare parts and spare gear units. In addition, we can extend our service to engage with our customers on their installed base and assist them in planning their maintenance, thus extending the life of their equipment. Through service contracts we can visit regularly and assess the condition of the gearboxes and proactively plan maintenance.”

Condition monitoring
Cardoso adds that the other focus area for Flender is condition monitoring and this is where digitalisation comes in. “We can assist customers to identify their critical high capital value items and install condition monitoring equipment on these machines,” he explains. “The idea is that you can monitor the equipment on the plant and set it so that it either provides alarms when a problem is identified and eventually shuts off, ensuring no further damage to the equipment. In addition, you can extend this to quite a complex system that can be remotely monitored by specialists who can advise on trends that are picked up by the system. All the options with condition monitoring provide long-term value, in that they minimise downtime for the customer and save a substantial amount of money.

“Our way forward is that we want to supply our customers with new products and services and partner with them so that they understand what is available to them in terms of our technical expertise, monitoring expertise and service expertise,” he concludes.

For more information contact Jennifer Naidoo, Siemens Digital Factory and Process Industries and Drives, +27 11 652 2795, jennifer.naidoo@siemens.com, www.siemens.co.za
SEW-Eurodrive South Africa has introduced a new assembly line at its Johannesburg head office for local production of its K19 and K29 helical bevel gear units. This forms part of the company’s strategy to diversify its product range, and also to offer end-to-end solutions. Helical gears in this new range are 90% to 96% efficient, as opposed to a 40% to 80% efficiency rating for traditional worm gears. Combined with SEW’s IE3-compliant DRN electric motors, the manufacturer is now able to supply its customers with complete high efficiency systems.

“Local assembly of the K19 and K29 series will give us increased competitiveness in small right-angled gear units, in addition to expanding our product range in this regard, particularly in the low to medium torque range of up to 130 Nm,” comments operations manager, Greg Perry. “These highly efficient right-angled gear units are especially suited to be combined with our energy-efficient motors, for example.”

The gearing with infinite fatigue strength means that the drive itself is almost wear-free, which means minimal maintenance. In addition, three standard base strips ensure an optimum connection to a client’s machine, even in critical mounting situations. A universal housing allows for both foot and shaft mounting.

Apart from the high efficiency, another outstanding feature of the K19 and K29 series is its compactness and aluminium construction, which has resulted in a considerable uptake in the food and beverage industry, especially bakeries. Other diverse applications are lifting stations and baggage handling systems for airport logistics, and the automotive, transportation, pharmaceutical and brewery sectors.

For more information contact Jana Klut, SEW-Eurodrive, +27 11 248 7000, jklut@sew.co.za, www.sew-eurodrive.co.za
SMC has changed its name

SMC Pneumatics South Africa now has a new name – SMC Corporation ZA. This name change reflects the growing range of non-pneumatic components being developed by SMC globally, thanks to the company’s continued focus on R&D. With the objective of producing cutting edge products to meet the growing need for automation, SMC’s investment in R&D has increased, with more than 1400 R&D engineers now located at technical centres around the world.

With a portfolio of over 12 000 standard products available in over 700 000 variant forms, SMC launches around 40 new products each year. “This constant stream of new and improved products means that our non-pneumatic products – drives and controls, chillers and air dryers, and static control equipment – have made this name change even more important,” says Peter Findlay, recently appointed general manager of SMC ZA.

To help its South African customers select the most appropriate products for their needs, SMC has created a Sales Engineering Group (SEG) at its Midrand facility. This exists primarily as a technical support function for the company’s broad product range. This support is not only for SMC’s internal and external sales personnel, but is also extended to customers and distributors. SEG’s functions include the following:

- Technical advice on correct product selection
- Support for circuit design
- Counter sales support
- Investigations into application failures
- New product demonstrations
- Guided showroom tours for customers
- Product training for internal staff

“We pride ourselves on having one of the best sales support departments for the automation industry in South Africa,” says product manager, Brian Abbott. “Our vast application experience in both electric drives and standard pneumatic fields enables us to give the best advice and support to our internal and external customers, with queries being handled in a very short space of time.”

To enable shorter delivery times and availability of non-standard stock items, SMC’s local production facility in Midrand was brought into operation in 2016. Abbott adds that this has created a huge competitive advantage as the company can offer product ranges and levels of service not available anywhere else in the country. “As an example we can offer three-day delivery on standard SY valve banks,” he continues. “Other benefits for the customer include free software and tools on the SMC website, a superbly equipped showroom, counter sales, a large stockholding and customised solutions tailored to individual customer needs.”

Training is a core part of SMC’s offering, and in South Africa the company offers five courses: basic pneumatics, electro-pneumatics, basic hydraulics, electro-hydraulics and mechatronics. National training manager, Riaan van Eck says that these training courses were developed to give machine operators, maintenance staff, technicians and engineers the knowledge and skills they need to operate and maintain their production machines on a daily basis. “Although we have five standard courses scheduled throughout the year across the country, we also offer customers the option of onsite training. We can also customise courses depending on individual customer needs,” he adds.

The training department also offers educational training equipment for schools, colleges and universities and these are available to customers for in-house training. This range of training equipment covers a wide range of topics including e-learning, circuit design and simulation software, vacuum technology, energy efficiency in pneumatics, hydraulics, PLCs, instrumentation process control, mechatronics and Industry 4.0.

To deliver automation solutions to its diverse customer base, SMC has a vast knowledge of applications in a wide range of industries ranging from automotive to food and beverage to packaging and mining. “In South Africa we have a diverse and driven team ready to help our customers,” says regional sales manager for the northern region, Shaun Collett. “Our goal is to give the best possible service we can to all our customers. We provide solutions and help our customers improve their processes, saving them time and money.”

“We are committed to delivering the highest level of support at all times in line with our dynamic, customer-focused approach,” concludes Findlay.

SMC Corporation is a global leader in pneumatics technology and industrial automation, and was voted for three consecutive years as one of the most innovative global companies by Forbes magazine. With its headquarters in Tokyo, the company has 51 subsidiaries around the world, with sales offices in 83 countries and employs over 20 000 people. It has an 8200-strong sales force of experts who enjoy a close working relationship with their customers.

For more information contact SMC Corporation South Africa, +27 11 100 5866, sales@smcpneumatics.co.za, www.smcza.co.za
The power of technology and fashion has combined in a thought-provoking project that demonstrates how data can transform African cities. Technology leader Siemens used data from the cities of Lagos, Nairobi and Johannesburg and wove it into unique fabrics which tell a story about each city. Three iconic African fashion designers then used the fabrics to create one-of-a-kind outfits, which are as stylish as they are smart.

Fabric – launched in Johannesburg on 23 August – showcases how digitalisation of the industrial world is fast becoming the biggest transformation of our time, and highlights how data combined with smart technology will ensure that tomorrow’s cities are more connected, efficient and powered.

Three African fashion designers created 12 extraordinary outfits from vast amounts of data extracted from the chosen cities. The intricate garments by John Kaveke (Kenyan), Zizi Cardow (Nigerian) and Palesa Mokubung (South African) outline a variety of patterns from power grids, shipping and tonnage to population densities, transport and areas of connectivity. Data from each of these sectors tell a powerful story about each city and how digitalisation can transform them. All of this is told through the universal language of fashion and design.

“This is how we thought to express the aspect of digitalisation,” said Keshin Govender, group communications head for Siemens South Africa. “As urbanisation rapidly increases, cities need to start preparing for the effects it will have on infrastructure, energy, water and transportation systems.

“Data gives greater insight on what makes each city tick, helping us make calculated decisions and improve service delivery to the people. Through the Fabric project, it was evident that the challenge is not what to do with the avalanche of data, but rather accessing reliable and recent data. This project has highlighted the need for access to data in order to make sound urban planning decisions.”

Siemens is well positioned in automation, electrification and digitalisation to find solutions to the various challenges of today. It is uniquely positioned to unlock the potential of digitalisation through its combination of digital expertise, domain know-how and understanding of hardware in order to leverage digital technologies and optimise operations.

“While there is a growing adoption of intelligent machines within certain sectors like the automotive industry, the real opportunity for Africa lies in sectors where it has not yet been explored like manufacturing, energy and transportation,” concluded Govender. “This is a remarkable opportunity for Africa, which will result in the establishment of new industries and new jobs while exponentially increasing skills development and contributing to GDP.”

For more information contact Keshin Govender, Siemens South Africa, +27 71 492 3789, keshin.govender@siemens.com, www.siemens.co.za

Megadyne has acquired the Challenge Group with locations in the UK, Ireland, Australia, South Africa and China, and Sprockets & Chains in South Africa.

Headquartered in the UK and active in production and distribution of a wide range of power transmission products across the globe, the Challenge Group was the first foreign company to manufacture and export power transmission products from mainland China.

This new partner represents a considerable competitive advantage and opportunity for Megadyne to consolidate its worldwide position into the power transmission sector, and to increase its market share into the various regions where Megadyne and Challenge are involved. Megadyne is continuing its strategic development plan aimed at confirming its leadership in the power transmission and conveying system business and expanding its product range, both through strong organic growth and through geographical and strategic acquisitions.

For more information contact Patrizio Trevisan, Megadyne South Africa, +27 12 661 1652, patrizio.trevisan@megadynegroup.com, www.megadynegroup.com
Sasol Solar Challenge 2018

The Dutch Nuon Solar team has won the 2018 Sasol Solar Challenge, clocking a distance of 4030 kilometres from Pretoria to Stellenbosch. Together, the nine teams competing this year drove 16 249 kilometres, stopping in 18 towns. Kids en route were also treated to virtual reality tours of the inside of a solar car as it travelled through the country. As with various other science and engineering-based games to stimulate interest.

The Sasol Solar Challenge is held every second year as a testament to the power of science, engineering, maths and technology. On their journey through South Africa, the solar cars become travelling laboratories, demonstrating to the schools that joined them at each stop exactly what practically applying those subjects can achieve. The competition pushes universities, and the major technology companies that sponsor them, to develop new processes and equipment to make the efficiency needed for an eight day road trip possible. “We’ve seen incredible ingenuity from these teams,” said Chris Selwood, president of the International Solar Car Federation.

In the local battle, Tshwane University of Technology’s Sun Chaser 3 finished an impressive 2397 kilometres. NWU’s Phoenix had an entirely unique rotating solar panel, allowing it to follow the sun as it drove through the country. High school team Sonke covered an admirable 660 kilometres with its first ever solar car. Charlotte Mokoena, Sasol’s executive vice president for human resources said: “You created a vehicle of inspiration and hope, and have contributed to the future of South Africa’s energy, aerodynamics, motoring, engineering and education sectors.”

For more information contact Anzet du Plessis, Proof Africa, +27 83 557 2322, Anzet@proofafrica.co.za

Springbot team excels in Global Robotics Olympics

A team of learners from Tshwane was placed sixth out of 180 teams from around the world participating in the annual FIRST Global Challenge Robotics Olympics in Mexico City. The teams were required to build and code their own robot. Team South Africa, which named itself The Springbots, also won The Walt Disney Award for Imagination and Creativity, awarded to the team that displays the most creative approach to problem solving. The University of Pretoria’s MakerSpace centre and a group of engineering students mentored the team, training them to build and code a functional and competition-ready robot. This year’s theme, Energy Impact, required learners to think strategically how to make the shift towards a cleaner and more efficient energy source.

The team had to build and code the robot to show how mechanical components, coupled with software, can address real-world problems relating to sustainable and renewable energy.

The robot, which was required to be 50 cm x 50 cm, was then handed to the team of learners to dismantle, practice and redesign, based on MakerSpace’s advice for the competition. At the competition in Mexico, the team had to reassemble their unit and test its connectivity, software and mechanics to ensure it was functional. Their robot was then given just two and a half minutes to select the best energy options by placing boxes in corresponding areas to activate the chosen energy source. In some instances, mechanisms such as the wind turbine crank needed to be activated.

For more information contact Liesel Swart, University of Pretoria, +27 12 420 3650, liesel@roundtree.co.za, www.roundtree.co.za

Paramount launches Parabotics competition

Global defence and aerospace company, Paramount Group, has launched an exciting new annual robotics competition called Parabotics, a contest open to high school pupils, college students and university undergraduates across South Africa. The Parabotics competition will enable young learners to be educated and trained on how to build and program world-class, desktop-scale robots, while being encouraged to pursue tertiary education in science, technology, engineering and mathematics (STEM).

Announced at the recent Africa Aerospace and Defence Exhibition (AAD), Parabotics is a Paramount Group initiative hosted in partnership with the Technology Localisation and Implementation Unit and the AAD Youth Development Programme (YDP). The Parabotics partnership will also include a year-long training programme, initiated annually for previously disadvantaged youth, whereby they will receive support and training in electronics, programming and robotics. Students will learn how to build and program a desktop-scale robot to navigate autonomously through a maze. The YDP transported over 1000 youth to the AAD Exhibition from all parts of South Africa, made possible through generous sponsorships.

Alison Crooks, CEO of Paramount Industrial Holdings said: “Training in electronics and mechatronics will equip South African youth with next-generation skills in automation and control, machine learning and artificial intelligence – technologies required to meet the challenges and opportunities arising from the Fourth Industrial Revolution.”

For more information contact Shamendran Pillay, Paramount Group, +27 11 697 0503, shamendran.pillay@paramountgroup.com, www.paramountgroup.com
In celebration of 45 years of successful growth and development in this country, managing director of Festo South Africa, Brett Wallace paints a picture of the company’s rich history, global heritage and ongoing pursuit of new improved automation solutions for Africa.

Festo was established in 1925 in a small city in Stuttgart, Germany by Albert Fezer and Gottlieb Stoll. The company began by creating tools for woodworking and quickly earned a reputation for providing its customers with cleverly designed and robust products. “These products and solutions challenged conventional thinking about the woodworking industry and it is that same philosophy that underpinned the founder’s approach when they recognised the potential of industrial automation and established an automation product range,” says Wallace.

Festo South Africa opened its doors in 1973. “Throughout this time, we have remained committed to delivering the best possible South African expression of the global Festo mandate,” he continues. “This means building a presence that is dependable, sustainable and focused on achieving growth not only for our customers, but for the economy in general.”

In 2015 Festo launched another differentiator, investing more than R5 million in an application centre at its Johannesburg headquarters. This boasts state-of-the-art electric handling and vision systems, allowing customers to physically test any application in a controlled environment in order to confirm important details such as speed, accuracy and cycle time.

In addition to its South African presence, Festo has been actively present in southern, central, east and west Africa, supplying manufacturing industries across the continent with cutting edge control solutions for over four decades.

Festo’s focus areas, or business units, act cohesively to provide customers with single source best-fit solutions in pneumatic factory automation, electric automation, process automation, customised solutions and skills competence development. These enable Festo to offer automation solutions to support the widest range of industry sectors, which include automotive, food and beverage, packaging, pharmaceuticals, chemicals, petrochemicals, oil and gas, water and wastewater, mining and power generation, mobile pneumatics and electronics.

Besides having an expansive product range, Festo offers a basket of value add services. These include:

- Complete support from its dedicated contact centre, technical support engineers and the global support community.
- An efficient user-friendly online shop that takes purchasing convenience to new heights.
- Software tools for design solutions and detailed product specification.
- Qualified, professional and passionate people who are industry sector specialists.
- Project conceptualisation, design, simulation and validation including energy-saving solutions.
- World-leading technical education from hardware through to skills development and curriculum supply development, competency evaluation and investment return.

- An average stock holding value of R150 million and world-class logistics capabilities to ensure speedy delivery throughout the continent.
- Local manufacture of a wide range of non-standard cylinders allowing individual customisation.
- Repair services for a variety of components, ensuring maximised product life cycle and cost efficiency.
- Turnkey systems ensuring optimum solutions and best total cost of ownership.

In a message of celebration, Wallace has the following to say:

Over the past 45 years we have seen multiple competitors come and go. We have retained our position of strength and our success as an organisation has been propelled by hard work and commitment, coupled with a determination to understand market trends as well as current and future needs of our customers.

Despite the economic challenges of the past five years, our proactive visionary strategy has allowed us to grow our revenue, market share and sales volumes across all sectors. This is testament to a customer-centric business model that is flexible and adaptive to market requirements, business processes that leverage global efficiencies and a dynamic and competent team of motivated employees.

Being a global driving influencer at the forefront of Industry 4.0 has further enhanced our productivity, profitability and employability. Festo takes a holistic view of the changes within the realm of automation, whilst considering non-technological aspects such as the interaction between humans and machinery as well as the critical need for training and qualification. We embrace this new revolution and look forward to the creative opportunities it promises to bring.

Our passion for innovation, combined with a dedication to learning and skills development has kept us in the lead. This attitude has not only been beneficial to us as an organisation but to the thousands of people who make use of our technology and solutions every day.

For more information contact Ntando Ndokweni, Festo, +27 11 971 5535, ntando.ndokweni@festo.com, www.festo.com
Parker honoured with Red Dot award

Parker Hannifin has been honoured with the Red Dot Award: Product Design 2018 for its integrated drying and filtration system, Oil Free Air System (OFAS). The German Red Dot Award is one of the most prestigious design awards and recognised as a seal of design excellence worldwide. The Red Dot is established internationally as one of the most sought-after quality marks for good design. The products are judged by an international jury of well known design experts.

The innovative OFAS system combines sophisticated Oil-X filtration technology with an optimised drying system. It has been designed to provide consistent high performance even over an extended period of time. Developed to set a new standard for the industry in terms of efficiency and productivity, it uses a specialist high strength desiccant cartridge with snowstorm filling that maximises packing density, prevents channelling effects, guarantees a consistent dew point and contributes to an extremely low differential pressure, helping to reduce the energy consumption of the compressor. Minimum total cost of ownership and the best cost-benefit ratio of any high quality air treatment solution are guaranteed through reduced service times, more simplicity in the replacement of parts, maximum uptime, extended maintenance periods and longer operational life. With OFAS, Parker Zander has redefined compressed air drying and filtration in order to provide for the best possible combination of economy, efficiency, quality, functionality and longevity.

Schneider Electric provides VSD training

Schneider Electric recently hosted two complimentary VSD Schneider teachers’ courses at the French South African Schneider Electric Education Centre (F'SASEC), based at the Vaal University of Technology (VUT). These courses are aimed at giving both students and employees an introduction to motors and variable speed drives, further enhancing their future ability to operate and establish machines.

F’SASEC VUT offers courses to young, previously disadvantaged South Africans who are aspiring electrical artisans interested in pursuing a career in the field of energy. “One of our biggest goals is to spread access to reliable, affordable and clean energy through a combined approach of training, business models and investments. Essential to achieving this, is providing access to education through training programmes in the field of energy,” says Zanelle Dalglish, Anglophone Africa head of sustainable development.

Students studying at F’SASEC are already benefitting from a competitive edge in the workplace, thanks to the centre’s PLC automation labs. These labs are equipped with the latest automation tools, including variable speed drives, instrumentation and robotics, and aim to empower students with interface abilities, programming, and basic electronics skills. “The course offered by F’SASEC emphasises practical experience to prepare students for industry. The training centres feature the latest Schneider Electric technology, while also affording students the opportunity to benefit from advanced and digitised teaching methods,” Dalglish says. “In the face of IIoT and Industry 4.0, it is important that we develop the critical skills needed to adapt to this new business environment.

For more information contact Prisca Mashanda, Schneider Electric SA, +27 11 254 6400, prisca.mashanda@schneider-electric.com, www.schneider-electric.co.za

Appointments

Bosch East Africa Consulting Engineers has appointed Walter Awinda as managing director.

Hudaco Industries has appointed Ernie Smith as portfolio executive for Bearings International and Bauer.

For more information contact Lisa de Beer, Parker Hannifin SA, +27 11 961 0700, lisa.debeer@parker.com, www.parker.com/za
Global partnerships for automotive support

Parker Hannifin is a global leader in motion control components and system solutions serving industrial, mobile and automotive markets. Specialising in hydraulics, pneumatics, electromechanics, fluid connection and filtration, the company can act as a single source for all automotive market requirements. Customers rely on Parker's proven multi-technology systems, engineering excellence, world class manufacturing and customer service to provide comprehensive application solutions and reduce manufacturing time and total cost of ownership.

Parker is committed to helping customers become more productive and more profitable through its global offerings of motion and control products and systems. In an increasingly competitive global economy, the company seeks to develop customer relationships through technology partnerships. Working closely with customers, it can ensure the best selection of technologies to suit the needs of their applications.

Parker solutions
Among the challenges in automotive manufacturing is how to achieve globalisation in order to address growing markets. Another is to improve efficiencies in TAKT time – the rate at which a finished product needs to be completed in order to meet customer demand – in order to increase overall productivity.

Parker’s global footprint ensures localised product and service, with more than 300 global factories and 13 000 distribution network locations. Its machine schematic review process ensures that the most efficient systems are provided to customers. Programme management services address a process in order to commodisise the products used on a programme and make recommendations for the ongoing management of spare parts inventory. In addition Parker field sales and distribution representatives are present on the plant floor, addressing system diagnostics, product functionality and product lead time to ensure manufacturing productivity.

Here are some of the key products that Parker supplies to the automotive industry:

Leak free weld water solutions
Parker’s actuators and accessories for welding robots prevent water expulsion. Their integrated design allows for dry weld tip changes and keeps water off equipment and out of the production cell. Paired with the Water Saver, the Water Retract Actuator (WRA) prevents weld water expulsion from the robot during tip changes, keeps water off equipment and electronics within the cell, and reduces water consumption costs and the need for expensive chemical additives.

Die cast hydraulic system with Parker Eco Drive system
There are many benefits to using a Parker Eco Drive system. Designed with closed loop pressure control, it will increase die casting speed. Piston speed ranges from 0,05 to 10 ms, with a maximum acceleration of 500 m/s, and a pressure increase from 160 to 300 bar in 50 ms.

Trainair solutions
Trainair piping systems were designed to avoid the issues created by traditional systems. Benefits of using Trainair include corrosion resistance, immediate pressurisation and provision of clean air, together with a leak-free guarantee.

Compressor room filtration
In the compressor room, Parker offers many products to filter and condition dry air before it is distributed throughout the plant. Parker can even carry the controlled air to a customer’s specific requirement through an integrated supply system. The company can assist with most applications across a full range of sizes.

Filtration
Parker filters protect customer equipment, resulting in quality finished products, together with reduced downtime and lower costs. Portable filter carts are the ideal way to pre-filter and transfer fluids into reservoirs or to clean up existing systems. Using a Parker portable filter cart is the most economical way to protect a system from damage caused by contamination. In addition, point of use desiccant dryers are the simplest and most reliable method of ensuring that sensitive pneumatic equipment is not exposed to damaging moisture.

Fluid condition monitoring
With 15 years’ experience in manufacturing the world’s bestselling white light portable particle counter, the CM20, the progression to the LaserCM with its opto-mechanical, continuous wave SPSL single point source laser is both a natural and customer driven development.

For more information contact Lisa de Beer, Parker Hannifin SA, +27 11 961 0700, lisa.debeer@parker.com, www.parker.com/za
Taking hydraulics to a new level

Not so long ago, only the largest OEMs could afford to develop complex proprietary control systems. But the recent introduction of versatile digital ecosystems connecting electronic control hardware and software to the cloud will be a game changer for mobile hydraulic machinery and equipment manufacturers.

By empowering design engineers with real-time access to the most sophisticated data collection and monitoring capabilities, such systems are enabling OEMs to customise electro-hydraulic control parameters to meet highly specific application requirements.

This levelling of the playing field is catalysing a new era of mobile machine and equipment design innovation, as OEMs across industries, tiers and geographies develop customised solutions that digitally integrate their customers’ hydraulic and machine controls with IIoT.

Whether managing a fleet of transport trucks, utility vehicles, refuse collection truck, or complex construction, agricultural and mining machinery, the ability to conduct real-time monitoring of vehicle functions and operator performance enables increased productivity, improved customer satisfaction, improved operator safety, optimised energy and fuel efficiency, the ability to track performance variables continually, the ability to selectively share data across distribution and supply channels and comprehensive reporting for analysis and improvement.

Now imagine adding to these benefits the ability to custom modify from a remote location onboard programs, software releases, alerts and notifications, as well as specific system parameters such as operating ranges. Today’s mobile IIoT systems enable OEM and/or user-based control system designers and technicians to respond rapidly to ever-changing application requirements, providing enterprises with a strong competitive advantage.

Today’s mobile IIoT ecosystems securely monitor, access and adjust operational parameters via laptop, tablet or cellphone anywhere the Internet is available, rapidly delivering functional adaptations and improvements to fleet managers, engineers, call centre operators, technicians, and administrators across the channel as required.

Next generation mobile IIoT systems are highly user configurable, which means both control functions and interfaces can be customised to match specific customer needs. Operational parameters and controls are easily adjusted to improve the efficiency of the equipment and of related business operations. Interface details such as colours and the types and designs of freestanding or display-based controls can be customised to match each customer’s branding requirements.

Anywhere mobile equipment is used, no matter how vast the regions in which that equipment is deployed, mobile IIoT systems offer an opportunity for higher levels of productivity improvement and cost efficiency. Across all markets, mobile IIoT systems are expediting the time to market of cost-saving operational improvements.

The hardware components of smart gateways are designed to withstand punishing industrial and outdoor environments. When new equipment installs are adopted, previously existing vehicles can typically be retrofitted to connect to the IIoT. Electronic control systems are compatible with a wide range of intelligent components, including hydraulic pumps, accumulators, cylinders, filters, tubing, fittings, power units and valves.

Data is aggregated into customisable reports that identify trends and anomalies, enabling operation engineers and technicians to adjust system functionality with the ultimate goal of improving productivity and the efficiency of business operations.

Perhaps the most significant benefit of remote configurability and Internet-based data access is the downstream effect on innovation.

Enterprise software connecting machines to the cloud is accelerating the collection and analysis of data, leading to new insights that not only improve the competitiveness of individual market players, but raise the performance bar on entire industries.

Imagine mining sites where near instant access to troubleshooting data triggers alerts and shutdowns, saving lives. Imagine how the improved flexibility and responsiveness afforded by remote control might enable engineers to experiment with micro-repositionings of a single sensor to ensure the fastest possible identification of wear factors for continual improvements in uptime. Imagine the ongoing analysis of millions of operator performance profiles, enabling OEMs to go to market with next generation ergonomic improvements for greater in-the-cab efficiency and reduced operator injury.

The complex mechanical, electronic and hydraulic systems used by mobile equipment and machinery, when supported by digital ecosystems, are expected to usher in a new era of mobile solution innovation. For the first time, mobile equipment OEMs and their customers have immediate access to large and robust collections of data which, upon analysis, can be quickly acted upon to improve functional efficiencies, operator wellness and productivity.

Today’s motion control enterprises are leading the way towards a new era of safer, cleaner, more efficient and more reliable mobile equipment performance.

Read the full story at http://motioncontrol.co.za/papers/parker1.pdf

For more information contact Lisa de Beer,
Parker Hannifin SA, +27 11 961 0700,
lisa.debeer@parker.com, www.parker.com/za

Gear units and motors from SEW-EURODRIVE have always set the trend and established new standards in drive technology. For this reason, the quality label “made by SEW” has become a hallmark of quality in the drive industry. Market-orientated products developed and manufactured in-house, as well as uncompromising quality, are the cornerstones of our success.

SEW-EURODRIVE - Driving the world

Tel: +27 11 248 7000
Email: info@sew.co.za
Web: www.sew-eurodrive.co.za
Extensive electric motor range from Zest

Electric motor applications require a reliable, robust fit-for-purpose product that gives the end user the requisite low total cost of ownership. Fanie Steyn, manager for rotating machines at Zest WEG Group, says it is encouraging that most industries in southern Africa have woken up to the fact that purchasing the standard efficiency motor is not always the best long-term option.

As a leading supplier of electric motors in southern Africa, the Zest WEG Group offers a comprehensive range. All facilities adhere to stringent quality control processes, are ISO 9001:2015 accredited and motors meet all the requisite international standards and regulations.

“The depth of the WEG low voltage range of electric motors allows us to offer customers the best fit for individual applications, and we are also able to draw from a line-up of motors that are engineered for specific application requirements,” says Steyn.

The WEG range starts from 0.18 kW motors that would be used to drive small fans or used in exhaust applications and goes up to 1250 kW motors used to drive large pumps or ventilation fans. Electric motors for specialised applications would include slip ring motors, roller table motors, saw arbor motors, gas pump motors, pad mounted motors, smoke extraction motors, permanent magnet motors, cooling tower motors and wash down motors for hygienic applications.

For more information contact Zest WEG Group, +27 11 723 6000, info@zestweg.com, www.zestweg.com

Drive control for pumps and agitators

Nord drivesystems encompass optimum drive configurations to ensure optimum performance of mechanical speed control for specific applications in almost every industry. “Nord drive solutions, which meet stringent local and international quality standards, are known for reliability, energy efficiency, low noise levels, extended service life and reduced maintenance,” says business unit manager, Mark Barbour. “These modular drive systems incorporate advanced drive technology and special design features to meet the exact requirements of every operation. In the processing sector for example, Nord drivesystems are engineered with reinforced bearings and increased bearing spacing, especially for agitators, pumps and mixers used in process plants.”

Reinforced and larger output shaft bearings allow the gear unit to absorb high radial and axial bearing loads that occur during the agitating process, extending the service life of the gear units. To enhance efficiency, an agitator version with increased bearing spacing and reinforced bearings is available. Advantages of large oversized output bearings include quick assembly, large bore capacities, high radial load capacity and extended service life.

Modular Nord drivesystems are easy to expand or upgrade using a minimum of different types and sizes of components. Local assembly enables prompt delivery and the ready availability of spare parts. Included in the range are drives for torques from 10 Nm to over 250 kNm, electric motors in the power range from 0.12 to 1000 kW and frequency inverters with the required power electronics up to 160 kW. Inverter solutions are available for conventional control cabinet installations, as well as for decentralised, fully integrated drive units.

For more information contact Lauren Holloway, BMG, +27 11 620 7597, laurenhy@bmgworld.net, www.bmgworld.net
DeltaV™
PK Controller

Powerful Standalone.

Easily Integrated.

The DeltaV PK Controller brings faster logic execution, built-in native Ethernet device protocols, and many scalable sizes, enabling it to address a wide variety of applications such as Ethernet device control, wellpads, and a wide variety of system sizes. From small-scale applications like skid-units, to your large-scale traditional control operations, the multi-purpose, multi-functional controller can handle your toughest demands no matter the size or stage of your operation.

Features
- Runs standalone or as part of a DeltaV system
- Seamlessly merge into a DeltaV system resulting in one native database and system
- Eliminates the cost and time-consuming data mapping exercises
- Saves cabinet space by leveraging the six built-in Ethernet ports
- Supports 1:1 redundancy without adding footprint or configuration changes
- Flexible I/O enables you to choose from M-series traditional, S-series traditional Charms I/O Card and Wireless I/O cards to best suit your needs
- Integrated safety with DeltaV SIS Electronic Marshalling and DeltaV SIS 1508 Safety Logic Solver

Automation & Control Solutions

+27 (0)11 246 6700 • 0661 257 738
International RFQ: rfp@aveng-acs.com • www.aveng-acs.com

Complete Process Control Solutions and Services Provider
Having an in-house Projects Department to focus on the specific requirements of project houses, OEMs, and other tender-related project activity is starting to bear fruit for drive and automation specialist, SEW-Eurodrive, which has clinched a major order for five M-Series industrial gear units for a mining operation in West Africa.

The Projects Department, headed up by Andreas Meid, with Pat Marquez as project sales coordinator and Brett Weinmann in charge of Project Sales Development, oversaw this entire project from receipt of the initial order to successful installation and commissioning at the mine, in addition to any backup service and technical assistance required.

It is this capability to offer complete solutions packages, as opposed to standalone products, in addition to the necessary aftermarket support, that has resulted in SEW’s Projects Department showing consistent growth year on year. “We pride ourselves on our on-time delivery in particular, which is a clear differentiator for us in a highly competitive market,” Meid comments. “We are committed to supplying high quality products, in addition to the continuous improvement of our customer service offering.”

The Projects Department also has a drawing office and a mechanical engineer to compile any calculations that are needed. Its core function is to respond to queries from either project houses or OEMs for specific project work. It focuses mainly on greenfield projects related to conveyors, agitators and mixers in mineral processing applications.

“Based on the enquiries received, we work in conjunction with the specific project house or OEM to offer a complete solution for their mining clients. In other words, our products essentially allow them to complete their portion of the work in hand,” Meid elaborates. Such collaboration between suppliers and related companies is a growing trend in response to a tough business environment, and clients’ need to reduce costs by installing the latest technology.

The Projects Department liaises closely with its clients so that they can best meet their own technical requirements and time constraints. “Our project management in this regard is critical, from the time that the order enters our system, to the point where the product is finally delivered,” Marquez elaborates. “Once this stage is reached, other departments such as Field Service also become involved. We specialise in integrated solutions. A lot of clients tend to regard SEW solely as a gear unit supplier, but we offer a host of ancillary services that can add significant value, reduce risk and downtime and improve efficiency.”

It is for this reason that the Projects Department remains in a growth phase, with the bulk of SEW’s project work being secured in the rest of Africa at present. In this regard, it also works closely with the Exports Department, headed up by Marcio Sicchiero, to realise additional opportunities on the continent.

In terms of main products, the M-Series industrial gear units (with the ‘M’ indicating ‘modular’) are ideal to meet the highest demands for quality, reliability, and performance. The product range has been optimised for a range of drive characteristics, allowing for simple machine design by easily adding options and mounting parts.

A long service life is guaranteed due to highly efficient lubrication and sealing, which also cuts down on maintenance requirements. Easy mounting and installation are facilitated by advanced features such as Extended Bearing Distance (EBD) and an axial thrust bearing arrangement on the output shaft.

Looking to the future, Meid concludes that SEW is well on its way to being perceived as a sole solutions provider for its clients. “This gives us the added possibility of integrating some of our latest electronics products as well in future. While our mechanical product remain our core focus, particularly given the harsh operating environment in Africa, combined with the lack of technical skills, SEW has always been sufficiently forward thinking to make sure our clients have access to the latest technology and developments.”

For more information contact Jana Klut, SEW-Eurodrive, +27 11 248 7000, jklut@sew.co.za, www.sew-eurodrive.co.za
Cummins ISG is a revolutionary global heavy duty engine platform developed using a combination of patented technologies and advanced production techniques. It has been developed specifically for heavy duty commercial applications such as construction tippers, tractors, and forklifts. Sales and business development manager, Bo Fu, explains that the ISG is available in 10.5 litre and 11.8 litre displacements, ranging from 228 to 382 kW, in order to meet a broad range of on-highway market requirements and emissions standards.

The Cummins ISG series features an optimised power to weight ratio, with a sculptured block that retains high rigidity while removing unnecessary mass. Weight savings are enhanced further by the use of composite materials for the oil pan and valve cover. This results in a remarkably low engine weight of only 862 kg, while retaining all of the structural strength and durability that characterises Cummins’ heavy-duty engines.

The Xtra-High Pressure Injection (XPI) fuel system boasts multiple injection events driven by high precision electronic controls, contributing to an impressive torque peak torque of nearly 2300 Nm, in addition to a torque rise as high as 60%. This translates into an exceptionally fast response to increasing load factors from low engine rpm.

The low weight design of the Cummins ISG series means that more payload can be delivered, making it the ideal power solution for heavy duty trucks in long haul, regional haul, and vocational applications, as well as buses, motor coaches, fire trucks, and recreational vehicles.

Streamlined architecture means 50% fewer parts for improved reliability and ease of servicing, while the integrated engine brake delivers 50% more braking horsepower than bleeder compression brakes, which enhances downhill control and safe vehicle operation.

Fleetguard two-stage fuel filters with NanoNet media provide protection against damaging particles down to 5 µ, while the Fleetguard StrataPore oil filters are pre-charged with chemical additives for extended drain intervals of 100 000 km.

“The ISG engine family is unique to Cummins, giving equipment manufacturers an extremely efficient and cost-effective power unit, backed by the renowned dependability of Cummins engines,” Fu says. “In addition, the ISG series is stronger, lighter and quieter, and outperforms competitive engines in every benchmark from power and torque to fuel efficiency, driveability and reliability.”

For more information contact Amina Abudanpoka Kaguah, Cummins Africa Middle East, +27 11 028 8622, amina.kaguah@cummins.com, www.cummins.com
Specialised hydraulic power units from Hyflo

Hyflo offers the local market a comprehensive service for hydraulic systems, which includes the manufacture of hydraulic power units (HPUs) designed to meet exact customer specifications. The Hyflo engineering team at the Johannesburg head office facility has recently completed an 11 kW HPU, which has been designed to drive a conveyor system at a mine in Limpopo.

“This HPU, which is capable of supplying a high-torque, low-speed function for startup, as well as a low-torque, high-speed function for normal operation, ensures optimum performance and power efficiency in harsh mining conditions,” says project engineer, Tinus Vermeulen. “An advanced digital pump control system enables the HPU pump to provide various functions, which are adjustable to meet exact requirements.”

This robust system is equipped with a Parker PV electro-hydraulic axial piston pump, which is controlled via an electronic module located in the local control panel. Other features of the HPU are a strengthened frame, 400 litre tank and hydraulic control manifold, as well as pressure and return line filtration. Safety features include maintenance indicators and low-level and high temperature cut-outs.

All Hyflo systems are manufactured according to stringent quality and safety standards, as required by customers in diverse industries, including mining and quarrying, manufacturing, agriculture, marine and offshore services, as well as general engineering.

Hyflo’s fluid power solutions encompass hydraulics and pneumatics, hose and fittings, as well as automation systems.

Desiccant breathers

BMG’s fluid technology services include solutions for hydraulics and pneumatics, lubrication, filtration systems, hydraulic hose and fittings, as well as instrumentation, pumps and valves. “The range encompasses FG EcoPart filter elements for stationary and mobile hydraulic systems from the Filtration Group. These components, with defined filter performance and purity class, comply with stringent DIN and ISO standards and have all other necessary standard industry approvals.

These components are suitable for diverse hydraulic applications, as well as gear oil treatment. FG Filter elements reduce solid particle contamination to the prescribed contamination class, to prevent the ingress of dirt from the environment and maintain the properties of the hydraulic fluid for an extended time period. Included in this range are FG desiccant breathers, which protect lubricants and machines from damage caused by moisture and the ingress of particles.

The FG breather replaces conventional dust caps or breathers often found on new equipment. When contaminated air enters the top of the breather, it passes through layered filter media, blocking particles from entering the breather, thus preventing wear to equipment surfaces. The filtered air passes through a bed of silica gel, which effectively removes moisture.

Multilayer polyester filter media provide three micron particulate filtration and a polyurethane foam collects oil mist and distributes air evenly over filter media and the moisture absorbing silica gel.

Breathers are suitable for use in hydraulic units, where there are high humidity and temperature fluctuations. The normal hazards of condensation – rapid ageing of hydraulic oil, degradation of additives and corrosion – are prevented.

For more information contact Lauren Holloway, BMG, +27 11 620 7597, laurenhy@bmgworld.net, www.bmgworld.net
Introducing our newest

STAR

product...

AXIOM HYDRAULICS (PTY) LTD.

CNR BERGVLEI & STELLENBERG ROADS, WADEVILLE, GERMISTON, JOHANNESBURG, GAUTENG
TEL (+27) 11 334 3068/66
FAX (+27) 11 334 4543
www.axiomsa.co.za
Containerised workshop for mine-based hydraulic services

Hytec Services Africa has launched mine site-based containerised hose workshops to provide a comprehensive onsite hose and fittings service to its mining customers across Africa. Set up in refurbished and branded shipping containers varying in size from 6 to 13 metres, the workshops not only provide hose and fittings services, but also enable Hytec to supply its entire range of hydraulic services on a mine site, effectively functioning as an onsite mobile branch.

This gives Hytec a distinct advantage over other companies, which generally only offer hose and fitting services. In order to provide an onsite end-to-end hydraulic offering, the workshop services include Hytec’s hydraulic cylinder service exchange programme, as well as supplying new or providing services for pumps, filtration systems, drives, valves, piston motors and hydraulic maintenance tools. Additionally, as a value-added benefit, Hytec is able to control and stock other hydraulic components on request.

Hytec can provide a startup workshop with stock in very short turnaround times. All workshops come standard with double side doors, 220 and 380 volt plugs with the plug design matching the destination country requirements; all electrics; strip lighting; air conditioner; extractor fans; and shelving to accommodate approximately 800 small stock bins and startup hose stock. Startup workshops are manufactured and readily available, fully fitted in Johannesburg to ensure speedy mobilisation and delivery times.

“The workshop configuration depends on the mine’s requirements,” explains Africa mining services and operations manager, Charlie Harrison. “Mines that require services beyond hydraulic hose and fittings may need additional containers to accommodate filter, pump or cylinder stock. It may also be appropriate to add an office using a six metre container. Each container is custom-designed to the mine’s requirements.”

He points out that if a Hytec container workshop is based in a country without an established Hytec branch infrastructure, the container itself becomes the Hytec country base. “We ensure that the workshop configuration is sufficiently flexible to accommodate all hydraulic components and services to the mines requirements,” he continues. “If, for instance, the mine is in a remote and inaccessible area like many in east, west and north Africa, the containers and their configuration need to allow for supplementary stockholdings due to extended and difficult supply routes.”

Startup hose fittings and adaptors, as well as startup hose stock; crimping and cut-off machines; manual engraver; work bench with vice and stool; hose rack; hose cleaning projectile kit and projectile stock; electric hand grinder and a 2 x 6 metre bolt-on side canopy form the bulk of the container’s standard contents.

“The bolt-on canopy is used to accommodate the hose cut-off machine, which is normally situated outside the container in order to adhere to mine health and safety regulations,” says Africa development manager, Petrus Viljoen.

Additional standard contents include a tool cabinet and workshop tools, storage bins and shelving, measuring instruments, display board and white board with markers. Office furniture with amenities like a bar fridge are included, as is signage and a standard fire extinguisher.

As the container workshops are pre-manufactured and set up in Johannesburg, Hytec will keep at least one in stock at its Gauteng facility. “In Africa a typical mobilisation period is approximately three months. By retaining fully-equipped mobile workshops at our Johannesburg facility we can easily deliver within that period – more often than not a lot more quickly,” says Harrison.

One workshop will remain at Hytec as a demonstration model for potential customers to view and experience, and another located in the DRC will be used for the same purpose. The latter was the original prototype, which is a fully-functional hose and fittings workshop and office that was developed for a Hytec distributor in the DRC. It is ready for mobilisation and until the order is received, it functions as a demonstration unit for potential customers in that country. Later this year, another fully-functioning workshop will be set up at the new Takoradi Ghana main base for West Africa.

“The benefits of our containerised workshops are almost quid pro quo for clients and Hytec alike,” Viljoen says. “Being permanently onsite, our personnel are, for all intents and purposes, part of the customer’s operation, making us first port of call for hydraulic services and equipment. For the customer, they have our hydraulic service offering on their doorstep for immediate turnaround and delivery, and we separate our product pricing and our service fees, so there are no hidden costs for customers.”

For more information contact
Charlie Harrison, Hytec Services Africa,
+27 11 573 5460,
charlie.harrison@hytec.co.za,
www.hytecgroup.co.za
Hydraulic crimping equipment

Hyflo's extensive range of fluid power products includes hydraulic crimping equipment and tooling, designed for the efficient manufacture of factory quality hose assemblies. The Parker Parkrimp and Karrykrimp hydraulic crimping equipment enables customers to manufacture hose to precise specifications quickly, easily and cost-effectively.

The Parkrimp 2, the largest machine in Parker's crimper range, is available in single or three phase options. It requires no calibration and is simple to operate. This versatile crimper can crimp straight or bent-stem steel and stainless steel fittings, from 0.6 to 5 cm diameter. The robust machines are suitable for high volume productivity, as well as portable, onsite assembly.

Karrykrimp 2 models are portable or bench-mount crimpers that can crimp Parkrimp style straight or bent-stem stainless and stainless steel fittings up to 3 cm in diameter. The modular design gives users the flexibility of a portable crimper, with the advantages of increased productivity when connected to the stationary power unit. Increased height enables longer bent tube fittings to be crimped.

Parker's Parkalign system positions the fitting securely in the die to ensure a perfect crimp to the exact diameter required. The efficient bottom-loading design enables operators to manage long hose assemblies easily and linked dies prevent segments from being misplaced or mismatched. Dies are colour-coded by size for easy identification and reduced setup time. These crimping systems are suitable for use in diverse industries, including general industry, mining, construction and civil engineering, transportation and automotive, machine tools, materials handling, oil field services and marine and shipping.

For more information contact Michael Bissett, Hyflo, +27 11 386 5800, mjb@hyflo.co.za, www.hyflo.co.za
A new addition to Axiom Hydraulics’ comprehensive portfolio of hydraulic brands is the Intermot range of radial piston hydraulic motors. Founded in 1985, Intermot Hydraulic Motors is based in Modena, Italy and is now part of SAI Hydraulic Motors. The radial piston hydraulic motors are available in a wide range of displacements, suitable for a variety of industry applications ranging from marine to mining, drilling, agriculture and recycling.

In 1991 Intermot went global, one of the first European companies to do so, with the establishment of a production site in China. Today the brand is a major player in the hydraulic motor sector as a manufacturer of equipment for plastic injection machines.

In 2010 Intermot became part of the SAI Hydraulic Motors group in Italy. This allowed it to benefit from a research centre known throughout Europe for its capability, expertise and speed of development. With eight production sites located in the USA, Europe and Asia, the group produces motors that are distinguished by unique quality standards, with speed and excellent lead time due to its geographical closeness to the client.

Thanks to the product and process development flowing from its entry into the SAI Group, Intermot is today a successful brand with technological and commercial competences that enable the company to act as a strategic partner with major international organisations in a wide variety of industrial sectors.

Dosco Precision Hydraulics has been in the hydraulics market for 28 years. The company is one of the market leaders in the Kawasaki motor and pump range, with an experienced product specialist to meet and answer all customer needs and expectations. This has resulted in Dosco being appointed as an authorised Kawasaki Distributor and Repair Centre.

Dosco’s unique GPM product range of gear and piston motors and pumps has strengthened its footprint in the marketplace and reinforced its reputation as a highly reputable hydraulics company.

For more information contact Fritz Kern, Axiom Hydraulics, +27 11 334 3068, fritz@axiom.org.za, www.axiomsa.co.za

For more information contact Jacques Lombard, Dosco Precision Hydraulics, +27 11 452 5843, jacquesl@dosco.co.za, www.dosco.co.za
Metal Work Pneumatic Italy was for many years represented by various companies in South Africa. Recognising the need to consolidate its efforts and offer the local market a common point of contact, the company approached Johan Bester in 2017, with a view to launching a local subsidiary.

After filing the necessary documentation, Metal Work Pneumatic South Africa was launched in August 2017 and began trading in January 2018. Bester, who has been involved in the automation industry for over 22 years, says that while this is a relatively new local operation, it is able to leverage the experience, capacity and capabilities of over 1400 employees worldwide in 46 countries.

With its head office in Riverhorse Valley in Durban, Bester says the company plans to expand into the other provinces and simultaneously appoint distribution partners outside South Africa: “We have already appointed two main distributors in South Africa, one being Peninsula Pneumatics in Paarden Eiland. In addition to selling through distributors, we have a direct sales force and a trade counter which allows walk-in customers to buy directly from us in Durban. We have instituted an open door policy, which means that anybody is welcome to pop in and ask for a tour of our facilities at any time during working hours – from the media to suppliers, to potential customers.”

Providing a range of pneumatic and electric actuators, control components, air preparation equipment, fittings, tubing and various other accessories, together with several bespoke products, the organisation focuses on a number of strategic business practices that include lean thinking and a culture of continuous improvement. The company attacks waste through the value chain and employs the Kaizen (change for better) philosophy which increases flexibility and competitiveness through its people. “We work together for a common purpose and use strict quality control, accompanied by the right products for the task at an affordable price,” says Bester. “We maintain constant contact with customers to identify, assess and meet their needs. More than 80% of our product range is manufactured in-house at the state-of-the-art facilities in Brescia, Italy.”

Metal Work Pneumatic holds a number of certifications, including ISO 9001 (1992), ISO 14001 (2000), OHS 18001 (2007), as well as certification by Dekra and accreditation by TGA.

Training at the company is continuous. “We dedicate more than 5000 hours of ongoing training to our employees to ensure that they are completely up to date on the latest product iterations,” explains Bester. “We have a base of international trainers who travel around to the various Metal Work Pneumatic subsidiaries specifically to provide technical and new product training as required. Since the company releases up to 50 new products a year, this training happens on a frequent basis. I am also involved in providing in-house sales training to our employees.”

The fact that the company provides components for the entire industrial automation market, combined with its cumulative and collective team application knowledge, means that all industries are served. “In a nutshell, wherever increased production and automation is required we can provide automation componentry,” concludes Bester.

For more information contact Johan Bester, Metal Work Pneumatic South Africa, +27 31 569 1584, johanb@metalworkpneumatic.co.za, www.metalworkpneumatic.co.za
With the spotlight on safety in mining, the new prototype Air Rail Switch from Torre Industries’ pneumatic automation business, Pneumax is set to reduce risk in underground rail traffic.

Pneumax has joined forces with power electronic engineering technology leaders, Battery Electric, to incorporate a fail-safe design into a uniquely assembled South African product that will ensure safe rail switching in high risk areas. “Up to this point, mines have seen rail track changeover safety as a real problem with no fail-safe solution,” says Pneumax national sales manager, Eugene Van Der Lith. “This prototype is specifically designed to protect the health and safety of mineworkers, employing the latest in electrical engineering and pneumatics to work towards best practice in the mining industry.”

In the case of rail accidents and fatalities, the common cause is an unexpected switching of lanes to the wrong track, either by human error – manually misusing the metal industrial crowbar known as a ‘gwala’ in South African mines – or when components have deteriorated and failed inside switch devices. One of the worst rail mining disasters on record was in 1995 when 104 miners lost their lives at Vaal Reef when an underground locomotive carriage fell down a lift shaft and landed onto a cage loaded with night shift miners.

This prototype with its control box replaces the need for a gwala. It overcomes the darkness and noise factor of mines with its in-built visual and audio safety features. In addition it has an emergency air shutoff valve to quickly stop any moving parts, thereby minimising the risk of injury.

“Pneumatically, we knew that we had a viable safety concept for the mines. Applying a non-perishable reservoir of air to a rail switch creates a fail-safe design,” says Van Der Lith. “The advantage of Pneumax partnering with mining industry specialists, Battery Electric is that we have created an integrated concept that features RFID controlled access via a card reader, proximity detection, and warning systems, all backed up by expertise in pneumatic actuated switching.”

For safety, only an operator with a licensed RFID access card can choose to open or close the Air Rail Switch by inserting the RFID access card and selecting the open/close button switch. Mechanically, a pneumatic actuator is used to move the switch, which changes the direction of traffic on the rails. The air is fed in from the mine’s airline and collected in a reservoir which is used to feed the system in the event of air loss. Pressurised, filtered air is then used to keep the rail switch in the open (default) position in a critical situation. For instance, in cases where the switch had not been activated, or if there is a loss in power or air to the system it will remain in an unchanged position. The inbuilt contingencies of the switch will keep rail traffic on track even if the licensed authorisation card has been removed.

Safety is the sole purpose of the switch, and the system design requires the operator to move away from unsafe environments before operating on the moving components of the product. When an RFID card is inserted, flashing lights are activated to indicate possible operation. During the mechanical movement of the rail switch, a warning buzzer is used to alert locomotive operators of its position as they approach. And while the switch is moving to change tracks, creep speed control is automatically applied to any locomotive in close proximity.

“The default position is also known as the fail-safe position and locomotive traffic is controlled in the direction of the straight track,” explains Van Der Lith. “Importantly, the Air Rail Switch is completely free of electricity – an added safety feature that eliminates the hazard of water on underground rails and makes the Air Rail Switch ideally suited for use in harsh mining environments.”

Standard equipment includes: a rail switch, control box, RFID system and indicators (flashing lights for visual signalling, and a buzzer for audio signalling. Every pneumatic component of the switch is locally stocked and replaceable.

The team is now in test phase, working together with Lonmin and mine engineers for approval, and in the process of writing a risk assessment. A complete safety pack will be drawn up.

For more information contact Mballi Msimango, Pneumax, +27 11 923 7000, mballi@torreindustries.com, www.torreindustries.com
Compressed air monitoring equipment

The cost of compressed air equipment is ever-increasing and the need to economise on equipment and power consumption has become even more critical in South Africa. A mid-range air compressor with a 160 kW motor will cost a company in excess of R1,5 million per annum in power and standard service costs. The ability to monitor the compressed air system and prevent contamination before it creates a system upset is a major benefit to any services manager. When water contamination gets into a compressed air system it takes weeks to clear, or evaporate, even when the dew point is rectified. Oil can stay in a system for life. The cost of monitoring is easily recouped by air instrumentation monitoring the airline to ensure that the compressed air remains dry and clean, ensuring downstream air driven equipment service uptime and availability.

Suto-iTec in Germany offers a broad range of compressed air monitoring equipment to record data and inform operational staff about a compressed air system’s performance. This includes a wide range of instruments that can monitor air or vacuum flow, air or vacuum pressure, temperature, compressed air dew point, particle count, oil carry-over performance and power monitoring.

Data storage solutions are offered through the Suto-iTec CSM-2G cloud-based data capture system, or through simple data logging. Information from multiple instruments can be taken back to a wall-mounted static or mobile touch sensitive display or data-logger, or onto a central scada system via 4-20 mA, RS-485 or Ethernet connections.

For more information contact Allen Cockfield, Artic Driers International, +27 11 420 0274, allen@articdriers.co.za, www.articdriers.co.za
In the pharmaceutical manufacturing process, every input into the final product has to be scrupulously hygienic and sterile. Rand-Air is a leader in the rental of portable air and power solutions, and supplied an Atlas Copco ZT315VSD oil-free compressor to Adcock Ingram, a major pharmaceutical manufacturer.

“The Atlas Copco ZT315VSD with its 44 cubic metre a minute, 8,6 bar supply is eminently suitable for this application as it supplies completely contaminant- and oil-free air,” says marketing manager, Byrone Thorne. “In this instance, we did not supply a dryer as Adcock Ingram takes the feed from our compressor through their own in-house dryer. While the ZT315VSD is a standby unit, in the event of an operational issue with one of the in-house centrifugal compressors, the Atlas Copco ZT315VSD would take over the supply of compressed air with minimum disruption to the facility’s manufacturing capability.”

The unit is well suited for the rigorous 24/7 duty cycle required by Adcock, and its output is critical in ensuring uninterrupted production. An absolutely reliable supply of completely contaminant- and oil-free compressed air is essential for high speed pharmaceutical mixing processes – and also for blending, packaging and water conditioning. Rand-Air’s high quality service and maintenance is all part of the package.

“This is very much in line with Rand-Air’s rental ethos, where the customers have the freedom to concentrate on their core business while leaving the responsibility for the provision of essential, contaminant and oil-free compressed air to us,” concludes Thorne.

For more information contact Byrone Thorne, Rand-Air, +27 11 345 0700, byrone.thorne@randair.com, www.randair.com

Creating a vacuum without compressed air

The ECBP electrical vacuum generator from Schmalz is ideal for handling airtight and slightly porous workpieces. It features an integrated speed control function, which regulates the power of the pump to suit the process or workpiece. Moving porous workpieces such as cardboard requires considerable suction capacity and thus considerable energy. Airtight materials, on the other hand, require less power, meaning the user can reduce the speed. This degree of flexibility makes the vacuum generator extremely energy efficient.

As the vacuum is generated without compressed air, the ECBP is particularly useful in mobile robotics, and its fully automated small parts handle just as well for stationary handling tasks. Different grippers from the Schmalz VEE modular system can be attached simply and easily via integrated flanges.

Via a data interface, the ECBP provides the user with energy and process data via IO-Link from the machine to the cloud. The condition monitoring function recognises deviations in the vacuum supply, thus reducing faults and downtimes. This considerably increases the reliability of the system. Furthermore, the user has various options for adapting the pump capacity to the handling process. The ECBP can be parameterised directly on the device, using an NFC-enabled mobile terminal or via IO-Link in the control centre.

The ECBP weighs just 700 grams and is designed so that there are no interfering contours. The electrical connection to the pump is established via an 8 pin M12 connector. The maximum suction capacity is up to 12 litres per minute at a maximum current strength of 0,7 amperes.

For more information contact Malan Bosman, Tectra Automation, +27 11 971 9400, malan.bosman@tectra.co.za, www.hytecgroup.co.za
Flexible, cost-effective controller

Through listening to and responding to its customers’ ever-changing needs, SMC Corporation has introduced the JXC83 controller, which can control up to four electric actuators simultaneously for single or multiple axes. Providing a comprehensive and flexible solution, this latest controller offers savings on equipment costs, programming time, wiring and space.

Launched in 2016, the controller is compatible with the majority of the actuators in SMC’s LE range. It also uses minimum wiring due to a common power supply cable and less I/O cable is required, thereby reducing overall costs.

Ernst Smith, SMC product manager explains how, amongst its savings, the JXC83 also reduces labour time for increased productivity in the workplace, “All four axes of this controller can be set with just one connection, ensuring easy programming and minimal hassle,” explains Smith.

“By introducing the JXC83, we have responded to market needs for a single controller that is flexible and simple to set up. By also giving our customers a range of savings, we believe this latest controller from SMC will meet the demands of those working within general industry.”

The JXC83 has the capability to move two axes with arc interpolation or three axes with linear interpolation at any one time in certain conditions. “The JXC83 will greatly benefit the general industrial machinery sector and is suitable for a range of applications such as pick and place and vertical board lifting,” concludes Smith.

For more information contact SMC Corporation South Africa, +27 11 100 5866, sales@smcpneumatics.co.za, www.smcza.co.za

Ultrasonic compressed air leak detection

Air leaks are costly. It is estimated that 25% of an average manufacturing plant’s power is spent on compressed air, with some 20% of this air leaking to the atmosphere. Using flowmeter results and software from Suto-iTec in Germany, the cost of air leaks can be monitored and corrective action taken, reducing costs substantially.

Artic Driers International offers a wide range of ultrasonic leak detection equipment, and can also hire out technicians by the day to evaluate a system’s air losses and calculate the cost to company. Artic can also take flow readings in conjunction with ultrasonic testing to ensure that all leaks are located. The company is able to provide costs per air leak, along with the actual air flow per leak. This is presented on a spreadsheet to allow the sorting of leak locations by priority.

Air flowmeters, fixed or static, also allow for accurate selection of new compressors and air treatment ancillary equipment on plants, allowing engineers to make informed decisions on the type of equipment and size to purchase. This ensures optimum performance on site.

Dew point monitoring can be done with a standalone unit that monitors a system’s water content, or it can be part of a bigger and more comprehensive instrument set. A dew point probe will give a pre-alarm for a wide range of faults, for example bypass valves left open, blocked dryer drains, dryers that have tripped, faulty freon compressors, and even fractured heat exchangers.

For more information contact Allen Cockfield, Artic Driers International, +27 11 420 0274, allen@articdriers.co.za, www.articdriers.co.za
In William Shakespeare’s celebrated play, ‘As You Like It’, the legendary playwright famously wrote that “all the world’s a stage, and all the men and women players”. Making the storytelling and action seem effortless and enabling the viewer to step into the lives of the characters on stage takes a herculean effort behind the scenes. This is where New York-based Hudson Scenic Studio comes into play, providing scene fabrication and automation services to the entertainment industry.

Hudson serves some of the largest and most successful Broadway shows to ever hit the stage and provides the means for creative directors and their crews to bring their boldest ideas to life. The company builds intricate scenery and stage props, and then makes that scenery dynamically move, shift and change to enhance the visual direction of the show. Every individual action, or effect, such as opening a trap door in the stage floor, lifting a section of scenery or helping an actor fly across the stage, requires complex control technology. There are virtually no limits to the imagination but the prerequisite for staging such blockbuster effects is that the mechanical systems, the software and the automation work smoothly.

Controlling all the complex moving parts in a large-scale theatrical production requires a robust control system in the background, and Hudson uses Beckhoff’s PC-based control technology, comprising CX2030 Embedded PCs with 1.5 GHz Intel Core i7 dual-core CPU, as well as CXS100 Embedded PCs with Intel Atom processors. Director, Chuck Adomanis explains the need for a variety of controllers: “Each of these devices acts as a primary system controller, running PLC, NC and HMI software as the main control devices in our automation system. The highly scalable range of controllers allows us to choose the right performance level for the job, and helps mitigate costs for the shows.”

TwinCAT 3 automation software provides the core underlying architecture for the control systems. Adomanis continues: “We use a variety of TwinCAT 3 packages for PLC and motion control, given the varied nature of our projects, and we utilise the full range of available TwinCAT modules: TwinCAT PLC and NC for axis control, TwinCAT ADS, TwinCAT TCP/IP Server or TwinCAT OPC UA for horizontal and vertical communication.” Remote access enables Hudson to diagnose equipment issues anywhere in the world without engineering teams having to physically travel to the venues, providing significant cost-savings which can be passed on to the customer.

Safety is paramount for stage and show applications. Hudson relies heavily on the TwinSAFE system from Beckhoff to integrate the wide range of necessary safety functions into the automation system, such as guard doors and e-stops. Communication of the real-time relevant signals in the field takes place via EtherCAT. EtherCAT Terminals and EtherCAT Box Modules offer best-in-class speed, as well as a minimal footprint – essential in the space-constrained applications Hudson takes on.

For motion tasks, Hudson relies on AX5000 series EtherCAT servo drives and AM8000 series synchronous servomotors from Beckhoff, a change from the three-phase induction motor systems used in the past. Beckhoff servo drive technology is now the standard motion system. “As the technical demands of our projects continue to grow and change, One Cable Technology for the motors and drives, when coupled with absolute encoder technology, provides excellent value in our projects and will be our standard on new equipment,” Adomanis says.

Beyond added flexibility in system design and maintenance, Hudson achieved impressive performance increases. Adomanis explains: “With our previous PLC and motion system, we were living in a world with scan times higher than 20 milliseconds for PLC commands and motion control. Now, our scan times are around 1 or 2 milliseconds.” In addition, engineering costs have been greatly decreased while efficiency has increased. Code written for one project is easily scaled from one effect to another. Adomanis also notes that margins have dramatically improved on projects and Hudson can go after applications large and small and maintain high profitability.

As these projects grow in scope and technological complexity, the Hudson team is ready to meet any entertainment engineering challenge that comes their way. With Beckhoff providing the controls foundation, these talented engineers have the necessary tools to keep bringing the artistic visions and dreams of stage and show professionals into reality.

For more information contact Michelle Murphy, Beckhoff Automation, +27 11 795 2898, michellem@beckhoff.com, www.beckhoff.co.za
Siemens is launching a new app for drive systems in the field of motion control called Analyze MyDrives, and has also introduced Manage MyMachines/Remote, a new plug-in to upgrade its tried and tested Manage MyMachines MindApp for machine tools with the addition of a smart remote feature. Analyze MyDrives and Manage MyMachines/Remote are special MindApps designed specifically for MindSphere, the open IoT operating system from Siemens, which allow users to utilise the benefits of cloud-based services and create added value with machine operation. Digitalising drive systems or machine tools enables extensive data generated by the drive or machine to be analysed and put to use. By connecting to MindSphere, this process can be carried out simply by the machine manufacturer or user, significantly improving the efficiency of drive systems and machines and boosting productivity across the production network. In this way, these MindApps provide the starting point for totally new applications for drives or machine tools which enable innovative digital services such as predictive maintenance, energy data management or resource optimisation.

Using the Analyze MyDrives MindApp for the Sinamics V20 and V90 converters, Sinamics G modular and compact, and Sinamics S (up to 250 kW), machine operators are now able to also monitor the drive components of their machines. The app captures and analyses all the operating data, allowing the actual maintenance requirement to be detected by continuously monitoring power consumption, torque and frequency. The machine operator is kept informed about critical machine operating statuses, and machine builders are able to suggest preventive machine servicing as and when it’s needed. This eliminates the need for machine maintenance at fixed intervals, boosting machine capacity utilisation and productivity, extending maintenance intervals and minimising downtimes. The analysis of operating data also enables predictive maintenance which reduces the probability of unscheduled costs. The MindApp also allows the measurement of energy flows as the basis for determining energy-saving potential, allowing consistent energy-saving optimisation measures to be implemented.

Manage MyMachines/Remote is a plug-in offered by Siemens for its Manage MyMachines MindApp, which enables remote access to the computerised numerical control (CNC). This allows complete remote control of the CNC by means of failsafe encrypted communication over the Internet, which not only improves machine availability and simplifies maintenance but also cuts costs in the event of a fault. By graduating the supply stages for Single Access, Conferencing and Remote STEP 7, the scope of performance can be precisely adjusted to customer requirements. The ability to record the entire maintenance process in different video formats makes for enhanced transparency.

The Manage MyMachines MindApp quickly and simply connects CNCs such as the Sinumerik 840D s to MindSphere, providing machine operators with a cloud-based overview of key data and operating statuses across all the connected machines. The app allows relevant machine data to be captured, analysed and visualised, lending users an outstanding level of transparency on the current machine status and its development.

For more information contact Jennifer Naidoo, Siemens Digital Factory and Process Industries and Drives, +27 11 652 2795, jennifer.naidoo@siemens.com, www.siemens.co.za
According to the Annual Manufacturing Report, 2018, four in five manufacturers believe that smart factory technologies will improve their supply chain relationships. The proposed benefits of data collection from smart sensors are huge, but some manufacturers still feel that a smart factory is out of their reach.

Nick Boughton, digital lead at systems integrator, Boulting Technology explains how plants with legacy equipment can retrospectively upgrade their facility to a smart factory.

Plants across a wide range of industry sectors worldwide contain an abundance of legacy equipment. Particularly in industries with high turnover of low margin products, such as food and beverage, plant managers may not perceive themselves to have the budget to upgrade equipment, or the time to shut down a section of the production line for installation.

The legacy equipment that remains can cause a multitude of issues, including lack of service and support from manufacturers and an increased risk of breakdown as equipment ages. Each of these are complicated by obsolescent equipment and difficulty getting hold of the parts needed for repair.

However, in many plants these risks are well managed and so the equipment, alongside its related historical data, is essential.

Being smart

Plant managers may accept that machinery can’t be upgraded, but this does not mean they shouldn’t explore the benefits of the smart factory and connected technology, including predictive maintenance, productivity improvements and quality control.

The ageing legacy equipment was likely not built with connectivity in mind and there is simply no way to connect it to the existing industrial network. Despite making financial investments when purchasing equipment, there is no reason to believe you can’t upgrade a plant to make it more intelligent.

Retrofit

A wide range of industrial automation suppliers are now offering add-on solutions that can provide these benefits. A ‘black box’, which can be installed alongside existing, isolated, equipment can integrate it with the network, allowing the box to read and communicate data from the machine without any changes to existing hardware or software.

In addition, software within the system can allow for visualisation of performance metrics, making it easy for plant managers to identify targets for improvements allowing the system to run more efficiently.

Although each box is different, the overall concept remains the same. A controller collects runtime data via I/O or fieldbus protocols before using software to process it with no need for changes to existing equipment or analysis. This allows for easier and more in-depth monitoring of processes as well as energy consumption. Collating the data from multiple pieces of equipment gives an overall interactive visual of the plant, allowing for real-time monitoring.

This can also be integrated with a predictive maintenance schedule, as the data produced highlights potential breakdowns before they happen. For example, a conveyer which is becoming less efficient over time could have a motor that has worn or could require a lubricant change.

Concerns

The analysis, collection and visualisation software required for these applications can be expensive to purchase outright. Allowing plant managers to use their machines as a service rather than buying each package individually is becoming more popular. Because the services are integrated, life cycle management and software updates with enhanced features and security updates are combined as part of the service subscription.

With the wide range of options already available, it can be difficult to know which retrofitting solution would fit your plant best and how to overcome any compatibility issues that might arise. For complex systems, expert advice from an independent systems integrator such as Boulting Technology is advised. Choosing the correct option for your plant, process and systems is essential to achieving a wide range of benefits including better supply chain relationships, which four out of five manufacturers believe is possible.

For more information contact Kara Doble, Boulting Technology, +44 1785 245 466, karadoble@boulting.co.uk, www.boultingtechnology.co.uk
How to prove payback on an Industry 4.0 project

As industry changes amid the drive towards digitalisation, organisations are looking to achieve real business results from their engagement with new technologies. Marketing hype detailing theoretical benefits of an IIoT-enabled future is no longer enough, companies want to see real returns on investments in new technology. Festo, for example, not only implements IIoT functions and services into its product portfolio, but also adds training and consulting, for students as well as professionals, using the latest ideas in its Technology Factory at Scharnhausen, Germany.

Industry 4.0 products

From the mechanics to the cloud, Festo already delivers some real automation technology products for the fourth industrial revolution: integrated drive packages, modular valve terminals with open platform communications (OPC) universal architecture (UAA) and IoT gateways, decentralised Codesys controllers and autonomous mechatronic subsystems with IP20 or IP65. In addition, there are IoT driven apps and services, as well as dashboards for products and subsystems.

Festo is able to provide consistent connectivity from the mechanics right up to flexible and multiple cloud concepts. The company has the advantage that it can draw on a wealth of user experience from pilot projects at the Scharnhausen plant. These include energy management and optimisation as well as innovative one-pieceflow concepts based on standardised networking, mobile maintenance with tablets or automated, flexible test systems for individual products.

Big data analytics figure out bottlenecks to reduce cycle time by 15%

The example described below refers to a significant 15% improvement in performance of an assembly line, enabled by big data analytics. It highlights how Festo’s new automation platforms with a direct link to a cloud can be a basic ingredient for success.

A large assembly line was designed for mass production, as well as lot size 1 (current customers demand lot size 200-2000). The volume each year adds up to 1,2 million at a cycle time of 13 seconds. The change of the batches is done by SAP ME/order management, but inside the machine, RFID at each work-station triggers all parameters. Technically, the basics of the assembly line are mechatronic subsystems in all machine cells, which are operated by decentralised control concepts for the electric and pneumatic drives and actuators. All stations provide the data relevant to operate and maintain the line, and are networked with all testing stations and quality systems. Data is processed locally in real-time. All data, from around about 400 IP addresses in total, is gathered, condensed and provided via OPC UA to either support motion control, or for analysis by a PC or a cloud-based solution. Such a concept generates a mass of data, which requires additional skills for the data analytics.

After two years in operation, a first big data analysis was executed and turned out to be highly valuable. Typical patterns could clearly be found and bottlenecks were identified. It was found possible to overcome these and optimise the machine’s cycle time by 15% – from 13 to 11 seconds. The changes made include modifications inside the test cells and their procedures. The work stations now trigger the test cells in advance and thereby save booting and routing time. Other bottlenecks required a more powerful CPU be installed. The value of data made such an optimisation possible without the time wasting associated with guesswork and trial and error approaches. This example shows how to transform measured value into added value with a payback period of less than one year.

Automation solutions for mechatronic subsystems in Industry 4.0 environments

To get all the relevant data out of a machine requires several ingredients. Depending on the production system, it could include integrated drive solutions, electric as well as pneumatic, plus associated sensors, quality inspection, tracking, energy monitoring, connection to logistics and order management. A possible Festo solution is the CPX system, a high-performance control platform for factory automation. It consists of individual function modules that can be used to create a modular, compact and flexible (sub)systems. Depending on the module combination, it can be used as a purely remote I/O system, or as a (centralised or decentralised) control system for factory or process automation.

Festo can thus offer a portfolio for the decentralised automation of sub-systems and small machines/installations with IP20 (CPX-E platform) and IP65 (CPX platform). All are in line with a flexible Industry 4.0 host environment, including the CPX-IOT gateway and the first customised dashboards in the clouds of Festo, Siemens MindSphere or Rockwell FactoryTalk.

For more information contact Ntando Ndokweni, Festo, +27 11 971 5535, ntando.ndokweni@festo.com, www.festo.co.za

www.motioncontrol.co.za Fourth Quarter 2018 33
Swedish group, SKF has been implementing its digital transformation since 2015, investing close to R260 million to carry out its digital revolution at its historical Göteborg plant which has, for over a century, been producing the quality bearings on which the Swedish group’s success is based.

Over the years the plant has witnessed developments brought about by successive waves of automation, including the introduction of the first forklifts in 1970, the implementation of lean manufacturing ten years later and the arrival of the first industrial robots in production in 1995.

2015 saw the Göteborg facility launch the complete modernisation of its spherical roller bearing manufacturing plant. The initiative, based on a model called World Class Manufacturing, saw SKF gradually opening more sites in a bid to bring production closer to customers. The objective was to increase customer uptime and productivity by helping to reduce their stock levels and improve lead times.

However, more sites led to a significant fall in production for European plants. The global bearing and rotating technology specialist reviewed its production tool and adapted it to a product catalogue that is as varied as ever but with smaller volumes to achieve the digitalisation goal which is not to produce more but to gain in flexibility.

Historically, the Göteborg plant ran four conventional production lines, each dedicated to the manufacture of only one type of bearing. Digitalisation resulted in the replacement of the four original lines with a new, almost completely automated 4.0 production line which can deal with different sizes and selections. Three of the previous lines have already been shut down while the life of the fourth line has been extended to serve as backup and will be shut down by December 2018 when the workshop’s digital transformation will be complete.

The digital transformation incorporates a range of solutions, from robots and automatic guided vehicles (AGVs) to sensors and tablets. There are 22 industrial robots on the new production line, which is divided into four distinct units corresponding to four production steps, namely grinding, assembly, marking and lubrication. In all, 25 different software applications are used to coordinate the process. A manufacturing execution system (MES) collects the production data in real time in order to control a certain number of activities such as the management of the AGVs. This system is in turn coupled with new enterprise resource planning (ERP) software, linking production to demand to ensure the seamless running of the workshop operation which involves some 1500 trips by the AGVs daily.

In the grinding phase, the AGVs place the rings on pallets before being grasped by a massive six-axis robotic arm. Fitted with adaptive grippers on the wrist joint, the arm can grasp nearly 200 different types of rings. It takes just three seconds to automatically adapt to parts with a diameter of between 180 and 400 mm. Plunged into a closed chamber, the rings come out less than a minute later, ground and polished, for placement in a pallet whose volume is monitored by three 3D cameras. Once the pallet is full, an AGV takes it to the assembly island, after which follows the final two phases, lubrication and marking.

The QuickCollect sensor developed by SKF ensures constant monitoring of machine operation. Operators who constantly move between workstations during the day are able to conveniently take instructions directly from their tablets.

With a wide range of solutions always available to solve a particular problem, SKF did not jump on all cutting-edge technologies. Instead, the company first thoroughly assessed each technology to ensure it met a real need before the process was integrated. For example, in order to be integrated into the new grinding unit, certain machines dating back to the 1980s were retrofitted with the addition of servomotors and an IIoT layer. Automation was done without interrupting production.

Digital transformation is an ongoing process at SKF as the company continues to strive in adding value by improving efficiencies, product quality and service delivery to the ultimate benefit of all its customers.

For more information contact Samantha Joubert, SKF South Africa, +27 11 821 3500, samantha.joubert@skf.com, www.skf.com
Omron has introduced four series of condition monitoring devices to monitor operational status in manufacturing sites for workers.

- Motor condition monitoring devices that predict a failure of three-phase induction motors.
- Power supplies with a network that can predict the service life and failures of a power supply installed in a control panel.
- Flow sensors and pressure sensors that monitor hydraulic oil and cooling water used for press machines and moulding machines.
- Smart condition monitoring amplifiers that accelerate IoT for existing analog sensors installed in facilities or machines.

This is part of Omron’s effort to complete a 100 000 IoT component line up. The monitoring devices constantly visualise facility and equipment condition that could not have been seen previously, detect status errors of facilities in advance, and maintain production lines and productivity.

They also monitor changes in power systems and circulation systems in real time. In addition they inform replacement time of parts before failures through communication networks and contribute to prevention of unexpected facility stoppages and quality abnormality of products. It is easy to capture a sign of abnormality of facilities and failures that have relied on experience and intuition of skilled workers. This reduces opportunity loss due to unexpected facility stoppages and enhances the accuracy of maintenance plans.

**Motor condition monitoring devices**

Motor condition monitoring devices detect errors caused by ageing deterioration of three-phase induction motors used for many production facilities, including conveyors, lifters and pumps. The monitoring devices detect errors by status changes in vibration, temperature, current, insulation resistors, monitor by display on the main unit or Ethernet/IP communications remotely, and solve the following issues.

- Minimise opportunity loss caused by unexpected facility stoppages
- Digitalise knowledge of skilled maintenance engineers and homogenise motor maintenance from a remote location
- Shift from periodical inspection to preventative inspection to significantly reduce inspection work

**Power supplies with network**

Power supplies with network visualise necessary information to maintain and control power supplies, in addition to supplying DC electricity to devices in facilities. They can visualise when to replace themselves and information on output voltage/current, and they boost current by remote control using Ethernet/IP communications and the main unit monitor. This contributes to solving the following issues:

- Notify the power supply replacement time in advance to reduce unexpected facility stoppages due to a trouble of power supply
- Monitor the replacement time, total run time, voltage and current of a power supply remotely to reduce maintenance work in facilities
- Use in combination with the dedicated software power supply monitoring tool to visualise power supply condition on the derating curve.

**Flow sensors, pressure sensors**

A single flow sensor can measure both flow rate and temperature of cooling water used for a welding or moulding machine. Monitoring errors caused by temperature in addition to flow rate of cooling water enables detection and captures warning signs of unexpected stoppages due to overheated current transformers in order to achieve more stable welding quality and prevent defective moulding.

Pressure sensors simultaneously visualise the pressure and temperature of hydraulic oil for machining centres and press machines. They capture any signs of packing deterioration due to temperature rise and following hydraulic oil leakage. They also detect temperature changes due to deterioration of the hydraulic oil viscosity to maintain stable processing quality. There is no need for separate installation of temperature or pressure sensors on pipes resulting in a 50% cut in installation time. By sensing a plurality of measurement data elements such as ‘flow rate and temperature’ and ‘pressure and temperature’, these sensors can visualise a facility’s condition with less cost, work and space.

**Smart condition monitoring amplifiers**

Smart condition monitoring amplifiers connect to general analog output sensors. Omron offers the N-Smart next generation sensor series that connects to fibre sensors and laser sensors. This enables inexpensive networks to be easily built with various sensors used to understand facility condition.

Previously, obtaining data of analog output sensors required system up with expensive data loggers and measurement equipment. The sensor can synchronise up to 30 units at a high speed of 1 ms, collect data at the timing of facility operation, capture subtle changes of facilities and correlation of signs reliably, enabling optimum machine control according to facility status changes.

**For more information contact**

Omron Electronics, +27 11 579 2600, info.sa@eu.omron.com, www.industrial.omron.co.za
Leveraging digital technology is said to be key to participating in the next wave of economic growth. At the very least using it will allow mines, process plants and other industrial operations to reduce operating costs. Fanie Steyn, manager of rotating machines at Zest WEG Group, says one of the areas that stands to be most impacted is predictive maintenance. “This is where access to accurate data can be used to increase production efficiency and reduce downtime, and for the first time industry will be able to do this remotely with electric motor installations,” he says.

WEG Motor Scan is a brand new solution available from Zest WEG Group that facilitates remote monitoring of electric motor installations. This innovative technology allows engineers and maintenance personnel to make informed decisions about the health of installed motors and react accordingly, depending on the data captured.

Steyn says that the WEG Motor Scan solution uses Industry 4.0’s digital technology including IoT and Big Data analytics. The technology allows for the monitoring of running hours, measurement of vibration and surface temperature, as well as providing data on speed and start/stop time. The load and efficiency will be included in the second phase. Data is extracted via Bluetooth using a smart device with the innovative app that is available on android and iOS phones and tablets. Users can also access the data on laptops and desktops via a dedicated web portal.

Powerful analytics help to process the data and predict pending failures or hidden problems based on frequency spectrum analysis. Warning levels are pre-set based on acceptable baselines of temperature or vibration and sophisticated software is able to plot performance curves with the captured data. The data is sent to the cloud for storage, facilitating fast access and more accurate decision making.

“Using the WEG Motor Scan solution minimises the requirement to manually collect and monitor data, and it eliminates the guesswork from preventative maintenance routines,” he explains. “This removes the inefficiency of reactive maintenance and assists in minimising motor failure.”

The WEG Motor Scan solution is currently available for frame sizes from 63 to 450, providing this innovative monitoring solution for motors ranging from 0,18 up to 1250 kW. It can be fitted on newly manufactured motors or retrofitted to existing installations. The sensor itself is battery powered and has an estimated life span of three years. It is designed to work in ambient temperatures ranging from minus 40 up to 80°C, has a protection rating of IP66 and can operate in Zone 1 areas with a T4 temperature rating.

Offering optimum flexibility, the sensor can be used on direct online starting, as well as variable speed drive applications. “This is a major value add for our customers and the market and will set a new benchmark in predictive maintenance,” Steyn concludes.

For more information contact Zest WEG Group Africa, +27 11 723 6000, info@zestweg.com, www.zestweg.com
Going Above and Beyond
to Enhance Your Operational Efficiency

Over the past 4 decades BMG has built up extensive product divisions and an unrivalled distribution network, along with a rock-solid reputation as Africa’s foremost supplier of engineering components. A convenient, single source of supply to the full spectrum of industry.

Along the way we’ve also cultivated a technically-proficient, specialist mindset and applied this technical knowledge toward the maximisation of our customers’ efficiency, productivity and ultimately, their profitability.

Today, this ongoing commitment to being a valuable ‘Part Of Every Process’ is proudly manifested in ways that go well beyond the physical products on offer.

THE WORLD’S BEST BRANDS, BOLSTERED BY A RANGE OF SPECIALIST SERVICES:

- Custom Design and Evaluation of products and systems.
- On-site Installation, Troubleshooting, Maintenance and Support.
- Condition Monitoring and Preventative Maintenance.
- Energy-Efficiency Studies and Recommendations.
- Hands-on Customer Training.

BEARINGS • SEALS • POWER TRANSMISSION • DRIVES & MOTORS • MATERIALS HANDLING
FASTENERS & TOOLS • HYDRAULICS • FILTRATION • LUBRICATION • FIELD SERVICE

www.bmgworld.net
Sensors for condition monitoring

Instrotech’s general purpose monitoring sensors are ideal for use with PLCs and other industrial controllers. They provide users with a continuous output of vibration, usually as a 4-20 mA signal. Changes in the monitor signal allow the user to spot vibration changes in the part of the machine to which the sensor is attached. Rapid changes accompany such conditions, as machinery working loose from its mountings, fan blade malfunction and bearing failure all require immediate attention and machine shutdown to avoid widespread damage and loss of machine time. If the signal is logged at regular intervals, gradually increasing vibration indicates wear in the part of the machine where the sensor is fitted, calling for replacement or detailed study with a portable vibration analyser.

The long-standing 1185/C series is tried and trusted. It is a general purpose, top-entry velocity transducer with DC output, made from robust stainless steel throughout for continuous vibration monitoring in harsh environments. The unit is sealed to IP67 with industry standard two-wire 4-20 mA output proportional to sensor range that can connect directly to PLC, DCS and other industrial controllers.

The 1185I/C model is ATEX and IECEx Group I & II certified. It has all of the 1185’s components with integral stainless overbraided ETFE cable and is available with a wide range of mountings. The 1185SW model is submersible, for harsh underwater environments and areas with constant moisture or condensation. It includes integral heavy-duty polyurethane cable and is sealed to IP68 and is available with a wide range of mountings. The 1185IW is ATEX and IECEx Group I & II certified.

For more information contact Instrotech,
+27 10 595 1831, sales@instrotech.co.za,
sales@instrotech.co.za

Approach and planning for effective maintenance

Even as cost cutting eats into maintenance budgets, companies can avoid catastrophic failures if they adopt the structured approach offered by specialists like Marthinusen & Coutts. According to projects and engineering services executive, Craig Smorenburg, an effective maintenance programme starts with proper buy-in from the client and its engineering team, as well as from the OEM. “If all stakeholders understand and support the importance of a structured maintenance programme, then the next step is to agree on the most critical equipment in the client’s facility,” he says. “These assets are the ones that must be most closely managed as they impact directly on the whole operation’s success and sustainability.”

A further study is then conducted to ascertain which elements within each item are critical to maintain, and how the OEM maintenance guidelines must be applied. “We then develop a strategic level-based maintenance plan, which considers all maintenance requirements and activities,” he continues. “We generally advise clients to conduct their weekly or monthly maintenance activities in-house, otherwise they lose touch with their equipment and lose the necessary skill.”

Marthinusen & Coutts promotes continuous improvement through engaging with its customers. Smorenburg says that this regular interaction between the division and the customer ensures that recommendations are addressed and action plans are realised. A Plan-Do-Check-Act (PDCA) cycle is also followed. The company has developed its own level based maintenance schedule that incorporates OEM guidelines. This takes the best of each of the OEM requirements to come up with a maintenance schedule that is suitable for all equipment.

Smorenburg emphasises the skills transfer that occurs when Marthinusen & Coutts technicians are on site with a customer’s maintenance staff. “We encourage customers to involve their teams in the maintenance activities that we conduct, so they can benefit from transfer of skills from the specialist,” he adds. “This gives them hands-on training on how the maintenance should be conducted.” He says they have applied this approach on a number of sites around Africa and have noticed a significant improvement in machine condition when they go back to conduct the six month inspections.

For more information contact Richard Botton, Marthinusen & Coutts,
+27 11 607 1700,
richardb@mandc.co.za,
www.mandc.co.za
**New rodless cylinder for compact machine design**

Aventics has recently launched a new double-acting RTC rodless cylinder range for high performance applications that require a compact machine design. As with other Aventics double-acting rodless cylinders, at the heart of the RTC-SB (slide bearing) cylinder is its oval piston design. This design element enables the cylinder to offer high load capacities in relation to its compact construction, creating even more compact machine designs. This innovative cylinder range is equipped with a lubrication-free slide bearing and wear-free magnetically attached exterior strip, scraper and sealing strip that make the cylinder resistant to water, chemicals and dirt, with zero maintenance requirements. In addition, thanks to the form-fit connection technology with standardised mechanical interfaces, machine design and assembly times are drastically reduced as no re-adjustments are necessary.

The new cylinder is designed for a maximum speed of 6.5 m/s with a maximum stroke of 6600 mm. Its adjustable pneumatic cushioning extends its operating service life and ensures precise and gentle operation. The RTC cylinder range completes the Aventics range of double-acting rodless cylinders. The new RTC-SB version with a piston diameter ranging from 25 to 40 mm closes the previous gap between the basic version (RTC-BV) and the versions designed for higher loads, the RTC-CG (compact guide) and RTC-HD (heavy duty).

**Transmission belts for tough conditions**

BMG’s portfolio of Fenner power transmission components includes a range of high-strength friction transmission belts that offer longer service life, higher drive efficiency and reduced downtime compared with conventional V-belts. Fenner PowerTwist Drive V-belts, which are manufactured from a high-strength polyurethane elastomer, reinforced with multiple plies of polyester fabric, offer excellent resistance to abrasion, oils and greases, water and steam, industrial solvents and chemicals. “These flexible V-belts are the ideal solution for permanent replacement and fitment into inaccessible locations. They can be custom-sized for each sheave groove, reducing wear and providing a perfect matched set of belts when mounted on a drive. They combine extremely high-strength with low-stretch and have the same power ratings as conventional V-belts. The elasticity of woven polyurethane fabric enables these belts to be stretched over a pulley drive without any damage.

An important advantage is that these durable belts operate efficiently at elevated temperatures to 110°C in harsh environments, for up to 15 times longer than standard rubber and other link V-belts. These flexible belts are also designed for easy installation as a permanent replacement, with minimal downtime. No dismantling of equipment is necessary.”

Also in Fenner’s range of transmission belts are Fenner Power Plus heavy duty drive belts, which meet stringent international quality specifications, as well as the highest standards for static conductivity (ISO 1813 standards).

**Disc couplings for high torque applications**

SKF’s range of disc couplings in a variety of configurations offer cost-effective, lubrication free service in medium to high torque applications that require torsional rigidity. They consist of two hubs and a laminated stainless steel disc pack secured by a series of fitted bolts retained by nylon insert lock nuts. The couplings feature a capacity range up to 178 kNm in a variety of configurations including single disc, double disc and spacer for both horizontal and vertical mounting. “In many applications, the challenge posed by exposure to the elements requires quality parts that continue to operate smoothly,” says power transmission global technical manager, David Beggs. “The SKF disc coupling offers robust performance, with all-steel machined components that allow for high-speed applications to be handled with ease. With two-plane dynamic balancing, higher speeds are often permissible.”

The couplings minimise the need for maintenance because they offer some allowance for misalignment and do not require lubrication. Single disc couplings accommodate angular offset, while double disc pack units with a spacer will allow for angular, parallel or combined offset. The disc pack or spacer may be removed and re-installed radially, meaning the prime mover and driven machine need not be moved at all.

With hub pilot bores to simplify boring to requirements, the disc couplings bring cost-effective performance to a range of applications and industries including petrochemical (direct drive fan drives, pumps and compressors), printing and paper (positioning), plastics, power generation (high-speed turbine type drives, alternators, pumps), refrigeration (compressors) and marine.

**For more information contact**

**Malan Bosman, Tectra Automation,**
+27 (0)11 974 9400,
malan.bosman@tectra.co.za,
www.hytecgroup.co.za

**For more information contact**

**Lauren Holloway, BMG,**
+27 11 620 7597,
laureny@bmgworld.net,
www.bmgworld.net

**For more information contact**

**Samantha Joubert,**
SKF South Africa, +27 11 821 3500,
samantha.joubert@skf.com,
www.skf.com

www.motioncontrol.co.za Fourth Quarter 2018 39
**Motor control and protection products**

Magnet’s portfolio of space saving Eaton motor control and protection devices offers motor starting and protection solutions in diverse industries, including mining, oil and gas, pulp and paper, OEMs, the automotive sector and in general utilities. “This range, which encompasses contactors, circuit breakers and overload relays, has been designed for easy installation and simple setup, increased accuracy, greater visibility into the motor status and a higher degree of protection,” says managing director, Brian Howarth. “Eaton motor control and protection products efficiently meet the demands of challenging applications, including motor control centres, field starter panels and heavy duty pumps, as well as conveyors, fans, pumps and compressors.”

DILM contactors the AC-3/400 V utilisation category are rated for normal switching duty for AC induction motors. Typical applications include compressors, lifts, mixers, pumps, escalators, agitators, fan conveyor belts, centrifuges, hinged flaps, bucket-elevator air-conditioning systems and general drives for manufacturing and processing machines.

DILM contactors for utilisation category AC-4/400 V are rated for the extreme switching duty of squirrel-cage motors. Operating characteristics are inching, plugging and reversing. Electrical characteristics for making and breaking the current are up to 6 times the rated motor current. Typical applications include printing presses, wire-drawing machines and centrifuges, as well as for special drives used for manufacturing and processing machines.

Magnet’s Eaton motor control and protection range also includes overload relays (0,1 – 800 A) and soft starters (18,5 – 560 kW) and variable speed drives (0,75 – 160 kW).

**Theft-proof couplers**

Couplers facilitate the connection of electrical cables to mobile mining equipment. Given that they are traditionally manufactured from brass, leaded gun metal or stainless steel, the extremely high weight-to-value ratio of these critical components presents a substantial theft risk. The cost of replacing stolen couplers is often further exacerbated by subsequent downtime and production losses. Proof Engineering has pioneered the ProAlloy zinc coupler. This revolutionary unit presents a three-in-one solution for industry: reduced theft risk, lighter weight and lower cost.

Instead of the traditional materials, the ProAlloy is manufactured from a zinc, copper and aluminium mix which holds no resale value. The aluminium contaminates the mix, significantly decreasing the value and it cannot be sold for scrap. The patented non-theft ProAlloy material not only also makes the coupler 33% lighter in weight, but also presents a more affordable alternative.

The ProAlloy coupler demonstrates material integrity, retains its machinability and remains completely malleable. Stringent corrosion tests conducted by Mintek showed that there is no corrosion affect. Marks adds that the addition of a newly developed additive has improved the metal strength of the coupler even further. The ProAlloy couplers have been successfully tried and field tested by a number of blue chip mining houses. This has led to the manufacture of ProAlloy plugs and sockets that provide end users with the same benefits as the ProAlloy couplers. “The material may also have potential applications in components other than electrical couplers, such as switches, housings and flameproof glands,” concludes Marks.

For more information contact
Donovan Marks, Proof Engineering,
+27 11 824 1146,
donovan@proofholdings.co.za,
www.proofeng.co.za

**Revolutionary modular rope hoist**

For the first time, a rope hoist can be built either in a C-design or co-axial design utilising one basic technology. The extraordinary wide range of possible DMR applications can be extended thanks to smart interfaces and corresponding fittings and accessories.

Demag’s modular rope hoist offers many options, such as five different sizes with load capacities of up to 50 tons, a choice of motors, a foot-mounted hoist, low headroom travelling hoist, double-rail crab, a standard headroom travelling hoist, as well as a smart SafeControl system.

“Flexibility and productivity, as well as long service life and cost-effective operation are key characteristics of our DMR,” says Richard Roughly, senior sales and marketing manager of Demag Cranes. “Consequently, the impressive modular rope hoist concept also offers sophisticated technical details.”

The coupling between the motor and the gearbox absorbs sudden motor forces for a longer rope hoist service life. The motor weighs much less than previous models. The DMR gearbox, which requires 30% less oil, provides for long maintenance intervals thanks to its efficient oil lubrication. Its enclosed design offers protection against external factors.

For more information contact
Richard Roughly, Demag Cranes,
+27 11 898 3500,
richard.roughly@demagcranes.com,
www.demagcranes.co.za
<table>
<thead>
<tr>
<th>Company</th>
<th>Telephone</th>
<th>E-mail</th>
<th>Website</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artic Driers International</td>
<td>+27 11 420 0274</td>
<td><a href="mailto:allen@articdriers.co.za">allen@articdriers.co.za</a></td>
<td><a href="http://www.articdriers.co.za">www.articdriers.co.za</a></td>
<td>25*,27,29</td>
</tr>
<tr>
<td>Automation &amp; Control Solutions</td>
<td>+27 11 249 6700</td>
<td><a href="mailto:rfq@aveng-acs.com">rfq@aveng-acs.com</a></td>
<td><a href="http://www.aveng-acs.com">www.aveng-acs.com</a></td>
<td>17*</td>
</tr>
<tr>
<td>Axiom Hydraulics</td>
<td>+27 11 334 3068</td>
<td><a href="mailto:fritz@axiom.org.za">fritz@axiom.org.za</a></td>
<td><a href="http://www.axiomsa.co.za">www.axiomsa.co.za</a></td>
<td>21*,24</td>
</tr>
<tr>
<td>Beckhoff Automation</td>
<td>+27 11 1955 2888</td>
<td><a href="mailto:michelle@beckhoff.com">michelle@beckhoff.com</a></td>
<td><a href="http://www.beckhoff.co.za">www.beckhoff.co.za</a></td>
<td>30,0BC*</td>
</tr>
<tr>
<td>BMG</td>
<td>+27 11 620 7597</td>
<td><a href="mailto:laurenh@bmworld.net">laurenh@bmworld.net</a></td>
<td><a href="http://www.bmgworld.net">www.bmgworld.net</a></td>
<td>16,20, 37*,39</td>
</tr>
<tr>
<td>Boulting Technology</td>
<td>+44 1785 245 466</td>
<td><a href="mailto:kardoble@boulying.co.uk">kardoble@boulying.co.uk</a></td>
<td><a href="http://www.boulingtechnology.co.uk">www.boulingtechnology.co.uk</a></td>
<td>32</td>
</tr>
<tr>
<td>Commercial Shearing</td>
<td>+27 11 397 4264</td>
<td><a href="mailto:comshear@global.co.za">comshear@global.co.za</a></td>
<td><a href="http://www.commercialshearing.co.za">www.commercialshearing.co.za</a></td>
<td>IFC*</td>
</tr>
<tr>
<td>Cummins Africa Middle East</td>
<td>+27 11 028 8622</td>
<td><a href="mailto:amina.kaguah@cummins.com">amina.kaguah@cummins.com</a></td>
<td><a href="http://www.cummins.com">www.cummins.com</a></td>
<td>19</td>
</tr>
<tr>
<td>Demag Cranes</td>
<td>+27 11 898 3500</td>
<td><a href="mailto:richard.roughly@demagcranes.com">richard.roughly@demagcranes.com</a></td>
<td><a href="http://www.demagcranes.co.za">www.demagcranes.co.za</a></td>
<td>40</td>
</tr>
<tr>
<td>Dosco Precision Hydraulics</td>
<td>+27 11 452 5843</td>
<td><a href="mailto:jacques@dosco.co.za">jacques@dosco.co.za</a></td>
<td><a href="http://www.dosco.co.za">www.dosco.co.za</a></td>
<td>24</td>
</tr>
<tr>
<td>EP Normand</td>
<td>+27 11 824 1320</td>
<td><a href="mailto:sales@epnormand.co.za">sales@epnormand.co.za</a></td>
<td><a href="http://www.enormand.co.za">www.enormand.co.za</a></td>
<td></td>
</tr>
<tr>
<td>Festo</td>
<td>+27 11 971 5535</td>
<td><a href="mailto:ntando.ndkweini@festo.com">ntando.ndkweini@festo.com</a></td>
<td><a href="http://www.festo.co.za">www.festo.co.za</a></td>
<td>11,27*,33</td>
</tr>
<tr>
<td>Hydraulic &amp; Automation Warehouse</td>
<td>+27 11 281 3800</td>
<td><a href="mailto:info@haw.co.za">info@haw.co.za</a></td>
<td><a href="http://www.hydromotion%E6%8E%A7.co.za">www.hydromotion控.co.za</a></td>
<td>23*</td>
</tr>
<tr>
<td>Hyflo</td>
<td>+27 11 386 5800</td>
<td><a href="mailto:mjbj@hyflo.co.za">mjbj@hyflo.co.za</a></td>
<td><a href="http://www.hyflo.co.za">www.hyflo.co.za</a></td>
<td>20,23</td>
</tr>
<tr>
<td>Hytec</td>
<td>+27 11 975 9700</td>
<td><a href="mailto:mike.harrison@hytec.co.za">mike.harrison@hytec.co.za</a></td>
<td><a href="http://www.hytecgroup.co.za">www.hytecgroup.co.za</a></td>
<td>5</td>
</tr>
<tr>
<td>Hytec Services Africa</td>
<td>+27 11 573 5460</td>
<td><a href="mailto:charlie.harrison@hytec.co.za">charlie.harrison@hytec.co.za</a></td>
<td><a href="http://www.hytecgroup.co.za">www.hytecgroup.co.za</a></td>
<td>22</td>
</tr>
<tr>
<td>Instrotech</td>
<td>+27 10 595 1831</td>
<td><a href="mailto:sales@instrotech.co.za">sales@instrotech.co.za</a></td>
<td><a href="http://www.instrotech.co.za">www.instrotech.co.za</a></td>
<td>38</td>
</tr>
<tr>
<td>Magnet Group</td>
<td>+27 31 274 1998</td>
<td><a href="mailto:samantha@magnetgroup.co.za">samantha@magnetgroup.co.za</a></td>
<td><a href="http://www.magnetgroup.co.za">www.magnetgroup.co.za</a></td>
<td>40</td>
</tr>
<tr>
<td>Martinussen &amp; Coutts</td>
<td>+27 11 607 1700</td>
<td><a href="mailto:richard@mandc.co.za">richard@mandc.co.za</a></td>
<td><a href="http://www.mandc.co.za">www.mandc.co.za</a></td>
<td>38</td>
</tr>
<tr>
<td>Megadyne South Africa</td>
<td>+27 12 661 1652</td>
<td><a href="mailto:patrizio.trevisan@megadynegroup.com">patrizio.trevisan@megadynegroup.com</a></td>
<td><a href="http://www.megadynegroup.com">www.megadynegroup.com</a></td>
<td>9</td>
</tr>
<tr>
<td>Metal Work Pneumatic South Africa</td>
<td>+27 31 569 1584</td>
<td><a href="mailto:johanb@metalworkpneumatic.co.za">johanb@metalworkpneumatic.co.za</a></td>
<td><a href="http://www.metalworkpneumatic.co.za">www.metalworkpneumatic.co.za</a></td>
<td>25</td>
</tr>
<tr>
<td>Omron Electronics</td>
<td>+27 11 579 2600</td>
<td><a href="mailto:info@au.omron.com">info@au.omron.com</a></td>
<td><a href="http://www.industrial.omron.co.za">www.industrial.omron.co.za</a></td>
<td>7,31*,35</td>
</tr>
<tr>
<td>Paramount Group</td>
<td>+27 11 697 0503</td>
<td><a href="mailto:shamendran.pillay@paramountgroup.com">shamendran.pillay@paramountgroup.com</a></td>
<td><a href="http://www.paramountgroup.co.za">www.paramountgroup.co.za</a></td>
<td>10</td>
</tr>
<tr>
<td>Parker Hannifin SA</td>
<td>+27 11 961 0700</td>
<td><a href="mailto:lisa.debeer@parker.com">lisa.debeer@parker.com</a></td>
<td><a href="http://www.paramountgroup.co.za">www.paramountgroup.co.za</a></td>
<td></td>
</tr>
<tr>
<td>Pneumax</td>
<td>+27 11 923 7000</td>
<td><a href="mailto:mbali@torreindustries.com">mbali@torreindustries.com</a></td>
<td><a href="http://www.torreindustries.co.za">www.torreindustries.co.za</a></td>
<td></td>
</tr>
<tr>
<td>Proof Africa</td>
<td>+27 83 557 2322</td>
<td><a href="mailto:anz@proofafrica.co.za">anz@proofafrica.co.za</a></td>
<td><a href="http://www.proofafrica.co.za">www.proofafrica.co.za</a></td>
<td>26</td>
</tr>
<tr>
<td>Proof Engineering</td>
<td>+27 11 824 1146</td>
<td><a href="mailto:donovan@proofholdings.co.za">donovan@proofholdings.co.za</a></td>
<td><a href="http://www.proofeng.co.za">www.proofeng.co.za</a></td>
<td>10</td>
</tr>
<tr>
<td>Rand-Air</td>
<td>+27 11 345 0700</td>
<td><a href="mailto:byrone.thorne@randair.com">byrone.thorne@randair.com</a></td>
<td><a href="http://www.randair.com">www.randair.com</a></td>
<td>40</td>
</tr>
<tr>
<td>SAFPA</td>
<td>+27 11 888 7163</td>
<td><a href="mailto:ctr@safpa.org.za">ctr@safpa.org.za</a></td>
<td><a href="http://www.safpa.org.za">www.safpa.org.za</a></td>
<td>28</td>
</tr>
<tr>
<td>Schneider Electric SA</td>
<td>+27 11 254 6400</td>
<td><a href="mailto:priscac.mashanda@schneider-electric.com">priscac.mashanda@schneider-electric.com</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td>3*</td>
</tr>
<tr>
<td>SEW-Eurodrive</td>
<td>+27 11 248 7000</td>
<td><a href="mailto:jklut@sew.co.za">jklut@sew.co.za</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td>12</td>
</tr>
<tr>
<td>Siemens Digital Factory and Process Industries and Drives</td>
<td>+27 71 492 3789</td>
<td><a href="mailto:keshin.govender@siemens.com">keshin.govender@siemens.com</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td>7,15*,18</td>
</tr>
<tr>
<td>Siemens Digital Factory and Process Industries and Drives</td>
<td>+27 11 652 2795</td>
<td><a href="mailto:jennifer.naidoo@siemens.com">jennifer.naidoo@siemens.com</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td>9</td>
</tr>
<tr>
<td>SKF South Africa</td>
<td>+27 11 821 3500</td>
<td><a href="mailto:samantha.joubert@skf.com">samantha.joubert@skf.com</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td></td>
</tr>
<tr>
<td>SMC Corporation South Africa</td>
<td>+27 11 100 5866</td>
<td><a href="mailto:sales@smcpneumatics.co.za">sales@smcpneumatics.co.za</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td></td>
</tr>
<tr>
<td>Tectra Automation</td>
<td>+27 11 971 9400</td>
<td><a href="mailto:malan.bosman@tectra.co.za">malan.bosman@tectra.co.za</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td></td>
</tr>
<tr>
<td>University of Pretoria</td>
<td>+27 12 420 3650</td>
<td><a href="mailto:liezel@roundtree.co.za">liezel@roundtree.co.za</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td></td>
</tr>
<tr>
<td>Zest WEG Group Africa</td>
<td>+27 11 723 6000</td>
<td><a href="mailto:info@zestweg.com">info@zestweg.com</a></td>
<td><a href="http://www.schneider-electric.co.za">www.schneider-electric.co.za</a></td>
<td></td>
</tr>
</tbody>
</table>

*denotes advertiser

For more information on these and other suppliers please see [www.mcbg.co.za](http://www.mcbg.co.za)
Servo, stepper and DC motors: directly integrated into the I/O system.

www.beckhoff.co.za/compact-drive-technology

In combination with a wide range of motors and gear units, the Beckhoff I/O systems enable a compact and cost-effective drive solution. The modular and extendable motion terminals support servo, stepper and DC motors with different performance ranges. For machine mounting outside of a control cabinet, EtherCAT Box modules for stepper and DC motors are available. All drive solutions are integrated into the Beckhoff automation software TwinCAT which enables easy parameterization.

<table>
<thead>
<tr>
<th></th>
<th>EtherCAT Terminals (IP 20)</th>
<th>Bus Terminals (IP 20)</th>
<th>EtherCAT Box (IP 67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servomotor</td>
<td>50 V, 4 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O</td>
<td>50 V, 4 A, OCT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stepper motor</td>
<td>24 V, 1.5 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motion</td>
<td>50 V, 5 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC motor</td>
<td>24 V, 1 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 V, 3.5 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 V, 5 A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Beckhoff Automation (Pty) Ltd
Randburg 2194, South Africa
Phone: +27 (0)11 795 2898
info@beckhoff.co.za

New Automation Technology