THIS MONTH:

- Design challenges and solar energy innovation
- 100 years of stainless steel – a South African perspective
- New compressor technology and benchmark service support
- SA’s military vehicle specialist targets markets closer to home
MCEP is an initiative supporting South Africa’s manufacturing industries to improve competitiveness and sustain employment.

Cash grants and concessionary industrial financing facilities are available to companies operating in certain key manufacturing industries. Funding is available to enhance competitiveness and improve resource efficiency.

If you need to raise your competitive bar by improving your efficiency, feasibility or cluster competitiveness, then visit www.investmentincentives.co.za/mcep for help.

MCEP is an initiative of the Department of Trade and Industry and the Industrial Development Corporation.
The urgent need for independent power

I write this in a week that started with the announcement (or admission) that the first unit of the Medupi Power Station would not be online this year. The new, “more realistic” target is during “the second half of 2014.”

Three days later on 10 July, Eskom presented its results. Eskom’s outgoing finance director, Paul O’Flaherty, reported that net profit, excluding debt service, decreased from R13,2-billion as at 31 March 2012 to R5,2-billion as at 31 March 2013. Gross debt, however, rose from R182,5-billion in 2012 to very nearly R203-billion by the end of the 2012/2013 financial year. By my crude calculations of debt repayments (1% of total debt per month) the cost of Eskom’s debt far outweighs any profits.

At a Southern African Institute of Welding event this month, Bill Scurr, the executive director of the Southern African Stainless Steel Association (SASSDA), gave a presentation entitled ‘100 years of stainless steel: a South African perspective’, which is featured in this issue. A key input resource for making stainless steel is ferrochrome, which is produced from chromite ore. Scurr points out that, although South Africa has 85% of the world chromite resources and the capacity to meet 50% of global demand for ferrochrome, “we currently only supply 30%, and this is largely self-inflicted,” he says. “...Eskom is currently paying producers not to make ferrochrome. This has allowed the Chinese, who have no chromite resources, to become the world’s biggest ferrochrome producers.”

Eskom’s Brian Dames claims that Eskom has “kept the lights on amid increasingly difficult circumstances.” But at what cost?

Despite declarations to the contrary, the blame game has begun: Paul O’Flaherty is pointing at contractors, “... our construction industry is in real trouble in this country because we’ve lost the ability to manage and supervise the labour force”, and Public Enterprises minister Malusi Gigaba, has vowed to send a delegation to the Alstom headquarters in France to “seek explanations” – and compensation?

Three key reasons are being cited for the delay: First is Alstom’s “continued under-performance on the control and instrumentation contract, despite active interventions by Eskom over the past year”.

The second is boiler welding. Eskom says: “there has been inadequate post-weld heat treatment, meaning multiple welds needed to be retested and fixed. And welds made using unqualified procedures also needed to be replaced.” As a regular writer on welding, it is inconceivable that unqualified procedures can exist on critical boiler components. But skills shortages have long been highlighted as impacting issues with this project.

Labour relations, say Eskom, is reason number three: The project has lost up to nine months of production due to strike action, most recently, a three month stoppage between January to April 2013.

Said O’Flaherty: “There are so many things that need work, the way people are set up on site. The way labour is trained, treated and supervised is not acceptable ...” and “…Eskom is completely accountable to its build programme, but we know where we need to improve and we are working on it. The same cannot necessarily be said of the construction sector.”

It’s hard not to interpret statements like these as ‘blame deflectors’.

Jasson Urbach, a director of the Free Market Foundation, has been warning of a crisis at Medupi for some time now. In August 2012, he wrote: “Medupi power station will be 48 months late and cost at least R77,1-billion more than the original estimate.” On June 11, 2013, he writes that these estimates were “optimistic”. Including interest during construction and the costs of the required flue gas desulphurisation (FGD) plant, Urbach calculates the real cost of completing Medupi at between R145-and R150-billion. He goes on to predict some “horrendous economic impacts on South Africa’s wider economy ... the total cost of unserved energy for a delay on all six units amounts to a staggering R1 408-billion.”

The Energy Policy Unit of the Free Market Foundation believes that the way forward is to “abandon the outdated monopolistic model of Eskom as sole generator and distributor; and adopt internationally proven best practices. This means unbundling the national grid from Eskom into separate independent units and introducing private operators able to buy and sell (wheel) electricity over the grid at market determined prices.”

It is hard to disagree. Even in the short term, ferrochrome producers, for example, would benefit, immediately, if extra capacity could be made available quickly. We are committed to Medupi and Kusile, but our economy is far too dependent on Eskom. Policy is urgently required to allow power producers to be truly independent. Only then will we see a power grid that responds to the real needs of our economy.

Peter Middleton
Bonfiglioli’s New Range of Large Power Bevel Helical and Parallel Shaft Reducers for Heavy Duty Applications

The HD series is the perfect choice for demanding industrial applications. The advanced design technologies are setting new standards for industrial gearboxes. High precision ground gears, closely spaced reduction ratios and a wide range of mounting options, guarantee excellent configurability for every application.
SEW establishes contracts division
SEW-Eurodrive, a specialist drive solution provider with offerings that include: geared-motors and frequency inverters; servo and decentralised drive systems; and industrial gear units; has recently opened a contracts division in South Africa to better service the mining sector and its project houses. MechTech talks to Imtiaz Fajandar, the company’s newly appointed contracts engineer, and Rob Green, the SEW Johannesburg sales manager.

For more information contact:
Imtiaz Fajandar
SEW contracts engineer
Mobile: +27 84 555 6435
Tel: +27 11 248 7292
Fax: +27 86 533 4829
ifajandar@sew.co.za
www.sew.co.za

Features:

8 SA’s military vehicle specialist targets markets closer to home
On June 27, the Secretary for Defence, Sam Gulube, officially opened DCD Protected Mobility’s new R100-million manufacturing facility in Isando. MechTech attends and talk to Andrew Mears, the general manager.

Power transmission, bearings and bushes

10 BMG celebrates the Fenner brand
With the acquisition of Fenner Power Transmission (FPT) Distribution, SA over 15 years ago, this year BMG celebrates the brands 85th year in southern Africa. Keith van Wyk, director of BMG, unpacks the Fenner offering.

12 Manufacture and delivery of air cooled condenser fan drives completed

15 Voith couplings for belt conveyors

17 Managing torsional vibration

Computer-aided engineering

18 New clay brick making technology helps South Africa breathe easy
According to Rowe Group director Jez Rowe, using Autodesk Factory Design Suite has helped to optimise brick manufacturing operations.

21 Intergraph launches SmartPlant Cloud

Hydraulic and pneumatic systems

22 New compressor technology and benchmark service support
Atlas Copco’s Charl Ackerman talks about the new highly efficient oil-injected rotary screw compressors, while Wayne Jacobs argues the case for contracting the best possible service support.

24 Five star product line-up

25 New pneumatics products at local exhibition

26 Autodesk joins PneuDrive Challenge 2013

Modern engineering materials and processing

28 100 years of stainless steel – a South African perspective
At an evening function sponsored by SASSDA at the Southern African Institute of Welding on June 26, Bill Scurr, executive director of SASSDA summarised the developmental history of stainless steel and reported on the current outlook for the material, both globally and in South Africa.

32 Expanded profiling and processing service

Innovative engineering

34 Design challenges and solar energy innovation
At an event hosted by productONE at the newly opened Resolution Circle Nano centre at the University of Johannesburg, the university’s solar car team presented its design capabilities, and its use of PTC’s Creo family of CAE software solutions. Peter Middleton reports.

Regulars

1 Comment

4 On the cover: SEW establishes contracts division

38 Products and services

40 Nota bene
SEW establishes contracts division

SEW-Eurodrive, a specialist drive solution provider with offerings that include: geared-motors and frequency inverters; servo and decentralised drive systems; and industrial gear units; has recently opened a contracts division in South Africa to better service the mining sector and its project houses. MechTech talks to Imtiaz Fajandar, the company’s newly appointed contracts engineer, and Rob Green, the SEW Johannesburg sales manager.

With the launch of its locally assembled Industrial Gear (IG) range of heavy duty helical and helical-bevel gear units in 2005, Johannesburg-based SEW Eurodrive is increasingly active in the bulk materials handling and mining sectors. “Having achieved significant success in conventional geared motor applications, we were enthusiastic in entering the mining sector, and today the company is specified as the preferred solutions provider for a number of end users and OEMs operating in the platinum, waste water treatment and coal sectors across southern Africa,” says Green.

To further promote this business growth, a new contracts division was established on March 1, 2013, to coincide with the start of the new financial year. “There are numerous mining and materials handling developments, in both South and Southern Africa, going through our local project houses,” says Fajandar. “SEW Eurodrive’s head office in JHB services 10 sub-Saharan countries mostly, but not exclusively, in Southern Africa,” he informs MechTech.

Fajandar, who started in the engineering division of SEW after graduating from the University of Johannesburg in 2007, was chosen to head up the new SEW contracts division based on his six years of experience with SEW’s IG range of industrial gearboxes.

Explaining SEW’s rationale for the new division, Green says that Johannesburg sales is split into three departments: internal sales, external sales and exports. “We have an internal call centre for direct sales and enquiries. Then we have sales representatives who support and service key clients in regions across South Africa. In our exports department we have recently appointed additional staff to assist with enquiries received by our Johannesburg branch as well as to travel to countries within our coverage area to represent us in a greater capacity.”

“But the engineering project houses represent a different market. They require engineering input and experience, so we have to have the knowledge to assist them. This work needs to satisfy tender requirements, so it is very different from our normal sales specifications and quotation services,” says Green.

“The role of contracts is more technical, more integrated and associated with project management as well as legal contractual obligations,” suggests Fajandar.

“Project house requirements will now be channelled via SEW Eurodrive’s new contracts division, spearheaded by Imtiaz,” continues Green. “We are confident that he has all of the engineering and project management experience to service any of the specific needs for drives in proposals,” he assures MechTech. “The division also enables us to take a more proactive approach. In the past, we have tended to be more focused on individual units and components. Now, we are more able to embed our products into bigger systems and solutions, which offers designers a more seamless development experience and the end user a more integrated, reliable, efficient and cost effective plant. We now have people such as Imtiaz, with credentials and experience in the requirements of the mining and materials handling markets, who can engage and cooperate with project houses, and proactively come up with solutions instead of simply responding to enquiries,” he adds.

At the heart of the contracts offering, says Fajandar, is SEW’s range of IG gear units. “But all of our products – geared motors from small to large; inverters and VSDs – are part of the offering, along with fully customised power packs that include OEM components that are free issued such as motors and

SEW’s X-series is an invertible gearbox, which allows it to be used for both left and right handed applications, and a newly developed housing gives one of the best thermal ratings on the market.
couplings, and we fit them onto our baseplates and align them at no cost, a service that is available as part of the contracts offering,” he reveals.

Typically, a power pack for a convey or pulley drive, will consist of: an electric motor; an IG gearbox; high-speed and low speed couplings; a base plate; and customised high-speed and low speed coupling guards. “We can install flexible or fluid couplings; disc or drum brakes; and internal or external reverse protection systems,” Fajandar adds.

“Gear units are specified to meet the specified torque and bearing life requirements requested by the client. The Conveyor Manufacturers Association’s (CMA) standard is a bearing life of 40 000 hours, but increasingly, clients are insisting on 60 000 and 100 000 hour life calculations,” explains the SEW contracts engineer.

Thermal calculations, particularly in Africa’s hot environments, are also important. “We believe that gearbox sump temperatures should never go above 80°C, although some clients accept 90°C operating temperatures. So, depending on the application, location and ambient temperature, we specify additional technology required to cool the oil – oil reticulation and cooling systems, for example.”

Central to the contracts offering is the IG gear unit range: the MC-, X-, M-, ML- and Planetary-series of SEW units. Particularly suited to conveyor applications are the X-series helical and helical-bevel gear units, which can be optimally adjusted due to finely stepped torque ratings. “The modular concept allows us to offer a broad range of torque and speed options,” says Green, “and setting these apart from the norm, the X-series can provide four reduction stages instead of the traditional three,” he adds.

Other areas of application include: apron feeders; bucket elevators for horizontal and vertical conveying; hoist drives on cranes; and stacking and reclaiming equipment. “The X-series is an invertible gearbox, which allows it to be used for both left and right handed applications,” Fajandar tells MechTech. The gearbox can be flipped on its axis by 180°. In addition, a newly developed thermal housing gives the unit one of the best thermal ratings on the market, which is critical in gear unit applications,” he suggests.

For ease of maintenance, the X-series gear unit incorporates a horizontal split housing design, which gives access to the gearbox while connected to the shaft. “This feature allows for faster disassembly, service and re-assembly times which translates into minimised maintenance downtimes. In addition, if the unit is properly designed into the application with the most appropriate motor, couplings and other drivetrain components, then the life of the unit is maximised and the costs of ownerships reduced to their absolute minimum,” Fajandar points out.

Also suited to mining applications are the M- and ML-series of SEW IG units for conveyor, ball mill drive and other horizontal heavy duty conveyor applications. “The MC-series has been very well received and utilised in conveyor applications, particularly in the coal and platinum market,” Green informs MechTech. In addition to the standard right angle and parallel versions of MC-series units SEW has a vertical shaft version, specifically designed for agitators, mixers and stirring-type applications, while the planetary drives are ideal for slewing drives.

The most recent addition to the range, according to Fajandar, is the new MACC IG gearbox, which has been purpose-designed to suit the fan drives for the air-cooled condensers of power stations.

“The core advantage of using the SEW range is our vast stock holding. We have spares available for any downtime critical applications, so clients can be assured that downtime will be minimised,” he suggests.

The ability to service, overhaul and repair product locally is also key: “We are able to offer these services in two options. We repair equipment brought in or collect on request from site at our workshops or we are also able offer an onsite field service, with suitably qualified technicians in purpose-equipped vehicles. “And we can offer this service across sub-Saharan Africa,” adds Green.

With the launch of its locally assembled Industrial Gear (IG) range of heavy duty helical and helical-bevel gear units in 2005, Johannesburg-based SEW Eurodrive is increasingly active in the bulk materials handling and mining sectors.

A standard SEW complete drive train package will typically consist of: an electric motor; an IG gearbox; high-speed and low speed couplings; a base plate; and customised high-speed and low speed coupling guards.

A 3D model of a skid pan unit with a bell housing to accommodate the fluid coupling.

“The establishment of the contracts division allows us to develop the right solutions for any application,” concludes Green. “Leveraging off premium products across the range, it allows us to offer mining houses and bulk materials handling facilities products that do the job for the complete lifespan at the lowest possible cost.”
Bosch Holdings expands in Gauteng

Bosch Holdings, the multidisciplinary consulting engineering specialist, has expanded its operations in Gauteng and moved to new offices in Bryanston.

“The consolidation of our Gauteng operations enables Bosch Holdings to improve its service to a diverse customer base with an expanded and highly experienced team of specialists, permanently based in the Gauteng region,” says Mike Gibbon, CEO, Bosch Holdings. “The company plans to focus on growing its Gauteng client base while continuing to support its strategic growth initiatives both nationally and internationally.

“This expansion programme follows in the wake of the company’s 2010 re-branding initiative, which involved the consolidation of different specialist companies to form a single, unified brand. The company, which has expanded significantly over 52 years, now has offices throughout South Africa, into Africa and internationally and has completed projects in more than 35 countries. Over the last five years, Bosch Holdings has mobilised engineering, construction and commissioning teams in countries that include Swaziland, Mozambique, Zimbabwe, Tanzania, Malawi, Kenya, DRC, Sudan, Egypt and Brazil. And a new East African regional headquarters is currently being set up in Nairobi.

“Since 2002, the group’s turnover has increased tenfold. Growth has been driven by enhanced marketing of specialist services, good corporate governance, effective planning and utilisation of resources, as well as a superior service to customers,” says Gibbon.

Recent successes for Bosch Holdings include the Mhlabatshane bulk water supply scheme that will provide 100 000 rural people with potable water, and Umgeni Water’s Mtuli River pipe bridge crossing project near Amanzimtoti. The company is currently busy with the design of a multi-billion dollar sugar and ethanol estate in Angola. Other significant projects include a water and wastewater plant for Bulawayo, Zimbabwe, and the implementation of a national waste collection training programme throughout South Africa.

Bosch Holdings, committed to the principles of BBBEE, is certified as a level three contributor. All activities adhere to ISO 9001-2008 quality standards.

www.boschholdings.co.za

Sundyne names AESPUMP as channel partner

Sundyne has named AESPUMP as its sole authorised channel partner and service provider for South Africa. The appointment, which became effective on May 1, includes sales, maintenance, repair and technical support for the entire portfolio of Sundyne pumps and compressors throughout the country, as well as the supply of spare parts.

Launched in 2012 from the former rotating equipment repairs division of AESSEAL, AESPUMP is located in Secunda and has a primary business focus on the support of petrochemical refineries and mining operations, in addition to the repair of API 610 pumps.

Sundyne made the decision to appoint AESPUMP after completing a comprehensive audit of the company’s capabilities, which include pump testing facilities, Level 4BEE certification, full compliance with ISO 9001, 14001 and OSHAS18001 industrial standards, merSETA approval for apprenticeship training, and flame-proof apparatus for use in explosive gas atmospheres.

“In our search to identify a new sales and service partner for the South African market, we tried to find a company whose business and service model was in alignment with our own,” says Colin Guppy, Sundyne’s general manager of worldwide sales. “AES-PUMP met that criteria.”

www.aespump.co.za

Plastic product customising centre enlarged

Röchling Sustaplast KG from Lahnstein has invested €2-million in the construction of its Product Customising Centre. The plastics processor from the Rhine-Lahn-Circle has thus extended its position as the market leader for cut-to-size, semi-finished, high-performance plastics.

Röchling Sustaplast manufactures one of the most diverse ranges of thermoplastic semi-finished products, including sheet, round and hollow rods and profiles in a host of standard dimensions as well as machined parts according to customer drawings. These plastics are widely used in mechanical engineering, the food industry, medical technology, wind power plants and in the offshore field. Should customers need semi-finished products in special dimensions, they will be customised to order in this Product Customising Centre.

www.roechling.com

Carbon footprint calculator announced

Government’s announcement that companies will begin paying a carbon tax from 1 January 2015 is a daunting challenge for businesses that will now have to calculate their carbon emissions. In addition, companies emitting more than 0,1% of the total emissions of their industry sector will be required to submit mitigation plans detailing how they will reduce their greenhouse gas emissions.

“Businesses will need to ascertain four factors to evaluate their carbon footprint: the quantity of emissions generated; their industry sector total; the company’s own baseline from where emissions must be reduced; and how actual emissions will be reduced,” says Robbie Louw, a director of carbon advisory firm, Promethium Carbon.

In line with this, Promethium Carbon has introduced a carbon tax tool, available free of charge on the web, that calculates carbon footprint. It takes into account the current tax legislation and will incorporate changes as they occur.

Louw says the tax calculations can become quite complex. The tax tool aims to assist in doing these calculations as simply as possible. “Organisations should start getting an indication of their potential tax liability to prepare for 2015,” he advises.

www.carbontax.co.za

www.aespump.co.za
WEG to broaden investment in local infrastructure

The WEG Group’s strategy of expanding its global network of businesses and manufacturing plants is achieving dynamic year-on-year growth and is expected to gain momentum in the years ahead. WEG is the holding company of the Zest WEG Group, a leader in the supply of electric motors, variable speeds drives, transformers and switchgear in Africa.

“In 2011, the same year in which our Group strategy was launched and in the wake of the economic crisis, WEG achieved 19% growth and again in 2012,” says Harry Schmelzer, executive president and CEO of WEG. The strategic plan is expected to ensure that the WEG Group increases its sales by at least 17% year on year until 2020, when it aims to arrive at a turnover of US$10-billion.

“We’re confident that this vigorous growth will continue year on year, deriving from investments and our entry into new markets. We’re focused on introducing more products into these markets to increase the reach of our portfolio and expand the number of electrical and automation systems on offer. “The acquisition of a majority stake in Zest in 2010 was pivotal for us, because it has brought WEG much closer to the African business world. Our next step is to grow strongly in the African market. Our business strategy in South Africa aligns with the Group’s strategic plan, with emphasis on exploring sectors of the market in which we are not currently active. Customers in various sectors are helping us to identify potential opportunities and these are currently being assessed from a perspective of introducing new products and making acquisitions. For example, we’re about to acquire a transformer manufacturing facility in South Africa.”

Schmelzer adds that WEG is broadening its investment into the group’s local infrastructure. Localisation is also in line with the Zest WEG Group’s BBBEE and localisation strategy that seeks to boost job creation and add value to local communities. “WEG will continue to make investments in order to secure business and market share and achieve growth in mature markets, while keeping a close watch on emerging markets, where there is always opportunity to develop,” Schmelzer concludes.

Voith Vorecons chosen for offshore operations in Brazil

A further 28 Voith variable speed planetary gearboxes are being supplied to the oil fields in the giant ‘Pre-Salt-Cluster’ in the Atlantic. Needing to equip four FPSOs (Floating Production Storage and Offloading Vessels) in the ‘Cessao Onerosa’ oil field off the coast of Rio de Janeiro and São Paulo, Petrobras Netherlands (PNBV) has chosen Voith Vorecons.

In 2012, Voith received its first large order to supply 60 Vorecon units to the Brazilian pre-salt fields. The high reliability, compact skid arrangement and local content of these units helped to convince the operator that Voith was the right choice, and they have now made a follow-up order for this space-saving drive solution.

For the four FPSOs, a total of 28 Vorecon units (type RWE 12 F 7) are being installed in the compressor drive train. The electric motors drive the compressors, with their operating speed controlled by the Voith Vorecon units.

This variable speed planetary gearbox is particularly well suited to the arduous pre-salt province conditions, located in the Atlantic Ocean around 250 km far from the coast. An MTBF (mean time between failure) of 48 years indicates the high level of reliability of the Voith Vorecon. The service life stands at four decades, more than three times longer than that of typical variable frequency drives.

In brief

GRW, South Africa’s road tanker and trailer specialist, has announced the appointment of Johan Richards as the company’s new group commercial executive. A qualified engineer with extensive experience in the local transport industry, Richards will oversee all of the company’s sales and marketing activities in Gauteng.

Zest WEG Group’s Genset Division is supplying a custom engineered genset solution to the Silo 1 building project in Silo Town. The hybrid modern-meets-historic building comprises nine storeys, three of which are basement levels.

Internationally-recognised consultancy firm SMEC South Africa CEO Thomas Marshall says that having already established a strong foothold in southern and East Africa, SMEC is looking to further expand its presence in West and North Africa.

DPI Plastics, a member of the Dawn Group, has entered into an agreement to supply plumbing products to the newly established DRC branch of Dawn and Saffer’s AST International, the hardware, sanitaryware, plumbing, kitchen, engineering and civil products distributor. The branch is expected to officially open by August 2013.

Conveyor equipment manufacturer Melco has supplied R2,3-million worth of conveyor components to the US$3-billion Cut-8 extension at the Jwaneng open pit diamond mine in Botswana. The Jwaneng Cut-8 project represents the single largest private investment in the history of Botswana.

Consulting engineering and project implementation firm Hatch Goba announced its involvement as founding partner in the National Biodiversity and Business Network – a new initiative that is being spearheaded by the Endangered Wildlife Trust. The aim of the initiative is to facilitate engagement with various business sectors, industries and related stakeholders to promote and assist the integration of biodiversity considerations into business agendas and operations.

Select PPE, a multi-brand service provider of customised onsite personal protective equipment and managed safety solutions in sub-Saharan Africa, celebrated its 15th anniversary on 22 May, 2013. “Select PPE procures, disburses, controls and tracks onsite usage of customer specified personal safety products,” says company director, Dries van Tonder.
CD Protected Mobility is “in a unique position in South Africa in that we are 100% South African-owned. There are other local manufacturers, but almost all of them are more than 50% foreign-owned. There are also some local engineering companies that are arguably stronger on the technical side, but none can offer the manufacturing and production capabilities that we can,” begins Mears.

Originally an offshoot of DCD Rolling Stock Division (RSD) with which it shared a factory, DCD Protected Mobility has emerged as the world’s leading original equipment manufacturer (OEM), for its Husky mine detector vehicles. “We own the intellectual property for these vehicles, which have been a tremendous success for us. Nearly 2 000 vehicles have been sold, mostly to the US Army and Marine Corp, bringing in over R10-billion in foreign revenue over the past 15 years,” he adds.

But from being a company focused exclusively on exports, Protected Mobility is now positioning to become a preferred African and South African manufacturer. “We have long been very close to the export market, and in particular, the highly-regulated and high specification US market,” Mears relates. “But on the Husky side, we are expanding our presence to include all of the G7+ nations and beyond: to Australia, Spain and Turkey, for example. We are trying to become a little less dependent on the US market,” he suggests.

Off the back of the Husky’s success, DCD Protected Mobility has developed the Mountain Lion, a modern versatile military vehicle that has four wheel steering to give it a turning circle of 12,5 m, similar to a commercial vehicle. “The Mountain Lion is not an M-ATV or a Humvee. It is an armoured utility vehicle that is better than all of these: better protected; with better payloads and it can manoeuvre in places where most highly protected vehicles can’t. The key principle is the four wheel steering, which gives much better access to tight urban environments,” explains Mears.

In independent Nato-standard landmine qualification tests conducted by the CSIR against 8 and 10 kg landmines, the Mountain Lion became one of the elite few vehicles to pass the test at its first attempt. The tests, which involve around R10-million worth of investment, require that nothing rup-
tures and no flying debris results from the blast, but most importantly, that all personnel inside the vehicle are able to survive. “We have taken the lessons learned from our Husky VMMD experience, which is designed to survive landmine blasts, and incorporated it into the Mountain Lion. Like the Husky, it uses a sharp V for the hull, but it still gives good ground clearance. It has a lot of innovative protection in safety critical areas and, by adopting as many commercial automotive components as possible, this vehicle is much more easily repaired and maintained than any other all terrain armoured vehicle in its class,” Mears reveals.

In addition, to cater for emerging markets in Africa, DCD Protected Mobility has acquired the intellectual property for the Springbuck armoured personnel carrier (APC) from another South African company, Drakensberg Truck Manufacturers, the vehicles original developer. “This is a much lighter vehicle than the Mountain Lion and although it remains well protected, it is much more affordable and much easier to maintain. We see this as an opportunity for localising the manufacture of vehicles that are ideally suited to African and other emerging markets,” he adds. The new facility is currently completing the manufacture of eight Springbuck IV variants destined for the Nigerian police force.

“We are currently manufacturing the
Special report

The new facility in Isando is currently manufacturing Springbuck IV variants for the Nigerian police force and Huskys for the US and Turkey. Final assembly is done on a mixed line after all the necessary components have been fabricated.

Springbucks for Nigeria and Huskys for the US and Turkey at the same time, continues Mears. “Ideally, we don’t want to mix our production too much, and when volumes increase, we are ready to shift some of the production to other DCD sites. We will then focus on the final assembly here.”

In the interim, however, the facility operates a mixed assembly line: “From our experience at Rolling Stock Division, we have learned to manage the mixed assembly environment very well. There, we had to cope with the Husky and the rolling stock manufacture at the same time, which are very different products. Here, although the vehicles are different, there is a lot more commonality.”

Mears cites three reasons for the move to the new facility: “First, we needed to add capacity to RSD, to allow it to participate fully in South Africa’s railway infrastructure development programmes.

“Second, we needed the space for the defence business to grow. Protected Mobility has been the major contributor to DCDs business for at least the last six years. Establishing a purpose-built facility for military vehicles gives us the opportunity to produce higher volumes and to participate in more local projects going forwards.

“Third, besides the niche US and export markets for the VMMDs, which we intend to protect, we needed to introduce new products to reduce our dependence on the US. This facility allows us to broaden our product range and to develop a new client base for the new vehicles,” he explains. Mears sees the Husky export market slowing. “We expect to sell another 2 000 systems, but over a 10 to 15 year period, and the market is diversifying. We have the capacity to produce 2-5 Springbuck vehicles every day, though, ie, much higher volumes. The new facility gives us the flexibility to mix and migrate production depending on where the different markets go,” he suggests.

For South Africa in the 20-year time-frame: “some of the biggest projects of the world will be in South Africa,” Mears believes. “A significant percentage of current SANDF equipment needs to be replaced. They need tactical trucks and replacements for the Casspir and Mamba vehicles, for example. OEMs such as Mercedes Benz, MAN, IVECO, Volvo or Toyota will be chosen to provide the basic chassis. Denel is likely to be the lead procurer, responsible for the acceptance criteria and logistics. Also needed, though, is a technical integrator, and we are in an ideal position to do that: manufacturing the armoured cabs and integrating the fuel carriers; the cranage or whatever other customisation is required. We hope that this facility will play a major localisation role in the replacement of the South African military fleet.”

On the APC side, he believes that the SANDF could replace its current fleet with the Mountain Lion or the Springbuck, “in which case, we could be the OEM. More likely, though is that SANDF will want to use OEM components in specially designed or customised vehicles,” he predicts.

Mears cites project Hoefyster, which finally moved into the procurement phase earlier this year. A replacement for the Ratel infantry combat vehicle, Hoefyster is an R8-billion contract for a total of 264 Badger infantry combat vehicles (ICV) for the SANDF, based on a Finnish vehicle by Patria with a South African-designed turret from Denel Land Systems. The acquisition plan has now been signed by the minister, but South African companies will have to deliver more than 70% of the total contract value. “We believe we are in an ideal position to work with Denel to satisfy the local content requirements,” says Mears.

“This facility places us in a unique position to provide high-level fabrication services to projects like these,” he adds. “It incorporates all of our experience gleaned from the US government, and all of the manufacturing, quality and business model lessons learned since we began making mine detection vehicles 15 years ago. There is no other facility in South Africa that can compete in terms of capacity or capability,” Mears concludes.
BMG celebrates the Fenner brand

With the acquisition of Fenner Power Transmission (FPT) Distribution SA over 15 years ago, this year BMG celebrates the brands 85th year in southern Africa. Keith van Wyk, director of BMG, unpacks the Fenner offering.

“Fenner power transmission products, which have become synonymous with quality and reliability in power transmission globally, were launched in South Africa in 1928, through Reunert & Lenz, leading engineering suppliers at the time,” says Van Wyk. “It’s a great tribute that Fenner has been in this country longer than any other power transmission brand.

“BMG’s aim has always been to provide a complete single-source drive train solution to industry – including the motor, couplings, speed reducers, belts and pulleys. The Fenner range – which consists of chain, wedge and V-belts, tyre and grid couplings, timing belts, sprockets and pulleys, as well as electric motors and shaft mounted speed reducers – enables BMG to work with all sectors of industry. BMG also services the industrial and mining replacement and re-sale markets and is a supplier to original equipment manufacturers (OEMs).”

An important factor for BMG in marketing Fenner products is the ‘Fenner Quality Assurance Initiative’, which is a worldwide commitment to quality. This is a guarantee to customers, wherever they are located, that the quality of Fenner products always meets exacting, agreed and internationally recognised industry standards.

Shaft mounted speed reducers

Spearheading the offering are Fenner shaft mounted speed reducers, designed to provide an efficient method of reducing speed in diverse applications, including conveyors, mixers and mills, cranes, hoists and winches, as well as manufacturing machinery and tools.

These highly flexible shaft mounted speed reducers (SMSRs) provide an efficient method of reducing speed in diverse applications, including conveyors, mixers and mills, cranes, hoists and winches, as well as manufacturing machinery and tools.

Shaft mounted speed reducers sizes and provides full adjustment of drive centres ensuring a standard belt can be fitted and easily re-tensioned as required. A motor mount that automatically adjusts the belt tension is also available.

This range, which provides a wide choice of final driven speeds, is available in 12 different gear case sizes, with ratios 5, 13, and 20:1, capable of handling powers up to 250 kW.

Elastic tyre couplings

Torsionally elastic Fenaflex tyre couplings offer different flange combinations to ensure optimum flexibility in any application. “These couplings, which are manufactured from natural rubber compounds, can accommodate simultaneous maximum misalignment in planes without imposing undue loads on adjacent bearings,” Van Wyk explains.

The flexing tyre of this coupling reduces torsional vibration, suppresses initial shock loads and eliminates stresses common to power driven machinery like centrifugal compressors and pumps, machine tools, metal presses, mills, winches and fans.

The torsionally soft feature of these couplings prevents expensive breakdowns and extends machine life. Because there are no moving parts, no lubrication is necessary and all that is required is periodic visual inspection of the tyre.

Fenner shaft mounted speed reducers (SMSRs) provide an efficient method of reducing speed in diverse applications, including conveyors, mixers and mills, cranes, hoists and winches, as well as manufacturing machinery and tools.

Shaft mounted speed reducers

Spearheading the offering are Fenner shaft mounted speed reducers, designed to provide an efficient method of reducing speed in diverse applications, including conveyors, mixers and mills, cranes, hoists and winches, as well as manufacturing machinery and tools.

Shaft mounted speed reducers sizes and provides full adjustment of drive centres ensuring a standard belt can be fitted and easily re-tensioned as required. A motor mount that automatically adjusts the belt tension is also available.

This range, which provides a wide choice of final driven speeds, is available in 12 different gear case sizes, with ratios 5, 13, and 20:1, capable of handling powers up to 250 kW.

Elastic tyre couplings

Torsionally elastic Fenaflex tyre couplings offer different flange combinations to ensure optimum flexibility in any application. “These couplings, which are manufactured from natural rubber compounds, can accommodate simultaneous maximum misalignment in planes without imposing undue loads on adjacent bearings,” Van Wyk explains.

The flexing tyre of this coupling reduces torsional vibration, suppresses initial shock loads and eliminates stresses common to power driven machinery like centrifugal compressors and pumps, machine tools, metal presses, mills, winches and fans.

The torsionally soft feature of these couplings prevents expensive breakdowns and extends machine life. Because there are no moving parts, no lubrication is necessary and all that is required is periodic visual inspection of the tyre.

Torsionally elastic Fenaflex tyre couplings offer different flange combinations to ensure optimum flexibility in any application.
Flanges are available in either F or H taper-lock fittings or bored to size. With the addition of a spacer flange, these couplings can be used to accommodate the distance between shaft ends and to facilitate easy pump maintenance. These couplings can withstand operational temperatures between -50°C and +50°C. For fire hazard areas, the chloroprene tyre is recommended. This compound also allows the free flow of static electricity between the two shafts to avoid static electricity build-up.

Shaft locking
The FenLock shaft fixing device transmits about three times more torque than other conventional quick fit shaft fixing devices. By avoiding the use of keys and keyways, simple installation and disassembly is also possible. “This shaft fixing range prevents backlash, ensures easy axial and angular positioning, as well as quick adjustment in all applications. The exceptional torque and axial thrust capacity, a resistance to alternating torque and the eradication of fretting corrosion, significantly extends drive life,” reveals Van Wyk.

Fenlock units fit shaft sizes from 6.0 mm to 900 mm and transmit torque of up to 1,65 MNm. Included in the range are automatic self-centering types, units with zero axial movement and those with a low surface pressure design, with minimal hub diameters.

Grid couplings
BMG’s Fenner grid couplings, which are taper grid steel flexible couplings, are designed to accommodate angular, parallel and axial misalignment between driving and driven machines. The Fenagrid coupling also absorbs considerable torque loads, thus achieving smoother running, with consequent reduction in wear and tear on connected components on the drive train.

This highly resilient grid coupling operates in either the horizontal or vertical position and is suited to any drive that is subjected to shock loading. The operating principle is based on connecting two grooved hubs – one on the driving and the other on the driven shaft – by a grid spring. These hubs are totally enclosed in a cover filled with grease, or in high-speed applications, oil.

An important feature of Fenagrid is that parts are interchangeable so that machines fitted with half couplings can be interchanged quickly, with a minimum loss of production time.

These versatile grid couplings are easy to install and maintain, which reduces labour costs and minimises production downtime.

V-belts
Fenner PowerTwist Plus V-belts, which are manufactured from a high strength polyurethane elastomer, reinforced with multiple plies of polyester fabric, offer excellence resistance to abrasion, oils and greases, water and steam, as well as industrial solvents and chemicals. “These flexible PowerTwist Plus V-belts have a unique design, which enables belts to be custom-sized for each sheave groove, reducing wear and providing a perfect matched set of belts when mounted on a drive,” Van Wyk suggests. These robust belts combine extremely high strength with low stretch and have the same power ratings as conventional V-belts.

Once the required length of belt is determined, the V-belt is simply twisted and the end links are interlocked by hand, without the need for tools. An important advantage is that the belts operate efficiently at elevated temperatures – of up to 110°C – and in harsh environments, for up to 15 times longer than standard rubber and other link V-belts. They are also designed for easy installation as a permanent replacement, with minimal downtime. No dismantling of equipment is necessary.

The belts can also be used on fixed centre drives. The elasticity of woven polyurethane fabric enables them to be stretched over a pulley drive without any damage. Speciality belts in this range are available for specific requirements. These include friction top V-belts which have an additional super grip top surface and highly flexible ground round belts, which are designed specifically to replace round profile rubber, urethane and leather belts.

Bridge top V-belts are fitted with polymer bridge tab inserts that increase the top surface grip and cushion products during transfer. Also in the range are double V-belts that are perfect for use with serpentine drives or for material transfer applications where a reduced contact surface is required.

For user convenience and inventory reduction, the PowerTwist Plus range is available in different speciality profiles and constructions for efficient power transmission and material handling applications. Because standardisation and spares holding costs are a high priority for most production operations, Fenner has applied a policy of low frequency product changes throughout its range, with design improvements implemented only where these will offer significant customer benefits.

The Fenner range is available nationally from BMG’s branch network of over 100 outlets, which offers a technical advisory and 24-hour service.
Manufacture and delivery of air cooled condenser fan drives completed

Hansen Transmissions South Africa, managing director, Fritz Fourie, is of the considered opinion that the closing of the Kusile order is a direct result of Hansen’s success at Medupi. “Medupi called for the delivery of the first fan drives in January 2009 and we have paid meticulous attention to service and delivery details to remain strictly on schedule,” says Fourie.

“Hansen Transmissions South Africa, local subsidiary of industrial gearbox designer, manufacturer and supplier, Hansen Industrial Transmissions in Belgium, secured a second order for the manufacture and supply of 384 M4 air cooled condenser (ACC) industrial gearboxes to Kusile Power Station, which followed hot on the heels of the first order of 384 M4ACCs for fan drives at Medupi Power Station.

The Kusile order, received in August 2009, specified delivery of the 384 M4ACC drives in batches of 16 over a period of three years, commencing February 2010. “Delivery of the final batch was completed in October 2012,” confirms Fourie.

“Our highly skilled local HTSA engineering team developed the fan drives in close co-operation with major original equipment manufacturers (OEMs) of air-cooled condenser equipment to meet exacting operating conditions for air-cooled steam condensation plants commonly used in dry environments,” he explains.

Mining and industry across the board face the stark reality of escalating energy costs and are investigating every single factor that can contribute to reduced consumption and associated cost containment. Keeping these factors in mind, Fourie says that the special design criteria of the Hansen M4ACC units dramatically reduce end-user operating costs for low total cost of ownership.

“The design of our M4ACC incorporates criteria highlighted by OEMs and end users and include optimised gear geometry, rigid monobloc housing design, ‘oil tight for life’, high thermal capacity, and reduced operating costs.”

The Hansen Transmissions gear design features optimised gear geometry to reach the perfect balance between strength, torque capacity, surface durability and low noise performance. According to Fourie, Hansen industrial gearboxes offer the lowest noise levels in the industry as they are carburised and ground to an AGMA level 11 finish.

The M4ACC monobloc gearbox housing design ensures greater rigidity and stiffness of the housing and is engineered for high volume manufacturing, delivering substantial cost savings compared to the traditional split housing design.

“The ‘oil tight for life’ housing design is another major plus as oil leaks not only cause environmental pollution but also affect operational efficiency of condensers in air-cooled condenser applications; as the transformers are located below the cooling towers, the risk of electrical short circuits is increased.

The housing is uniquely designed to contain all the required oil channels and piping needed for lubrication of gears and bearings and eliminate external piping. The vertical down low speed shaft runs in a drywell which, being an integrated part of the housing, completely eliminates the risk of oil leaks through the bottom low speed shaft seal. This design also ensures that the bottom low speed shaft bearing is grease lubricated.

The gearbox oil level is below the housing assembly port cover and eliminates the risk of oil leaks from this area.

Keeping gearbox operating temperatures to acceptable levels is critical for extended oil life as well as for reduced gear and bearing wear. The Hansen M4ACC housing’s external surface is finned to increase the surface area to increase heat dissipation. This is combined with a fan mounted on the motor shaft and a lantern housing designed to direct airflow to the housing areas where the most heat is being dissipated.

Thousands of Hansen M4ACC industrial gearboxes operate in diverse climatic conditions across the globe proving the product’s excellent thermal characteristics. End users can therefore safely rely on a gearbox that will operate at optimum temperatures, extending intervals between oil changes and industrial gearbox life.

Apart from electricity consumption, oil changes constitute the largest operating cost and because the Hansen
Quality products and service secures aerator orders

H

TSA, which has been supplying aerator drives to the local water treatment industry since 1969, received an order from a leading local waste water company in mid-2012 for the supply of four aerator drives for three different water treatment facilities. The order called for two QVPE3 (AGMA – 152) 75 kW drives with 35,5:1 reduction ratios; and two QVPD3 (AGMA – 94) 37 kW drives with 40:1 ratios.

According to HTSA’s sales representative for Agents and Water Treatment, Mark Moneron, the base plates require modification to adapt to the new generation Hansen P4 industrial gearboxes.

Discussing the reasons why HTSA was the preferred aerator drive supplier, he says that the reliable and efficient performance of Hansen industrial gearboxes comes to the fore.

“The fact that our previous generation HPP - RNF36 (2 off) and our HP2 – NF36 (1 off) industrial gearboxes have been running trouble free for 27 years at two of the three water treatment facilities, is proof of the impressive life span and reliability of our aerator drives. Add to this our engineering capabilities, service and after-sales service quality, and it seemed sensible that the company with the most reliable industrial gearboxes would once again be approached,” Moneron notes.

“In order to remain competitive, every industry today has no alternative but to strive towards lowering costs across the board and maximising productivity. Lower overall cost of ownership is the recipe to success and can be achieved through installing reliable equipment that offers longer service life and minimum downtime, and high performance equipment that does not compromise on efficiency,” says Moneron.

According to HTSA, managing director, Fritz Fourie, water is only one of many critical elements that HTSA engineers factor into the design of the Hansen P4 industrial gearbox range to perfectly adapt the drive to this extremely demanding application. “We have set the standard for performance in this highly demanding industry where industrial gearboxes are required to operate around-the-clock, failure-free.”

In addition to the features of the industrial gearboxes, the HTSA service ethic, which supports precision engineering and design to guarantee a superior quality product, is well known and highly respected in the industry. As one of South Africa’s foremost suppliers of drive solutions to local municipalities, mines and government departments, HTSA prides itself on building long-term business relationships through the delivery of tailor-made solutions and services. “The water industry is no exception and our long term business relationship in the water treatment sector has secured us an enviable reputation for supplying an exceptionally high quality product range and impeccable service,” says Fourie.

“Many consultants and contractors in the water treatment industry have been conducting business with us since 1969 (when we were known as CE Hultquist) and, in their experience, HTSA drive solutions deliver. Our robust units are manufactured to the highest quality specification for guaranteed rapid return on investment,” adds Fourie.

The four aerator drives were delivered to the customer on scheduled in November 2012 and Moneron adds that HTSA is responsible for erection, installation and commissioning of this turn-key project.

M4ACC features a much lower oil capacity, end users have the option of extending oil change intervals from one to three years by using synthetic oils as a viable alternative. Oil capacity is more than 50% lower than those of comparable products and end suppliers who have replaced older generation gearboxes with the Hansen M4ACC, have recorded up to 75% reduction in oil usage.

Considerable savings in the cost of the air-cooled condenser fan support structure are possible because the Hansen M4ACC industrial gearbox is approximately 50% lighter than comparable gearboxes and is another contributing factor to the Hansen M4ACCs low cost of ownership.

HTSA has been responsible for the local assembly and support of Hansen industrial gearboxes since 1969. “Our name has been synonymous with supreme quality and superior service for over 40 years and the Hansen Transmissions brand is entrenched as one of the most respected in Southern Africa. In fact, leading Southern African mines and industry list us as the supplier of choice for large industrial gearboxes. We have fully equipped repair facilities, accomplished application engineers, and an experienced, dedicated field service team to support our range of well- respected products,” concludes Fourie.
POWER TRANSMISSION COMPONENTS
THAT DELIVER

The BMG Power Transmission Division currently leads the Southern African market with some of the most powerful, respected brands in the world. It continually sources innovative, cutting-edge products that deliver to our customers’ individual needs.

PRODUCTS INCLUDE:
- Wedge & V Belts & Pulleys
- Poly Vee & Timing Belts
- Agricultural Components
- Pulleys
- Cable Carrier Systems
- Couplings & Sprockets
- Transmission & Conveyor Chains
- Torque limiters & more...

It is this commitment that has driven BMG to become a powerful industry leader. Parts for every process. Part of yours.

www.bmgworld.net
facebook.com/bmgworld
@bmgworld

ISO 9001 Certified
Voith recently delivered 36 fluid couplings for an iron ore distribution centre in Malaysia. Starting in 2014, the couplings will be used in the drives of 16 belt conveyors supplied by the BEUMER Group. For each of the belt conveyors Voith has offered a customised selection of fluid couplings.

The Voith hydrodynamic fluid couplings are used in drives ranging in powers from 200 to 800 kW. They have been selected to softly start and protect all conveyor system components and minimise unplanned system downtime. Voith fluid couplings have a rugged design and are well suited for use under the most extreme environmental conditions. They dampen torsional vibrations in the driveline and protect it against overload. This extends the lifetime of the entire system.

Voith has offered just the right fluid couplings for each of the 16 belt conveyors. The belt conveyor drives are equipped with TVVS-type couplings. Voith is delivering special TVVS designs to match the start-up and operating conditions of the drives.

The TVVS constant-filled fluid coupling is particularly suited for medium and long belt conveyors with start-up times up to 45 seconds. Fluid couplings automatically match the demand torque of the driven conveyor. The smooth application of fluid coupling torque provides a smooth belt start-up to protect the belt from damaging stresses, thus reducing system downtimes.

Thanks to the mechanical separation of the motor and machine through the fluid coupling, the motor can run up to speed without load. In addition, systems that use multiple motors can be switched on in a staggered sequence to limit the current demanded during motor acceleration. This avoids grid overloading caused by simultaneous motor starts. In the most demanding belt conveyors, the TVVS is deployed with centrifugal force valves to further protect the electricity grid. Centrifugal valves control the filling and draining of the coupling’s working circuit, and thus the power transmission, as a function of the drive speed.

The TVVS can also use water as the operating medium. This environmentally-friendly operating medium is particularly well-suited for use in belt conveyors that transport iron ore above the ocean.

In future, the Malaysian iron ore distribution centre will supply customers in the Asian-Pacific region with iron ore from South America. The belt conveyors transport the iron ore from the terminal to the harbour. The reliability of the belt conveyors is extremely important for ensuring the planned shipment capacity. Voith drive solutions increase the availability of these belt conveyors.

Voith Turbo, the specialist for hydrodynamic drive, coupling and braking systems for road, rail and industrial applications, as well as for ship propulsion systems, is a Group Division of Voith GmbH.

Voith sets standards in the energy, oil and gas, paper, raw materials, transportation and automotive markets. Founded in 1867, Voith employs more than 42 000 people, generates €5,7-billion in sales, operates in about 50 countries around the world and is today one of the biggest family-owned companies in Europe.
SAMHYDRAULIK, which is one of the leaders in the field of hydraulic transmission, has been operating for over 25 years in the international market, offering a complete range of orbital hydraulic motors and power steering units, axial pumps and motors for medium and high pressure ranges, all characterised by excellent performances.

SAMHYDRAULIK employs 120 people who operate inside a very modern and efficient plant that spans over 6 000 square metres to assure a high standard and flexible production capacity. The latest computer technology is used for both design and production, combined with strict quality control procedures during all production phases, which translates into innovative, reliable and functional products that meet the various needs of the market. Its ISO 9001 certification, held since 1994, is the result of a quality-orientated philosophy on which SAMHYDRAULIK has always based its operation.

AXIOM HYDRAULICS (PTY) LTD
Tel: (011) 334-3068 / 334-3086 Fax: (011) 334-4543
E-mail: axiom@intekom.co.za
Managing torsional vibration

A new resilient hybrid coupling adds a new ‘twist’ for managing torsional vibration in high-performance drivetrains and it is ideal for VFDs, synchronous motors, and diesel engines, or pulsing loads from reciprocating machinery, mill drives or crushers.

The Kop-Flex MAX-C WB hybrid coupling is a new solution for managing torsional vibration in high-performance drivetrains powered by synchronous motors, variable frequency drives (VFDs), and diesel engines, or those driving reciprocating machinery or handling shock loads.

Developed by the Kop-Flex unit of Emerson’s Power Transmission Solutions business, the design combines a maintenance-free, non-lubricated MAX-C resilient coupling half with a lightweight diaphragm, disc or high performance gear coupling half, depending on the application. The hybrid design matches the advantages of a low-cost, lightweight flexible coupling half for the driven shaft, with the vibration damping of a MAX-C coupling half on the motor end. The maintenance-free MAX-C dampens high drivetrain torque loads, while the overall hybrid design reduces weight, cost and inertia, eliminating the need for oversized and costlier drivetrain components.

Various designs of the engineered hybrid coupling are capable of transmitting up to 56 000 000 lb-in (6 383 kNm) torque. The MAX-C WB is ideal for use in drivetrains for ID/FD fans, torque converters, marine gears, drill rigs, crushers, kiln drives, mill pinions, ship thrusters, centrifugal compressors, and feed rolls.

The MAX-C coupling consists of an outer sleeve with a bladed ID, an inner flex hub with a bladed OD, and resilient drive blocks that fill cavities formed when the sleeve and hub are mated. The special wedge block cavity design formed by the blades is filled with incompressible elastomer blocks with a Shore ‘A’ hardness of up to 80, allowing tailoring of the block compound for hardness, chemical resistance and temperature resistance. The blocks typically last five years or more and are easily replaced, which makes the coupling ‘like new’.

The MAX-C design features a ‘fail engage’ safety mechanism: if an elastomer block fails for any reason, the coupling will briefly transmit torque through the metal-to-metal contact of the interlocking blades, which allows the user to immediately power down the equipment in a controlled manner. The MAX-C can also withstand wet, gritty and hot environments.
In a bid to reduce its environmental impact, South Africa, the continent’s top greenhouse gas producer, plans to tax carbon emissions from January 2015. One of the industries responsible for a portion of our carbon emissions is the clay brick making industry. It has, therefore, become vital that brick makers in South Africa start investigating greener ways of producing clay bricks to avoid long term tax implications and to assist in developing a cleaner environment.

One of the first industry players to do so was Langkloof Bricks in Jeffrey’s Bay. The clay brick maker installed innovative MKI vertical shaft brick kilns (VSBK), designed using Autodesk software technology, and partially funded by the Swiss Development Corporation (SDC) through Swiss-contact. The Rowe Group of companies project managed, constructed and redesigned certain aspects of this unique pilot, which consist of a six shaft kiln.

While the MKI VSBK system has significantly reduced carbon emissions at Langkloof Bricks, the design was still too expensive to roll out commercially. With the experience gained from the first construction, Jez Rowe of the Rowe Group took it upon himself to design an even more advanced VSBK firing system.

With the assistance of local suppliers and the directors of Langkloof Bricks he has been able to further reduce the ownership costs and increase thermal efficiencies. Using the Inventor software solutions contained within Autodesk Factory Design Suite, Rowe was able to design several different 3D models and was still able to quickly evaluate and commission design changes. The ability to easily integrate 2D AutoCAD information and Inventor in one package has helped tremendously to reduce the time to market. Rowe Design recently announced that the next generation of vertical shaft brick kiln designs (MKIII VSBK) are now complete and 18 more shafts are being built at Langkloof Bricks with a further 24 shafts in the pipeline.

The challenge
In order to improve the existing MKI VSBK technology the challenge was to find suitable software that could work for both the designer and the brick maker.

First, the software needed to present the project in a holistic manner so that the brick maker could easily understand the benefits and make a more informed commitment to lower his CO₂ emissions. Rowe Design needed software that could easily demonstrate how the VSBK system would integrate with...
enabled the company to validate the representation of the final product. This single digital model to create a virtual AutoCAD drawings and 3D data into a Rowe Design can now integrate 2D tooling, visualisation and, most impor-
gave them a comprehensive and flexible into the realm of digital prototyping and beyond the simplified 2D/3D of AutoCAD Autodesk Inventor took Rowe Design be-
design software package for the project. After assessing the requirements of the project, it was decided that Autodesk Factory Design Suite 2014, was the ideal 3D 
Inventor, part of Autodesk Factory Design Suite. The redesign has also enables the 
also contributed to reduced system cost. The MKIII VSBK also gives a cleaner working area, which is constantly purged with recirculated clean air.

In summary, Autodesk digital prototyping technology has offered brick makers access to a new design process that requires less fuel consumption, increases the kiln’s insulation capacity, lowers the heat loss, enhances access to the working space and improves working conditions – all while producing a much smaller carbon footprint.

“Digital Prototyping with Inventor software enables designers to design, visualise, and simulate products digitally, help-
ing companies like us to build better products, reduce development costs, and get to market faster,” says Jez Rowe, Rowe Group, director.

The redesign has also enables the hydraulic system complexity and stroke length to be reduced, which, in turn, contributes to reduced system cost.

The MKIII VSBK also gives a cleaner working area, which is constantly purged with recirculated clean air.

In summary, Autodesk digital prototyping technology has offered brick makers access to a new design process that requires less fuel consumption, increases the kiln’s insulation capacity, lowers the heat loss, enhances access to the working space and improves working conditions – all while producing a much smaller carbon footprint.

“Digital Prototyping with Inventor software enables designers to design, visualise, and simulate products digitally, helping companies like us to build better products, reduce development costs, and get to market faster,” says Jez Rowe, Rowe Group, director.

The Rowe Group is supported by Modena Design Centres, an Autodesk Gold Partner and a reseller of Autodesk software in Southern Africa.
RELIABLE AND SAFE CONNECTIONS FOR PIPES, FITTINGS, VALVES AND OTHER COMPONENTS

PLASTIC PIPING SYSTEMS IN MINING APPLICATIONS

WATER
> Raw Water / Process Water / De-watering
> Water Treatment
> Safety Showers & Eyewash

ORE BENEFICIATION
> Grinding
> Flotation
> Thickening

HYDROMETALLURGY
> Acid Leaching
> Bacterial Leaching
> Solvent Extraction
> Adsorption
> Elution
> Tailings Disposal

The right solution, for even the harshest environments...

+GF+

GEORG FISCHER PIPING SYSTEMS

MATROX™ SI 12 UHMWPE - FROM FLOW PROMOTION TO UNIT LINING
MOVE SMOOTHLY WITH MATROX™

> Excellent impact resistance - virtually unbreakable.
> Very low co-efficient of friction.
> High chemical resistance.
> Excellent corrosion, wear and abrasion resistance.
> Very high surface release properties - non-stick.
> Weldable, easy to handle, machine and install.

APPLICATIONS INCLUDE:
Flow promoting liners to resist sliding abrasion and assist release.
Conveyor components subject to high wear and requiring low friction.
Componentry and parts subject to high impact stresses.

BENEFITS
- No corrosion problems or scale build up
- Safe and economical solutions
- Reduced maintenance costs
- Easy to install and modify
- Reliable and with a long-service life
- Widest range of plastic piping systems for diverse applications

National Number - 086 1100 420 | www.maizey.co.za | epp@maizey.co.za
Intergraph launches SmartPlant Cloud

During April, 2013, Intergraph announced the launch of SmartPlant Cloud, the company’s software as a service solution, a cloud computing environment to support the SmartPlant Enterprise portfolio.

Intergraph® is a global provider of engineering and geospatial software for the visualisation of complex data. Businesses and governments in more than 60 countries rely on Intergraph’s industry-specific software to organise vast amounts of data to make processes and infrastructure better, safer and smarter. The company’s software and services are designed to help customers to build and operate more efficient plants and ships, create intelligent maps, and protect critical infrastructure and people around the world.

Intergraph’s software as a service solution allows users global access and provides them with 24/7 support on a pay-per-use basis. With the launch of SmartPlant Cloud, the need for customer hardware and infrastructure is significantly reduced because users can access SmartPlant Enterprise applications, project and plant maintenance environments via a simple URL, regardless of their global location. SmartPlant Cloud presents individual users with their relevant information, data and documents to support work processes and decision-making.

“The idea is to speed up project execution, reduce costs and improve operating plant performance,” says Kevin Holmes, Intergraph vice president and global director of Cloud Services. SmartPlant Cloud provides a software ecosystem that allows engineering, procurement and construction (EPC) companies and owner operator companies access to the most appropriate engineering software tools and utilities. The service, which is accessed through an intuitive web-based portal, has been configured to adapt to company specific standards, engineering workflows and processes.

The solution provides rapid deployment, robust security and a dynamically scalable environment that has been designed to specifically support all sizes of projects and assets for both owner operators and EPCs, regardless of global location.

“We have been supplying software-as-a-service solutions to a select customer base for a few years already, and we are now making these commercially available. The first SmartPlant Cloud customers are very enthusiastic about the solution,” says Holmes. “All plant models, data, drawings and documents can be created, modified, viewed and retrieved from SmartPlant Cloud, whether these are Intergraph tools or from a currently compatible third-party application.

SmartPlant Cloud allows customers and their subcontractors in capital projects and operating facilities to design workflows, standardise processes and create templates that can be replicated across projects, teams and regions,” he explains.

Intergraph operates through two divisions: Process, Power & Marine (PP&M) and Security, Government & Infrastructure (SG&I). PP&M provides enterprise engineering software for the design, construction, operation and data management of plants, ships and offshore facilities, while Intergraph SG&I provides geospatially powered solutions, including ERDAS technologies (Earth Resources Data Analysis System, an image processing and GIS software solution) to the public safety and security, defence and intelligence, government, transportation, photogrammetry, utilities and communications industries.

Gerhard Sallinger, Intergraph process, power & marine president, says: “Global projects are larger and more complex and therefore, plant design software and engineering data solutions need to respond quickly to these challenges.

“Cloud computing represents one step further in serving our customers, to allow them rapid and cost-effective decision making and execution. So, we are excited to add SmartPlant Cloud services as an option to clients in addition to our existing and very successful enterprise software business model, so that clients can choose what’s best for their situation.”

The ARC Advisory Group, a leading industry analyst firm, ranked Intergraph as the number one overall worldwide provider of engineering design solutions for industry according to its ‘Engineering Design Tools for Industry and Infrastructure Worldwide Outlook Market Analysis and Forecast Through 2016.’

Less is more
PPS automatic cushioning on our standard pneumatic drives means less installation time, more production time.
For more information, go to www.festo.co.za

FESTO
Tel: 08600 FESTO (33789)
sales.interaction@aza.festo.com
New compressor technology
and benchmark service support

At Hannover Messe in April 2013, Atlas Copco surprised the market with the launch of a new, very compact and highly efficient oil-injected rotary screw compressor range, the 7-37 GA VSD+. The company’s Charl Ackerman talks about the new products’s advantages, while Wayne Jacobs argues the case for contracting the best possible service support.

“Atlas Copco has translated the most requested needs of our customers in this new type of compressor, which includes better performance with less energy consumed, lower noise levels and a compact footprint,” says Charl Ackerman, Atlas Copco South Africa’s business line manager – Industrial Air.

In addition to its small footprint, the range offers a leap forward in ‘free air delivery’ with improvements of up to 12% and breakthrough energy efficiency as it requires, on average, 50% less energy than a comparable idling compressor. This new type of compressor is available with a variable speed (frequency-controlled) drive, which makes it ideally suitable for most industries.

The GA VSD+ variable speed drive compressor, available from 7 to 37 kW, achieves better performances – even at full load – than a comparable idling compressor.

Koen Lauwers, vice-president marketing – industrial air division, comments: “In 1994, Atlas Copco pioneered the variable speed drive compressor and now we have launched an innovation that, once again, will set a new benchmark in the compressor industry. The GA VSD+ has been developed completely in-house and brings together all our expertise and know-how about energy-efficient compressor technology.”

“The new type of compressor aims to contribute significantly to the needs of the green economy,” comments Ackerman and adds that this innovation will enable all compressor users to switch over to variable speed drive compressors, which is “an important step towards a more sustainable industry.”

According to Ackerman, Atlas Copco evaluated every part in this compressor: A more efficient fan, a robust air intake system, the elimination of all blow-off losses, and the best electronic components together with the new drive train, add up to energy savings of 50% on average compared to a traditional idling compressor of the same type. The new GA VSD+ is another 15% more efficient than Atlas Copco’s current variable speed drive compressor (the GA 7-37 VSD). A full feature version with an integrated dryer is optional.

Atlas Copco has also adapted its production environment to the future: The GA VSD+ is currently built in Antwerp, Belgium, on a production line that is more efficient, more standardised and that takes up less space. Regular maintenance and service by skilled technicians using the right tools and genuine parts are essential for ensuring optimum and reliable compressor performance and sustainable productivity.

Highlighting the importance of good service Wayne Jacobs says that, in addition to its innovative range of high-efficiency compressors, Atlas Copco Compressor Technique South Africa operates four service branches in Johannesburg, Durban, Cape Town and Port Elizabeth. Wayne Jacobs, business line manager, Compressor Technique Service Division, says a good service ethic is vital as it relates directly to customer value; value for money, as opposed to simply low cost, is the key to business sustainability.

“A customer makes a substantial investment when purchasing a compressor and the incorrect fitment of a part or use of the wrong replacement part can result in premature failure and resultant downtime and replacement costs,” warns Jacobs.

Underlining the importance of using only skilled technicians, Jacobs explains that a good service ethic encompasses highly trained technicians who use the right tools to do the correct maintenance and to fit the right parts.

Jacobs also points out that, because downtime is extremely costly for customers, an immediate response to a customer’s service requirement and stock of readily availability parts are also fundamental to a good service ethic.

The company’s Johannesburg, Durban, Cape Town and Port Elizabeth branches, supported by ten authorised distributors, take care of customers’ requirements across the country. “Our service branches boast a 27-strong tech-
“A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.

Hydraulic and pneumatic systems

A good service ethic relates directly to customer value,” says Wayne Jacobs.
Five star product line-up

A leader in reliably and consistently performing products, Eaton Hydraulics showcases its Star product line – products manufactured internationally in world-class facilities that offer a competitive advantage and shorter lead times.

Eaton Hydraulics supplies components, fluid conveyance accessories and systems from world-leading brands that offer solutions for on-road, off-road, agricultural, mining, marine, industrial, and even household applications. “When a task requires reliable, efficient, cost-effective hydraulic muscle, Eaton Hydraulics delivers engineered solutions, backed by service that has been designed to ensure complete satisfaction,” says Emil Berning, the company’s South African MD. “Our brand names are recognised as world-class leaders in their own right and are an integral part of Eaton Hydraulics’ worldwide reputation for quality and performance in hydraulic components, systems, fluid conveyance, service and support,” he says. The complete brand list consists of: Aeroquip®, Boston®, Char-Lynn®, Eaton®, Hydrokraft®, Hydrowa®, Hydro-Line®, Integrated Hydraulics®, Synflex®, Vickers®, Walterscheid™, Weatherhead® and Winner®.

Seven key product lines currently anchor the Eaton Hydraulics’ South African offering:

Spiral hose
The Aeroquip GH275 hose offers improved water glycol emulsion compatibility and improved abrasion resistance that enable it to outlast other products by as much as 10 times in high abrasion applications. The heavier-duty GH466 hose offers a constant working pressure of 420 bar, tested to two million flex-impulse cycles. The flex-impulse test is used to determine the performance of hoses in ‘real-world’ conditions. In contrast to the traditional static impulse pressure test (500 000 cycles), this test requires one end of the hose to be set in rotary motion.

Eaton’s latest innovation in spiral technology is the FC500 X-Flex, which offers a 47% improvement in force-to-bend and an even longer life in abrasion applications.

Air conditioning hose
“Environmentally, Eaton is one of the leaders in new developments and its products offer effective solutions for keeping refrigerant ‘in the system’,” says Berning. The FC800 EverCool™ refrigerant hose offers exceptional performance and is designed to meet the needs of the global bus market.

FC800 EverCool has the lowest permeation of any large bore hose for the coach bus industry with a new, unique hose nipple, designed with an O-ring for assured sealing of the hose to fitting connection in a screw-together type design, significantly reducing downtime, maintenance costs and it also avoids ‘topping-off’ the air conditioning system. The company continues to lead air conditioning and refrigeration with its new GH134 Refresh hose, which has the lowest permeation value of any multi-refrigerant hose. Eaton’s air conditioning and refrigeration hoses are manufactured to meet and exceed the latest requirements of the SAE J2064 standard.

Mining hose
Eaton hoses for the mining environment are specifically chosen to maximise hose lifespan. Over 60% of all hose failures are a direct result of abrasion, so any hydraulic hose for a mining application requires a thick cover, good abrasion resistance and cut resistance.

The Eaton 27J81 2 spiral hose is a good example. When tested to EN ISO 6945, the outer cover exceeds the EN abrasion specifications by as much as 5:1 and will exceed standard covers by as much as 16:1, resulting in reduced costs of hose assemblies and substantial savings in oil consumption and machine downtime. The hose consistently exceeds 200 000 impulse cycles when tested to SAE J343F specifications.

The Aeroquip ULTRA-FLEX (SH222) hose is a high pressure, high impulse hydraulic hose with a competitive price tag. This high performance hose meets or exceeds four spiral SAE100R12 hose types used extensively in the South African hydraulic industry today. The SH222 is a uniquely designed product with the hose construction based on a two-wire braided construction with a four-spiral SAE100R12 performance, offering an abrasion-resistant outer cover that will outlast other products by as much as five times in mining applications.

Fittings and connectors
Known worldwide for the breadth, quality, and ease of use of its product line, Walterscheid, the German manufacturer of metric hydraulic tube fittings and connectors, became part of Eaton in 2004. Walterscheid fittings and connectors are used in a broad range of mobile and industrial equipment including agricultural, mining and construction vehicles and machine tools. All Eaton Walterscheid carbon steel and stainless steel tube fittings are still manufactured in Germany.
Industrial valves
The Eaton Vickers hydraulic industrial valve range is one of the most respected names in hydraulics. This wide range of valves is engineered to provide continuous reliable performance in demanding operating conditions. “Eaton industrial valves are ‘at work’ all over the world and across a full spectrum of industrial applications,” adds Berning.

The company’s cartridge valve technology meets the needs of a new generation of hydraulically operated machinery and equipment for exceptionally cost-effective and energy-efficient controls. The Eaton slip-in cartridge valves are typically used in systems with relatively high flows of 150 ℓ/min or more, producing more efficient, faster and compact hydraulic systems than conventional valves in these applications.

Screw-in cartridge valves
Eaton is also a global leader in the design, manufacture and supply of hydraulic screw in cartridge valves and integrated screw-in cartridge valves (SICV). These offer flows suitable for large applications with high power densities, and a compact envelope for manifold systems, achieving one of the best system design solutions at a competitive price.

The company’s range of solenoid actuated screw-in cartridge valves provides product options to support nearly all flow, pressure, and directional control requirements.

The Tough Coil solenoid range, for example, offers ingress protection for enduring operation in the harshest environments.

Integrated hydraulics solenoid valve options include: two-way, two-position, normally open and normally closed spool and poppet valves; three-way, two-position spool valves; four-way, two-position spool valves; and four-way, three-position spool valves.

Open loop piston pumps
The Eaton PVM and 420 piston pumps provide excellent performance and flexibility in designs that suit a broad range of medium duty industrial and mobile fluid power systems. Displacements are available between 18 to 141cc/rev and up to a working pressure of 280 bars. These pumps are also widely used in the machine tool, moulding and manufacturing industries.

“Eaton pumps, motors, transmissions, valves, cylinders, controls, hose and fittings offer a unique combination of proven technology and innovative design that translate directly into reliable performance and enhanced uptime,” Berning concludes.
New products go on show at local exhibitions

Festo, a global automation specialist, showcases its latest product launches for 2013 at the Cape Industrial Showcase from 3-5 July, stand A2 – A5 at the Cape Town ICC, and at the KZN Industrial and Technology Exhibition from 23-26 July, stand B18/ B20/A19/A21 at the Durban Exhibition Centre.

Well-known for its innovative products and market-leading technology-based training, Festo will afford visitors the opportunity to learn about the latest technologies in industrial automation and motion control.

The new ISO 15552 standard cylinder DSBC will soon be manufactured locally at the Festo manufacturing facility in Isando, Johannesburg. The cylinder comes standard with the Festo patented PPS automatic cushioning system. With over 90% common parts to the existing DNC range, DSBC will ensure better availability of parts and the relevant accessories.

Also on display will be the DFPI pneumatic cylinder with integrated positioner. Used pre-launch in mining applications, the cylinder has proven to be robust and virtually maintenance free, due to all the components being housed inside the barrel. This makes the DFPI the first choice for outdoor applications in corrosive environments.

From the electric portfolio of products, Festo presents the small yet powerful CECC controller. The CoDeSys’ embedded compact controller is the first PLC with IO-Link master and CoDeSys’ V3, from Festo. It reduces installation time, simplifies programming and enables fast and cost-effective control of machines or processes. The CECC can be used as a stand-alone unit or can be conveniently integrated into more complex decentralised solutions. An example of such a system would be the new cost-effective EPCO Electric Drive solution.

Ernst Smith, Festo’s product marketing manager: electric explains, “Optimised Motion Series is a low-cost system with optimised performance. This package makes positioning easier than ever before and significantly less expensive than conventional electric positioning systems.” The system offers easy configuration, reliable ordering of the right size and combination of products. It includes the EPCO cylinder with motor and pre-assembled cables, which are suitable for use with energy chains and stepper motor controllers such as Festo CMMO-ST. This offers the customer quick commissioning via a web server/browser concept and simple selection with the Festo positioning drives sizing software.

In addition to these new products, Festo will also be representing the GSR range of valves for which, they are the sole agency supplier across sub-Saharan Africa. “GSR Ventiltechnik delivers the same quality and value as Festo does, enhancing synergy between both companies,” explains Brian Abbott, Festo’s product marketing manager: pneumatic. Festo locally stocks and supplies a range of pilot-force-pilot operated and direct-acting solenoid valves and angle seat valves, available in either brass or stainless steel.

With the usual dynamic displays of moving systems, these new products will be demonstrated by Festo specialist engineers at the Cape Industrial Show and the KZN Industrial and Technology Exhibition. Quick tutorials on engineering software will also be available for visitors at both shows.
Autodesk joins PneuDrive Challenge 2013 as a technology partner

Autodesk — a world leader in 3D design and engineering software — has been officially named as the technology partner for the PneuDrive Challenge 2013 Engineering Design Competition.

This year’s PneuDrive Challenge competition, which was originally established in 2008 by leading drive engineering company SEW Eurodrive, will provide engineering students from six South African universities with an opportunity to design and propose innovative engineering solutions that will contribute towards ‘greener’ mines.

As an official sponsor, Autodesk will provide a wide range of services and give participating universities and students free access to a range of Autodesk’s design software solutions. To assist participants with their submissions, Autodesk will also be hosting a series of technical workshops to assist in coming up with optimal design workflows in preparing their submissions.

Autodesk’s technology combined with Autodesk Education’s specialised communities, support networks, and participation and sponsorship of competitions and events inspire students to think creatively and to be innovative and limitless with their design work. With a full portfolio of professional and personal design products, Autodesk introduces students at all levels to the love of design and to the power of design to improve water recycling on mines.

This year’s competition requires students to review some typical challenges that mines face, such as the problems and risks associated with slurry dams, rehabilitating tailings dams and how to improve water recycling on mines. The problems of extracting and finding a use for mining by-products and controlling dust emissions are also part of the problem set. The Autodesk team will be sharing a practical case study with participants during the upcoming technical workshops about a company in the USA, Micromidas, where Autodesk Inventor and Autodesk Simulation CFD products are playing key roles in the evolution of their technology and processes.

While researching microbial-based wastewater treatment at their alma mater, the Micromidas team developed unique processes for transforming the carbon in organic wastewater into fully biodegradable plastics. Disposing of bio-solids — also known as ‘sludge’ — has proven to be an extremely expensive and complex problem. Rather than being incinerated, which creates greenhouse gases, or deposited in landfills, carbon and other nutrients and bio-solids in wastewater are ‘gobbled up’ by microbes harnessed by Micromidas from soil and water.

Rose notes that the sponsors and organisers of the competition are confident that South African students have the creativity and knowledge to take on the challenge of developing greener mining solutions. “An important principle of the competition is to get students to really understand a business problem, incorporate specific products in their design solution and then demonstrate through a business proposal how their ideas can be used as real-life business solutions.”

In terms of products from SEW Eurodrive, the 2013 competition requires students to consider how the company’s range of DR motors, Movitrac LTP inverters and X-Series industrial gear units could be used to address the environmental impact of mining activity. The Pneumax products that students need to consider for their designs are the range of dust collector valves, the Imperial mine cylinder and the Optima-S valve terminal.

Pneumax managing director, Adrian Buddingh, highlights the fact that the competition is an essential step in creating synergy between business growth and social responsibility. “It is business that needs to support learning experiences that allow students to learn about how to apply their academic knowledge on a practical level and in conjunction with the latest technology that is available.”

The winning team receives an all-expenses paid trip to Germany and Italy, where they will present their design at the head offices of SEW Eurodrive and Pneumax. They will also be given the opportunity to claim R100 000 worth of SEW Eurodrive and Pneumax products for their university.
W*hile many are claiming 2013 as the 100th anniversary of stainless steel, the year of its discovery is not universally accepted. “This view comes from England, but the French, the Germans and even the USA can point to different starting points in the material’s history,” begins Scurr.

The first milestones date back to the 18th century, staring with the discovery of nickel in 1751 by Axel Frederick Cronstedt, a Swedish scientist. A few years later, in 1778 another Swede, Carl Wilhelm Scheele, discovered molybdenum and two decades later (1797), a Frenchman named Nicolas Louis Vauquelin identified chromium. “As early as 1820, references to the corrosion resistant properties of chromium in iron were already being noted,” Scurr says, “but the ability to control carbon in steel prevented any useful development.”

Then in 1872 in Britain, Woods and Clark filed for a 30-35% chromium, 2% tungsten steel alloy, described as an ‘acid and weather resistant steel’, which is believed to be the first patent of a material that could now be considered a stainless steel.

Modern-day stainless steels began to be researched, patented and manufactured in the early 1900s. From 1904 to 1906, Leon Guillet of France did research into iron-chromium alloys – the basis for many of today’s martensitic stainless steels – and iron-chromium-nickel alloys – the basis for today’s austenitic stainless steels. But the findings were not well documented and, in particular, the potential corrosion resistance properties were not recorded. This was left to Philip Monnartz of Germany, who reported on the relationship between the chromium content in steel alloys and corrosion resistance in 1911.

The first true patents of what is now considered to be a stainless steel emerged in 1912 when two Germans at the Krupp Iron Works, Eduard Maurer and Benno Strauss, patented a 21% chromium, 7% nickel alloy. This was the forerunner of the austenitic 18/8 (18% Cr, 8% Ni) or 18/10 (18% Cr, 10% Ni) stainless steel grades, commonly referred to as the 300 series.

A few years later in the USA, Christian Dansizen developed began to develop the ferritic stainless steels, which generally require lower carbon content, while the stainless steel that is today one of the most technologically

---

**100 years of stainless steel — a South African perspective**

At an evening function sponsored by SASSDA at the Southern African Institute of Welding on June 26, Bill Scurr, executive director of SASSDA summarised the developmental history of stainless steel and reported on the current outlook for the material, both globally and in South Africa.

---

**Imports of stainless steel consumerware into South Africa: 2008-2012. “This is a huge threat to the stainless steel industry of South Africa, to local manufacturing and to local jobs,” believes Scurr.**

---

**The stainless steel ‘family tree’.**
An overview of stainless steel grades

“Stainless steel is now conventionally defined as an alloy of iron and chromium with controlled amounts of carbon. To be a stainless steel, the alloy must have at least 50% iron, and if it less, then we say it is a stainless alloy rather than a stainless steel,” Scurr notes.

For corrosion resistance, stainless steels require a minimum of 11% chromium, because it is chromium oxide that forms the corrosion resistant passive layer on the material surface. Carbon contents can be from very low (less than 0,03%) to greater than 1,0%, depending on the alloy, and the addition of nickel, molybdenum, nitrogen, titanium, copper, niobium, sulphur and selenium, amongst others, can be added to confer a range of attractive and exploitable properties.

“What we end up with is ‘family tree’ of stainless steel alloys and grades with an ever increasing range of applications,” suggests Scurr.

The plain chromium side of Scurr’s suggested ‘family tree’ starts with the martensitic and heat treatable chromium stainless steels. “These are generally not very good from a welding point of view, so are not widely used for general fabrication,” he advises.

The next branch up contains the ‘so called super ferritics’, which are high chromium alloys that usually also contain molybdenum. They have very good corrosion resistance, very low carbon content and are widely used for condenser tubing on a nuclear power stations, for example, when seawater is used for cooling.

Generic ferritics are also on the plain chromium side of the tree. “These are used for kitchen sinks, catering utensils; and extensively in the automotive industry, which is probably the biggest consumer.” On an offshoot from this branch are the utility ferritics, such as the South African-developed 3CR12. “Generally, due to grain growth and reduced toughness after welding, ferritic stainless steels are limited to thin gauge use, below about 3,0 mm. In contrast, 3CR12 is a weldable grade that is suitable for use at thicknesses of up to 30 mm,” says Scurr.

Moving across to the nickel containing side of the tree, Scurr says this is dominated by the well known 304 (18/8), and 316 (18/10) austenitic stainless steel alloys. Offshoot branches also include some higher chrome, heat resistant alloys for high temperature (up to 1 200°C) in oxidising conditions or furnace environments, for example. “The austenitic stainless alloys, such as the nickel-based alloys also appear here, although these are not strictly stainless steels, they are stainless alloys,” he reiterates.

The combined family finds uses in a host of different applications. “The use for of stainless steel for railway cars is topical in South Africa because the Passenger Rail Agency of South Africa (PRASA) has just awarded the contract for new passenger rail coaches – and the material of construction is likely to be austenitic stainless steel,” predicts Scurr. “As well as corrosion resistant properties, austenitic stainless steel can be work hardened on rolling, which gives it very good mechanical and toughness properties.”

Citing newer applications in architecture, Scurr shows a slide of the DNA Bridge in Singapore. “They used 2205 duplex for this bridge, not only for its stainless and aesthetic properties, but to make maximum use of the material’s mechanical properties. We are starting to see duplex making inroads into structural applications long dominated by carbon steel.”

Turning attention to the stainless steel industry in South Africa, Scurr says that we have 85% of the world’s reserves of chromite and the capacity to meet 50% of total global demand for ferrochrome. “We currently only supply 30%, though, and this is largely self-inflicted. We are limited by the electricity supply and Eskom is currently paying producers not to make ferrochrome. This has allowed the Chinese, who have no chromite ore resources, to become the world’s biggest ferrochrome producers,” he argues.

Ferrochrome production began in
BENDING AND FABRICATION LIMITATIONS LIFTED COUNTRY WIDE!

REDUCE FABRICATION COSTS AND IMPROVE ENGINEERING DESIGN BY UTILISING OUR NEW 12 METRE X 2 000 TON PRESS BRAKE

- We bend mild steels up to 25mm over 12 000mm
- We bend Q & T steels up to 22mm over 12 000mm
- We bend stainless steels up to 20mm over 12 000mm

WE CAN BEND MUCH THICKER OVER SHORTER LENGTHS. Please call to enquire.

- We also cut (Laser, Plasma, Flame) up to 13 000mm long & 3 000mm wide
- We now roll up to 50mm over 3 000mm (much thicker over shorter lengths)
- We carry a comprehensive range of stock in ferrous and non-ferrous metals
- Contact our sales team to discuss your individual requirements
- Please visit our website for full details.
- Trade buyers are welcome
- We deliver

CONTACT US
+27 11 062 3200 • www.generalprofiling.co.za • sales@generalprofiling.co.za
The DNA Bridge in Singapore, where 2205 duplex stainless steel has been used, not only for corrosion resistance and aesthetic properties, but to make maximum use of the material’s mechanical properties.

Why is stainless steel stainless?

Iron and steel corrode relatively quickly because of the reaction between surface metal atoms with oxygen and moisture in the air, a reaction that produces hydrated iron-oxides (FeO·xH₂O) on the metal surface – commonly known as rust. Atomic iron is much smaller than its oxide, so the oxide cracks and flakes off the surface, further exposing virgin metal to the atmosphere.

The chromium in stainless steel combines with oxygen in the atmosphere to form a thin, invisible layer of chrome-containing oxide, called the passive film. The chemistry of this passivation layer is chromium(III) oxide (Cr₂O₃). The sizes of chromium atoms and their oxides are similar, so they pack neatly together on the surface of the metal, forming a stable layer only a few atoms thick. The layer is too thin to be visible, so the metal remains lustrous, and is impervious to water and air, protecting the metal beneath. Also, this layer quickly reforms when the surface is scratched. This phenomenon is called passivation and higher chromium content in the steel produces stronger passivation layers and better corrosion resistance.

The passive film requires oxygen to self-repair, so conventional stainless steels have poor corrosion resistance in low-oxygen and poor circulation environments. In seawater, chlorides from the salt will attack and destroy the passive film more quickly than it can be repaired in a low oxygen environment. In such environments, highly alloyed stainless steels or stainless alloys can be used to overcome this problem.

Global perspectives

Globally, Scurr says that stainless steel consumption has risen from 1,0-million tons in 1950 to 35,4-million tons in 2012, representing compound annual growth of 5,6%. The regional share of stainless production is shifting, though, he warns. “In 2005, China produced 13% of the world’s stainless steel. By 2012, this had already increased to 45% and most believe that it is now over 50%,” he points out. “When you consider that we in South Africa have over 50%,” he warns. “In 2005, China produced 13% of the world’s stainless steel. By 2012, this had already increased to 45% and most believe that it is now over 50%,” he points out. “When you consider that we in South Africa have most of the world’s chromite, this is scary!” he exclaims.

Traditional chromium-nickel austenitic grades still dominate the market, but this is slowly changing; from over 70% of all production in 2001 to 53% in 2012. The use of ferritics, on the other hand, is growing. “Developments in the automotive industry towards better fuel efficiency and more stringent emissions requirements are driving significant growth in the use of ferritic stainless steel,” explains Scurr.

Another big growth area is in the Cr/Mn 200 austenitic series, which has risen from 5% to 20% in the 11 years to 2012. “These grades are widely used and accepted in the Far East, South East Asia and India for consumer ware. The nickel price was a driving factor for this, but it has since collapsed, so it is unclear whether this growth will continue,” he adds.

The opportunities and challenges for South Africa? “The export market for catalytic converters has been a success story for South Africa. “Supported by incentive schemes like the Motor Industry Development Programme (MIDP), we have managed to put together a high-value exports market, and catalytic converters fall into this category mostly because of platinum, rather than stainless steel. This industry is also under threat due to changes in incentive levels under the new Automotive Production and Development Programme (APDP) scheme, the replacement for the MIDP.

“We are also very successful at manufacturing and exporting stainless steel ISO-tanks and companies such as Welfit Oddy in Port Elizabeth have captured some 25% of the global market,” he says.

“At first glance, the future seems good, with ongoing growth, but if you scratch the surface, you unveil some worrying facts. Last year, import total ling 10 000 t of consumer ware arrived on our shores. This is a huge threat to the stainless steel industry of South Africa, to local manufacturing and to local jobs. Most of these products can and should be made here,” he warns.

“Our Government needs to use the tools at its disposal to act against unfair imports and to add more support for the development of a competitive local stainless manufacturing industry,” Scurr concludes.
Expanded profiling and processing service for the heavy engineering sector

General Profiling, one of South Africa’s largest privately owned steel and stainless steel service centres – has moved into a new purpose-built, state-of-the-art production facility. MechTech profiles the company and its capabilities.

General Profiling was established in 1971, initially to provide plate profiling services to advance South Africa’s manufacturing and fabrication capabilities. “Our first machine, a laser cutting machine from Japan, was bought at the Rand Easter Show in 1971. My father, Brian Poplak, used it to cut piece of steel bought from a scrap yard – and we still keep that first invoice,” the company’s current managing director, Gavin Poplak, tells MechTech.

Over 40 years later, the company remains one of the leading privately owned plate processing facilities in Africa and offers cutting and profiling capabilities across the full metal and thickness range from laser cutting and high-definition plasma cutting, to waterjet and flame-cutting, all under precision CNC control.

Over the years, General Profiling has also added CNC rolling, CNC bending and CNC machining to its service offering, for a comprehensive range of ferrous and non-ferrous metals. Robotic welding cells, along with skilled welders and MIG, TIG and stick welding equipment allow the company to offer light and medium fabrication services.

New premises
To further expand its service offering to the heavy engineering sector, General Profiling has recently completed a substantial capital investment programme in a move to an 8 500 m² purpose-built production facility on Industrial Road, Amalgam, Johannesburg. “The new factory was specially designed for our needs and we have already noticed improvements in production rates, speed of delivery and improved customer service levels,” says Poplak. “Not only did we see a market opportunity to increase our machinery offering to service heavy engineering needs, but also the opportunity to offer industry leading solutions that can significantly improve competitiveness in the manufacturing sector.”

The move, which took place during December of 2012, was completed by 15 outside technicians with the assistance of 200 staff, “and the entire workshop, all of the machines and the offices were successfully relocated in just two weeks,” Poplak reveals.

The new building’s lay-out is designed to streamline the flow of materials through the facility and has, therefore, unlocked a multitude of production efficiencies. Additional space has also been added to accommodate three more very large machines for heavy engineering.

The first is a laser cutting machine with a bed size 30 m long by 3,0 m wide. “This machine cuts through 25 mm in carbon steels and 20 mm in stainless steels and it took nearly nine weeks to install and calibrate. Its addition enables us to offer a cutting solution for very large parts, an increasing requirement from our customers,” Poplak explains. “And, in spite of the 30 m length of the bed, this laser machine still offers precision cutting accuracy using the latest technology.” The new machine raises the number of laser-cutting systems at General Profiling to seven, significantly increasing capacity and reducing production lead times.

The second new machine to be commissioned was a set of plate rolls. Besides having a 3,0 m working width, this is an automatic CNC-controlled four-roll plate rolling machine. Automatic systems use four rolls to prevent slippage, since the sheet is constantly pinched between the top roll and the fourth or ‘pinching roll’.

This machine offers both higher production rates and better accuracy and consistency, which is particularly important for repeat work. Once the CNC program is written and saved, the machine only requires minor adjustments for differing tensile strengths of the material being rolled to repeatedly produce identically rollerd components. The machine is able to roll 50 mm thicknesses over 3,0 m widths – and much thicker sections over shorter lengths.

“But the flagship capital investment of the new facility is our new press brake, which we believe is the largest press brake in South Africa,” claims Poplak. The 2 000 t press brake is able to bend across 12 m lengths, under full CNC control. “It has all the bells and whistles: a six-axis back gauge; and three crane hoists attached to the machine to increase productivity, two in the front and one at the back,” he reveals.

The machine itself weighs 430 t and was imported in two separate shipments. “Seven open top containers and five abnormal load containers were used by the transport company to get this machine into the factory. The rigging company assembled the machine with special lifting equipment, a task
Modern engineering materials and processing

The flagship capital investment is a new press brake, which is able to bend across 12 m lengths, under full CNC control. General Profiling’s automatic CNC-controlled four-roll plate rolling machine.

That took almost two weeks,” Poplak informs MechTech. “Some of the parts of the machine weighed up to 74 t (the side frame, for example) and had to be dragged into the workshop on special trolley devices,” he explains.

The new press brake required foundations 14 m long, 8.0 m wide and 2.5 m below ground level. “It was a challenging installation, but has delivered a one-of-a-kind machine that enables General Profiling to bend thicker, harder and longer material than anybody else in the country,” Poplak suggests. “The press brake is changing the South African fabrication landscape. We can now assist engineers to design bigger parts that can be shaped using bending instead of welding. This brings costs down, improves quality and reduces the possibility of defects and rework,” he adds.

To round off the capital investment programme, the company also added a horse and trailer to the in-house delivery fleet, enabling delivery of the long and heavy parts that will now be produced at the facility.

Summarising the advantages of the new facility, Poplak notes that:
• High volume production runs for customers can now be undertaken with little or no constraints.
• “We are engaging with our customers at a design level to re-engineer components to take advantage of the press brake’s 12 m bending width and 2 000 t capacity. This brings into play designs that will reduce fabricating costs, improve aesthetics and are less limited by fabrication capacities.”
• The additional factory space has also allowed greater stock levels to be held across the materials range: but most notably in stainless steel and quenched and tempered material. “This bodes well for turnaround times!”
• Closely aligned to the capital investment has been an investment in IT systems and the support staff needed to deliver “industry-leading solutions and services.”
• In line with the company’s ISO 9001:2008 certification “we have enlarged our quality control team to ensure that we offer our customers first-time quality, consistently and reliably.”

“We have positioned itself as a ‘one-stop-shop’ for South Africa’s heavy engineering requirements. We are now able to service, under one roof, the complete range of plate processing requirements,” concludes Poplak.
Innovative engineering

To promote the development of sustainable engineering design, efficient energy use, environmental awareness and innovation at the University of Johannesburg (UJ), Warren Hurter and his team have been developing hybrid, alternative and solar powered vehicles since 2010. UJ’s alternative energy project’s flagship is a solar powered vehicle, named Ilanga (meaning ‘sun’ in isiZulu), which has been designed by a team of eight undergraduate students with mentorship provided by two masters’ students, supervised by academic staff members from three different departments, Electrical Engineering, Mechanical Engineering and Industrial Design.

“But it’s not just for fun,” says Hurter, the project manager for UJ’s solar car team. “Our focus is on the educational side. Solar cars are a fantastic research platform that enables student engineers to do real projects with real funding in collaboration with local industry,” he says, adding that the project is also extensively used to market and promote engineering at UJ and at schools to promote science and technology in general.

UJ’s first vehicle was developed for the 2010 Solar Challenge and was a hybrid that combined a motorbike engine, an electric drive and a small hydrogen fuel cell. “It was nicknamed the ‘Ugly Duckling’ and finished 1st in its class and second overall,” reveals Hurter. Building on that, two hybrid vehicles followed, one driven by a hydrogen fuel cell and an identical vehicle fitted with a gas turbine to explore the potential of alternative fuels.

The team began to build solar cars in 2011, but soon realised that it needed more powerful CAD tools to stand any chance of being competitive: “We found the 3D design models were becoming very large and resource-hungry assemblies. We needed to move to a solution that would overcome this problem, and one that offered easier composite design, better simulation and finite element analysis.

“Also, we were late in deciding to enter a solar vehicle in the 2012 Solar Challenge, so we only had four months to design, build and test the vehicle, from scratch. Using PTC Creo Parametric, we were able to complete the design for Ilanga I.I in just five weeks. Through Windchill, PTC’s data management solution, collaboration between several designers was made easy and the software was much better able to deal with the large assemblies,” he notes. “And we could also easily analyse and optimise the weight balance of the 3D model.”

As soon as the 3D model was complete, the team moved directly into manufacture. “We were able to generate all the CNC files needed to manufacture the battery compartments, the axles and the body, and we also used 3D printing for some components. We finished assembling the vehicle three days before race, so it had to be a right-first-time design,” Hurter reveals.

The Solar Challenge is “not called a challenge for nothing”. It involves a 5 000 km journey across the best and worst of South Africa. “We had some breakdowns along the way, but still managed to finish second in our class. We visited some 15 000 school kids, made a 15 episode media video for Mindset Learn on DSTV and we are still doing exhibitions to get young people excited about science, engineering and technology,” he says.

The new challenge? Hurter’s team is currently developing Ilanga II, a second-generation ultra-lightweight...
solar-powered vehicle, that he hopes will be competitive in international solar challenges. “To do this, we must produce a world-class solar vehicle using the best modern materials and technology.

“The most important design consideration is the weight. The existing car weighs 300 kg, and our new target is 130 kg, so we are shaving off a fair amount. PTC Creo is helping us to do exactly what we need to do to get this right,” says Hurter.

“The design process started six months ago and for four of those months we have been testing the aerodynamics. We plug the PTC Creo model into STAR-CCM+, a CFD (computational fluid dynamics) package, test it and feed the results back into the design. We have been changing the model on a daily basis for the last four months, and getting some excellent results,” he asserts.

Demonstrating PTC Creo in action, Pieter Janse van Rensburg, product development engineer for the project, shows how the wheel fairings for the I langa were developed. The profile is based on a calculation for a minimum drag aerofoil. A set of x- and y-coordinates for a line is generated in Excel from a given fairing length and width.

Starting with a PTC Creo model of the wheel, Van Rensburg first marks three starting points at different heights to mark the fairing’s front contact points. “We draw around the wheel to make sure everything fits, and we know that the fairing must be at least 90 mm above the ground,” he explains. A set of coordinates to mark the profile will be generated to establish profiles at each of these points.

Switching to Excel Van Rensburg quickly enters a length and a width for the uppermost point: 1,3 m and width 0,25 m. A set of coordinates are generated and exported. On importing into PTC Creo, we see a point cloud appear around the wheel. “The next two are already done,” he adds, and a few clicks later, point clouds appear from the other two points in front of the wheel.

“These are the boundary curves of the fairing surface, so all we do now is to group them to make one part, and you have an accurate and smooth low drag surface,” adds Van Rensburg, as the wheel is surrounded by a realistic looking fairing.

He goes on to demonstrate how easily the design is updated. On altering the length and the width data, new coordinates are generated, which, immediately on importing, change the surface shape. “These features in PTC Creo have made life very easy for us. We can manipulate all the surface curves based on CFD data, and quickly get an optimised low-drag aerodynamic profile,” Van Rensburg explains.

“Some big changes also become much easier,” continues Hurter, “for example, moving the cockpit around. For the new car, we are also adding the fibre analysis side, so as well as the surface profiles, we will also optimise the direction of fibres to determine exactly where the structure needs to be strengthened. PTC Creo allows us to add material properties that are used to immediately give us a clear sense of the weight,” Hurter explains.

Other features he highlights are: The interference analysis features, to make sure that everything fits into tight spaces; PTC Creo Simulation, the finite element application that is being used to determine the loading on each component; and eCAD that enables wiring to be specified in 3D and the schematics to be extracted. “On the solar panel side, we try to prevent the cockpit from casting shadows, and we can put a virtual eye into the cockpit to make sure that pilot will have good visibility,” he explains.

“With the help of productONE and our other sponsors, we are convinced that we will be able to compete against the Japanese,” says Hurter, concluding his presentation.

PTC and highlights from the PTC Creo family
Following UJ onto the podium, Natasha Sampson, sales manager, productONE, and Jason Fagan, maintenance business and technical manager, presented an overview of productONE, PTC’s value-added reseller and service provider for sub-Saharan Africa, and of some of the novel features of the PTC Creo family of offerings.

I langa design
I langa I.I was designed in accordance with FIA and World Solar Challenge (WSC) regulations. At the heart of the four-wheeled vehicle lies a chrome-moly space-frame chassis with independent front and rear pushrod suspension. The vehicle also has custom designed lightweight carbon fibre motorcycle rims and uses a motorcycle braking system, as well as a regenerative braking system for energy recovery.

The outer shell of the vehicle is manufactured from lightweight fibre glass and foam core composites. Three maximum power point trackers (MPPT), which are used to charge from the solar cells, are mounted to the inside lid of the shell.

The solar cells have been encapsulated using an advanced custom composite lay-up. Individual cells are encapsulated in small modules of two to four cells, and the modules are then arranged to form the three primary arrays. Each array powers a dedicated MPPT, which charges the custom-designed Li-ion battery pack. The batteries act as a power buffer to the vehicle when there is insufficient solar power, when the vehicle needs to tackle a steep incline, for example.

Integrated into the vehicle is a monitoring and telemetry system that wirelessly transmits information – battery levels, temperatures, solar power levels, motor power consumption, and so on – to one of the support vehicles. Using a mathematical model of the car and accurate weather data, this allows the team to determine the optimal speed profile and to minimise energy wastage.
Innovative engineering

Fagan explains that Samuel Geisberg invented parametric modelling. He realised that the geometry of 3D parts could be defined using parameters such as dimensions, constraints and variables. He also recognised the importance of solid primitives or features – holes, slots, fillets, chamfers, rounds, protrusions, shells, etc – and that by defining these using constraints, references and attributes, intelligent behaviour could be incorporated into a model.

“ProductONE was founded in 1991, and we have been very close to PTC ever since. Today, we have 3D PTC-certified training and implementation employees; offices in Centurion and Cape Town, a national call centre, and presences at universities – UP, UJ, VUT, US, UCT, CPUT, WITS, UKZN – as well as training and research institutions across South Africa.

“We do not simply sell software. We work closely with our customers to help with product development processes,” says Sampson. Quoting Carel van der Merwe, engineering manager of Thys-Krupp Materials Handling (TKMH), Sampson says that TKMH “investigated each of the packages thoroughly” to determine which would best suit their needs, before choosing PTC Creo – and “A major factor in the successful implementation was the support of productONE personnel,” says Van der Merwe.

Summarising the PTC Creo offering, Fagan explains that Samuel Geisberg founded the Parametric Technology Corporation (PTC) in 1985 and quickly established a new era of mechanical design. “Geisberg invented parametric modelling. He realised that the geometry of 3D parts could be defined using parameters such as dimensions, constraints and variables. He also recognised the importance of solid primitives or features – holes, slots, fillets, chamfers, rounds, protrusions, shells, etc – and that by defining these using constraints, references and attributes, intelligent behaviour could be incorporated into a model.

“He further decided to incorporate associativity into his software, so that dependent or related parts would be updated automatically when any of the parameters, constraints or attributes was altered anywhere on the model,” Fagan explains.

It can also be used to create animations to show how something works or how something should be done. PTC Creo Sketch is relatively new and addresses the needs of industrial designers, who start with a freehand sketch – but this sketch can be used directly in PTC Creo Parametric as the starting point for a full parametric model.

“PTC Creo Layout is a 2D environment for people who prefer to design in 2D, but it can also pass 2D sections in and out of the 3D modelling apps. PTC Creo Schematics is also a 2D program, but suited to circuit, wiring or piping diagrams, and it is functionally intelligent. It will automatically insert wiring or port numbering, for example,” Fagan explains.

Completing the family is PTC Creo Direct. “If a CAD user does not need to know the engineering intent underpinning a parametric model, then PTC Creo Direct is ideal. It enables the geometry to be pushed or pulled outside of the parametric environment, but the updated data can easily be passed into PTC Creo Parametric for a full model update,” he suggests.

**Surfacing, assembly modelling and direct modelling**

To exemplify the power of the new approach, Fagan highlights three modelling tasks that might face developers: surfacing, assembly modelling and direct modelling.

“PTC Creo currently consists of 10 different applications: PTC Creo Parametric is what Pro|Engineer was; PTC Creo Simulate is the associated FEA package; the new Options Modeller allows for variations based on the different configurations of the source product, such as a BMW 3 series with a sun roof, or without a sun roof; MCAD and ECAD are visualisation tools that allow developers to interrogate a CAD model or PCB board, respectively.

“The idea is provide the right tool to the right person at the right time,” advises Fagan.

“PTC Creo Illustrate is for creating assembly drawings showing how a product comes apart or how to repair it.
PTC recently added freestyle or virtual clay modelling to its parametric application. The software continuously adjusts the mesh of the surface into facets with appropriate coarse or fine faces. So the user controls the ‘look’ of the surface and the software takes care of the finished quality.

“This surfacing mode is ideal for taps, for example, which need to be functional and look good for years, and for products such as StaySoft bottles, with interesting indentation and neck surfaces,” Fagan advises.

Moving onto assembly modelling, Fagan points out that this is a “powerhouse feature” of PTC Creo Parametric. “The limiting factor affecting any CAD design is the computer. At some point, any computer will run out of resources. PTC Creo deals with this by allowing the user to deactivate unnecessary parts of an assembly that are not directly associated with the component being designed. So you limit the number of parts that you look at any one time,” he explains.

“Assembly design is about designing the individual components of an assembly so that they connect to form the finished product. You design the components one at a time, though, and features, such as interference analysis, become very important in ensuring that everything fits into the allocated spaces when the product is fully assembled.”

Completing Fagan’s list of differentiators in the family is PTC Creo Direct: “As per feedback from industry about the need for a simple alternative to parametrics for users who are not incorporating engineering data, PTC has added a direct modelling option. This enables designers to directly edit someone else’s designs without having to unravel the underpinning attributes.

“The Creo Direct enables users to select geometrical features and to move, change or delete them. It also enables users to work with and edit 3D data from any CAD source, such as Inventor or SolidWorks,” concludes Fagan.

Summarising, Sampson says that PTC Creo is a scalable, right-tool-for-the-right-job solution that offers support for both simple and very complex design requirements. “It is also interoperable: data can flow seamlessly between any of the Creo applications and all of them can access third party or legacy CAD data.

“It is easy to adopt with a modern user interface, and includes robust learning tools for a fast ramp up of skills. All in all, this solution offers the fastest possible time to value,” she concludes.
Water operated couplings for sensitive environmental conditions

Hydrodynamic drive, coupling and braking system specialist, Voith Turbo, is on a constant quest to develop and manufacture fluid couplings engineered for specific applications. Voith draws on the vast experience gained from dealing with diverse industry and customers over many decades.

The water operated TW coupling is a perfect example of customer requirements combined with with Voith’s expertise and specialist ability to develop, design and manufacture a genuine ‘soft-start’ device. The TW coupling provides overload protection for both motor and machine.

The advantage of using pure water as the operating medium of a fluid coupling is its environmental friendliness. “Water-operated fluid couplings have proved to be reliable couplings for sensitive environmental areas,” explains Voith Turbo South Africa’s product manager, start-up components, Hans Voshol.

Constant-fill fluid couplings from Voith are used with electric motors in a wide range of applications, especially when highest powers, economy and reliability are required.

The range of constant-fill couplings is perfectly engineered to meet demanding conveyor drive applications with high capacities and lengths, and in bulk materials handling and processing industries.

Constant-fill fluid couplings contain a constant quantity of operating fluid, usually mineral oil but water or fire-retardant fluids are also used. The torque transmitted by the drive motor is converted into kinetic energy via the operating fluid in the pump wheel to which the motor is connected. In the turbine wheel, this kinetic energy is converted back into mechanical energy. The housings are made in either silumin or spheroidal cast iron.

“The couplings incorporate a number of outstanding characteristics to ensure efficient, safe and economical operation,” says Voshol. “They limit introduced torque during start-up and accelerate the working machine smoothly, providing nearly load-free start-up and run-up of the motor.” He adds that the couplings are suitable for economically priced squirrel cage motors and no motor modification is required. During operation the couplings absorb torque shocks and vibrations.

“There is a constant need to reduce costs, irrespective of industry, and the water operated couplings as well as all Voith fluid couplings deliver prolonged service life of the system, lowers maintenance costs and reduces the risk of unplanned downtime,” concludes Voshol.

The advantages of polyurethane wear solutions

Local industries can substantially reduce the unpredictable downtime periods and delays on overall return-on-investment caused by premature plant abrasion, by making use of wear protection products manufactured by polyurethane expert, UMP.

UMP director, Trevor Carolin, notes that the properties of polyurethane, its chemical composition and its suitability to applications are often misunderstood. “Polyurethane is often wrongly perceived as a plastic, which it is not. It is an organic polymer containing the urethane group that is core to the chemical structure and is grouped with rubbers, due to the fact that both are elastomers and made from reacting a polyol with a diisocyanate,” he explains.

Chain extenders are added to increase the molecular weight of the pre-polymer in order to form a usable elastic polymer. “Polyurethane wear solutions are among the most effective of these, helping to meet the plant’s projected time to break even and substantially reducing the expenditure required to operate the plant,” says Carolin.

According to Carolin, the variations of polyurethane composition make it suitable as an abrasion resistant and load bearing material for the mining industry and, due to its chemical resistance, as a versatile material for the chemical industry too. “When production chemistry is scientifically matched to the application, polyurethane can play a key role in assisting plant managers and maintenance engineers in protecting plant from downtime due to either erosive or abrasive wear,” says Carolin.
Multi-bolt tensioners for reduced downtime and improved safety

BMG’s new Superbolt® multi-jackbolt tensioners, which form part of the Nord-Lock range, are designed to reduce downtime and eliminate unsafe and laborious bolting methods for pumps and pumping equipment, particularly in harsh operating conditions.

“These new multi-jackbolt tensioners replace or retrofit nuts and bolts on pumps and only require hand or air tools for installation and removal of any size tensioner,” says Darryl Campbell, general manager for BMG’s fasteners, tools and equipment division. “Bolts on pumps and pumping equipment need to be easily removable during maintenance procedures, but must resist the loosening effects of vibrations and dynamic loads.

“This quick and efficient bolting method is based on a design that splits one big torque into a number of smaller ones. Superbolt, which has numerous advantages over conventional bolting products, ensures joints can be tightened with high accuracy, without the need for specialist skills or heavy tooling. Tightening in pure tension allows higher preloads on the same size bolt than conventional tightening methods.”

A conventional bolting system, such as the sledgehammer, gives little advantage over conventional tightening methods.

BMG offers a technical advisory service to determine the dimensions and load conditions of existing or required bolted joints. Current tightening methods are evaluated and bolt preload calculations are available at www.bmgworld.net.

Compressed air leak detection service

Shield Technologies, a South African supplier of industrial gas flow optimisation products for welding and cutting, has expanded its product offering to include the monitoring and detection of compressed air leaks.

CEO, Wayne Holt, says the company identified a gap in the local market after it became apparent that the majority of its clients makes use of air compressors on a regular basis. “Compressed air leakage is a wasted energy, and it is recommended that leak surveys be carried out at least twice a year in order to save on costs, and to eliminate the risk of downtime associated with large ruptures that have to be repaired,” Holt explains.

According to research undertaken by the University of Cape Town (UCT), the cumulative costs of compressed air over a ten year period comprises 10% maintenance, 15% capital equipment and 75% energy. The UCT study also found that 30% of the total electrical energy used to compress air is wasted, meaning that potential savings could be reaped through the introduction of simple and cost effective measures to minimise this avoidable wastage, without compromising production at all.

Holt notes that the company makes use of the internationally recognised SDT Ultrasonic Detector to swiftly identify compressed air leaks, which can then be easily repaired. “The SDT Ultrasonic Detector provides the most precise and cost-effective solutions in leak detection.”

Vibration resistant heavy-duty truck batteries

Leading manufacturer and distributor of lead acid batteries in South Africa, First National Battery, a subsidiary of JSE listed Metair Investments Limited, continues to be at the forefront of innovative battery technology with the introduction of a new range of extremely vibration resistant heavy-duty truck batteries.

Vibration is the single biggest cause of premature battery failure, which is why these batteries have been specially developed to overcome this. The batteries can withstand poor road conditions and rugged terrain, to which long-haul trucks, construction and agricultural machines are often subjected.

Managing director at First National Battery, Louis Denner says: “These batteries are made in South Africa for South African conditions and conform to EN specifications.”

The batteries have special vibration-reducing features such as plate locks fitted to the end cells to eliminate the possibility of inter-cell connector damage. Plates are also anchored to the bottom of the containers with hot melt glue to reduce movement.

“This range of batteries is subject to and exceeds SANS Battery Vibration test 60095-1: Rev 7 and are the only batteries produced in South Africa to comply. The test requires the battery to withstand vibration levels twice that of a passenger vehicle battery, for four times longer,” explains Denner.

Other key features include a specially formulated paste for increased battery performance and high cycle life. Fully-framed grids provide superior strength, improved conductivity and eliminate the possibility of separators being pierced.

The batteries also have lower self-discharge rates to ensure longer shelf life, while the addition of silver calcium reduces gassing and water loss. The result is a maintenance-free battery.

Additional features include:

• Increased cold cranking power for diesel engine starting even in the most trying conditions.
• A leak-proof dual-moulded vent that eliminates the possibility of acid spillage on the battery top.
• Central venting with flash arrestors for improved safety.

Available countrywide, these new batteries are ideally suited to long distance haulage, frequent stop-start deliveries, construction vehicles, open cast mining loaders and trucks, tractors and harvesters, refuse removal vehicles, fire engines, coaches and buses.

www.shieldtechnologies.co.za
Towards greener car bodies

Germany’s ‘Green Carbody Technologies’ innovation alliance is a consortium of 60 companies and research institutes striving to develop new technologies, processes and tools for car body manufacture. The overall aim is to reduce the energy required to build cars by 50%. In a sub-project: ‘Planning the efficient use of compressed air’, Festo, together with project partners, investigated compressed air applications in car body manufacturing. This is the first time that data on the use of compressed air in automotive production has been collated. The results were presented at the third Resource-Efficient Production Congress in Leipzig.

The sub-project sets out to co-ordinate the use of compressed air on the part of manufacturers and consumers, and thus save energy. This involved co-operation between the Boge Kompressoren Otto Boge; the Fraunhofer Institute for Machine Tools and Forming Technology; and Volkswagen; with Festo taking on the role of sub-project co-ordinator.

At the beginning of the sub-project, energy consumption at production line level; compressed air generation and distribution at plant and production line levels; as well as compressed air consumption at system and component levels were measured. Three software tools were developed in parallel to this. The first enables the distribution and generation of compressed air to be holistically analysed and optimally dimensioned. The second tool allows energy consumption to be estimated and system lifecycle costs to be calculated. The third tool facilitates the exchange of planning data on compressed air systems among various software applications.

Conventional body manufacture typically makes use of pneumatics to drive maintenance units, valves and servo-pneumatic spot welding tongs. The research found, however, that to realise savings, it was important to look holistically at the entire compressed air process chain: from generation, all the way through the distribution network and up to the point of use. Planning is, therefore, essential for the sustainable implementation of any energy efficiency measures.

Although compressed air in body manufacture accounts for only 3.7% of overall energy consumption at the reference plant, the potential for up to 35% of compressed air-related energy savings were identified, corresponding to annual electrical energy saving of 2 232 MWh or 1 257 t of CO₂-equivalent. These savings can be realised at reasonable cost and are easily attainable for new facilities by incorporating appropriate planning and design.

Pneumatic drive technology, for any body-in-white manufacture, is a highly cost-effective technology characterised by speed, simplicity, cleanliness, and safety. The full savings potential can only be exploited, however, when the entire functional chain is taken into account – from the generation and distribution of compressed air up to its application – over the entire life cycle.

Festo produces both pneumatic and electric drive technology and offers its customers the most suitable energy-efficient, and thus cost-effective, solu-

---

Data and tools that would make energy consumption transparent have been lacking. The results from the Festo-run subproject have yielded specific figures and suggested specific measures. Photo: Festo.

---

Xylem Africa Product Showcase

Xylem Water Solutions South Africa, a leader in submersible pumps, mixers and accessories, will host the Xylem Africa Product Showcase and Conference on 12 and 13 August 2013 at Gallagher Estate in Midrand.

The two-day long showcase will serve as a platform to launch several new products to the African and South African market and will feature local and international high-profile speakers. Not only will this be an excellent opportunity to view a wide selection of Xylem’s new and state-of-the-art products, but it will also be an invaluable opportunity for visitors to network with likeminded professionals from the water, mining, engineering, agricultural, building and environmental sectors.

The PR Collective: 010 591 0669.

---

Conventional body manufacture typically makes use of pneumatics for operating maintenance units, valves and servo-pneumatic spot welding tongs. Photo: Festo.

---

Industry diary

August 2013
South Africa’s Electricity Supply Conference, 2013
15 August: Rosebank/Sandton, Johannesburg
Fossil Fuel Foundation
events@rca.co.za

7th Annual Corrosion Conference: Pipeline Corrosion
20-23 August 2013, Hackle Brooke, Craighall, Johannesburg
+27 11 771 7000
registrations@iir.co.za
www.iir.co.za/corrosion

---

Index to advertisers

Axion Hydraulics ....................................................16
Bearings International .............................................17
BMG .................................................................14
Bortiglioni ............................................................2
Clyde Bergemann ..................................................13
Erigen .................................................................37
Festo .................................................................21
General Profiling ..................................................30
IDC .................................................................IFC
KEW Foundries .....................................................33
Maley Plastics .......................................................20
Modena Design Centres .....................................15
Robor .................................................................IBC
SEW Eurodrive ....................................................OFCC, OBC
Tectra Automation ................................................25
Voith .................................................................23
Engineering Enhanced

Products:
Robor are stockists and suppliers of a wide range of hot rolled, cold rolled, galvanized and pre-painted coil, plate and sheet in commercial, certified and wear resistant qualities stocked in a large variety of sizes. This comprehensive range is sourced from both local and international mills.

Structural carbon steel profiles include:
- Round, Square and Flat Bar
- Angles
- Channels
- Columns
- Tubing: Round, Square and Rectangular
- Beams and Joists
- Window Sections
- Palisade Sections

Value Added Services:
- Oxy Fuel Profile Cutting
- Laser Cutting
- Cut to length (Standard sheets to narrow slit strip)
- Decoil
- High Definition Plasma Cutting
- Drilling, Chamfering and Bending
- Cold Saw and Mitre Cutting
- Chamfering (Beveling)
- Strapping
- Guillotine (Cut to size)
- Pressing and Punching Blanks
- Cold Forming (W-Straps)
- Slitting and D&R Coiling

Robor operations are ISO 9001 compliant and subscribe to Global Best Practices to ensure the application of internationally recognized quality standards.

For more information: Tel: +27 (0)11 929 5000 or +27 (0)86 166 6999
E-mail: engineering@robor.co.za • www.robor.co.za
SEW-EURODRIVE offers innovative drive solutions for all applications in the mining industries.

All SEW-EURODRIVE products and systems make the best use of the space available around the machine and ensure great flexibility and reliability. Minimum maintenance and simple operation ensure that you will operate machines and equipment efficiently from the very beginning.

Thanks to the modular design and countless combination options, all drive engineering components can be replaced quickly, if the need arises. From gravel mining to the excavation of gold, platinum, coal and diamonds - we put the drive into all facets of the mining industry.

SEW-EURODRIVE - Driving the world.

Tel: +27 11 248-7000
Web: www.sew.co.za