

Mining

Z I M B A B W E

ISSUE
01
FREE

JULY/ SEP 2016

How to choose a
FUSION SPLICER

TO INVEST OR NOT TO
INVEST IS THE QUESTION

BAUMA, WHY
NOT IN ZIMBABWE

Mobile and semi-mobile
CRUSHERS

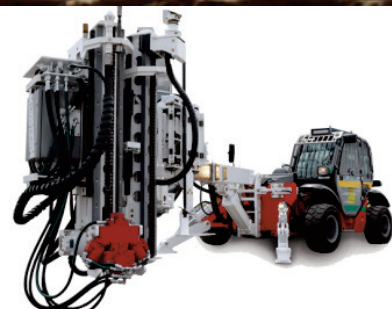
THE EIA LEGISLATIVE
POLICY IN ZIMBABWE

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UNIVERSAL SPEED MEASUREMENT
FOR EXPLOSIVE AREAS
HAND-TACHOMETERS



Metso Mobile/Semi mobile Crushers



MANITOU ROOF BOLTER



manitou



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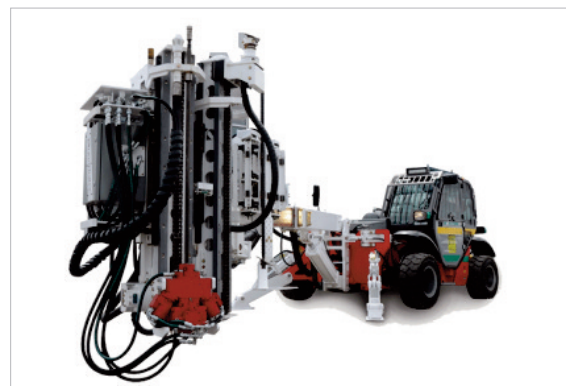
increases productivity by revolutionizing tyre and shovel maintenance practice



To invest or not to invest, that is the question



The Bauma, why not in Zimbabwe

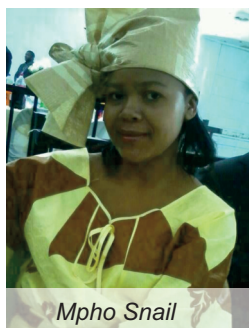


Manitou Handling your world



New Komatsu D85EXI/PXI-18

Note from the editor



Mpho Snail

What an exciting time this is for us here at Sungie Media. This issue is the beginning of great things to come for the Mining industry of Zimbabwe and Africa at large.

Zimbabwe has one of the biggest mining industry in Africa which has been under utilised until now. Our publication is here to aid in

turning that around. In our first issue we take a look at the current state of the mining industry in Zimbabwe. Our story on page 12 helps us take a closer look at Sandawana mine which is one of the mines being revived by Zimbabwe Mining Development Corporation (ZMDC) in the hopes of attracting investors and giving the economy a much needed turnaround. Now of course we are not just all about the money, safety is as important to us as it is to you, and so we encourage you to take a look at our health piece on page 8.

The world of mining can be so complicated especially when it comes to choosing the right equipment from a trusted supplier, but do not fear because Mining Zimbabwe is here to make sure that you do not stress about such, read all about it on pages 5 and 20. As our valued reader, we aim to keep you informed so that should you want to invest, you can do so with ease. We are here to serve you by furnishing you with hard hitting mining news as well as keep you abreast with new developments and how they affect you.

We are looking forward to a long and prosperous journey with you and if you have any views you would like to share with us, feel free to do so by emailing us on editor@miningzimbabwe.com. Happy reading everyone.

We welcome your comments

Contact the editor on editor@miningzimbabwe.com

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About Mining Zimbabwe Magazine

Mining Zimbabwe Magazine is a publication focused on the mining industry of Zimbabwe and how it relates and affects the rest of mining done in other African countries. The magazine's core focus is on the ever evolving face of the mining industry, trends, new technologies, machinery, solutions being developed and used to improve this crucial sector, as well as new opportunities and investments arising from it.



Mining Zimbabwe

MINING ZIMBABWE

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Digital wireless observation system

When dealing with heavy machinery it is vital to have a clear view of the entire vehicle surroundings. To help solve this dilemma, ASA Electronics introduced the new Voyager ToughCam 7" digital wireless observation system featuring WiSight technology to the heavy duty industry. This system supports up to 3 cameras, one wireless and two wired. Plus, this system's large, easy-to-see monitor will give drivers a crystal clear picture of any function not

viewable from the driver's seat.

The revolutionary WVOS7MDCL1B features WiSight technology which helps to eliminate dangerous blind spots and visibility limitations often encountered in a construction environment. This technology digitally locks the camera to the monitor, blocking all outside signals along with eliminating interference and noise typical of analog wireless systems. The WVOS7MDCL1B also features a strong signal that transmits through and around objects up to 60+ feet.

The large 7" screen provides viewers with a sharp, vivid picture of the vehicles surroundings allowing the driver to safely

perform many driving maneuvers such as reversing or maneuvering around a work-site. The monitor features a suction cup mount so it can be attached to the windshield and easily be transported between vehicles. The monitor also has a built-in speaker and convenient front controls for power on/off, brightness adjustment and volume control.

The Voyager ToughCam camera features wide viewing angles, infrared LED illumination for low light performance, a built-in microphone and mirror image orientation. The camera easily connects to the running lights or other 12 volt power source.

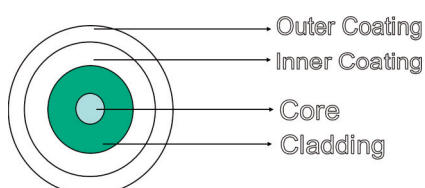


How to choose a FUSION SPLICER

This article covers any product or equipment investment. We, at IC Logistix deal first-hand with buyers, just like you and we often experience the frustration with clients once it is too late. The Good Book warns that regret always comes too late and we have seen grown men cry due to bad decision making. Our success is based on our relationships with our clients due to the integrity that we portray towards them. Our brand is our passion!

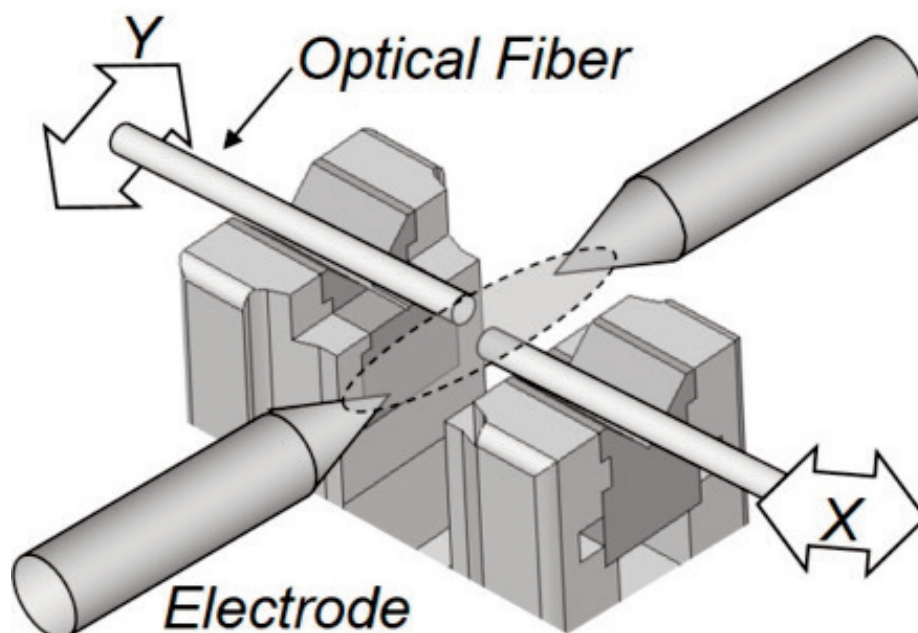
Fusion splicers have been around for almost 40 years now and arc fusion splicing plays a pivotal role in the installation of modern fibre networks and FTTH. (Fibre to the Home).

Typical optical fibre is constructed with a core made of doped silica and a cladding made of pure silica, having a less refractive index than



the core. It is then coated with two layers of acrylate material for mechanical and environmental protection. Data, communicated via a laser is transmitted across the core of the fibre. It is received on the other side by a receiver and is typically converted to an analogue signal, i.e. voice, video, internet data, etc. An immediate challenge with the advent of optical fibre was to join the cables with the least data-loss across the splice. Fujikura, a Japanese company, developed the first Optic Fibre Arc Fusion Splicing Machines in the 1970's.

The Splicing Machine aligns 2 strands of fibre exactly. (The core is typically between 4 and 9 microns for



Single Mode Fibre). Once aligned, it uses a complex algorithm to produce a high voltage arc across two electrodes in order to melt the silica glass together. This process is called Arc Fusion Splicing. A few factors determine the quality of the splice. (The quality of a splice refers to the loss across the splice as well as the life of the splice). These factors include environmental factors like temperature, humidity and altitude, available oxygen as well as safety. For example, splicing deep underground may be impossible due to too high humidity, lack of oxygen or the presence of flammable gasses. Other factors include the continuous quality of the tool, i.e. how well the alignment occurs, the precision of the arc algorithm, the stability of the arc, the proper arc time and the arc voltage. There are 4 ways to do alignment. Core alignment is the most accurate as it aligns the actual core of the fibre, active V-groove Adaptive Core uses the cladding to determine the logical core of the fibre, thirdly the cladding alignment splicer and lastly the fixed V-groove splicer which does

not feature alignment at all.

The first step towards purchasing the correct splicer is to determine which type of splicer is the right tool for the job at hand and most importantly, for future jobs. It is a piece of cake, if the contractor is doing any type of long-haul, or telecommunications work, stick with a core-alignment splicer. The same applies if the contractor is doing a range of different jobs and they need a splicer that is very versatile and fast. LAN/WAN, Datacentre and Multi-mode jobs can be done by an Active V-groove Adaptive Core or Cladding alignment splicer. The same applies for FTTx work; however, a portable or hand-held version of these splicers are the best solution. Fixed V-groove is good for light duty FTTx work, connectorization, and small jobs or in many cases bought due to budget constraints.

Once you have determined which type of splicer will be best for your requirements, the next step is brand name. As with many things in life,

How to choose a FUSION SPLICER



cheap is nasty. In the case of splicing machines, cheap can be very nasty. The rule of thumb is to stick to a well-established Japanese brand. Don't be ignorant. There is only one market leader. When looking at different brands and the salesman indicates that their brand is as good as the world market leader, rather purchase from the market leader. It's a no-brainer. Companies who compare their product to another product's success are hiding the inferiority of their brand. Another common incidence is a vendor that blatantly shoots another proven product down. Beware, this guy is downgrading the superior product to their level in order to deceive you. Stay away! Did I mention not to buy cheap? Don't. We deal with many disappointed customers and they have no way of getting their money back. Stay away from Chinese and Korean brands. These are the cheap and nasty ones. If you don't know the brand, do not buy it. Remember, a splice machine is an investment and most likely your livelihood. Put your family's lives in good hands by buying a quality product that can put food on the table for a long time.

Look at warranty periods and possible maintenance plans. Carefully consider service intervals. Make sure that the product is not a grey import. Some vendors will try to deceive you. Grey imported equipment does not carry manufacturers support and this can

burn you in a few years when, for instance you need to purchase a new battery for the device. We have dealt with a few very unhappy people in the past. People who bought grey equipment, only to find that the unit arrived faulty. It is very easy to import from India and China; however, it is almost impossible to return something for repairs. Do not expect local agents to assist you once you have bypassed them in the purchase. Unscrupulous vendors do not have rent and staff to pay, thus it is easy for them to sell equipment slightly cheaper in some cases than the local guy. Remember the local guy, if he is the right guy, will look after you properly in the long run.

The next very important factor is aftersales service. Ensure that the reputable brand that you are considering offers a certified calibration lab for service and repairs. Physically check the premises if possible and confirm that they carry special tools and spares for all models. Find out if the technicians are trained by the manufacturer, etc. Once again, don't be ignorant. If a company sells splicers as a side-line product, chances are that they will lack on the aftersales side. Please don't get caught by these vendors. Don't think that because you have bought accessories and cable from a vendor for many years that they will have the capability to look after a highly complex, electro-mechanical precision device. Splicing machines are specialised tools and they need specialised care. If you bought the wrong brand, you will find this out very quickly once things start to go wrong with the machine. Tricks that vendors use to convince you to purchase their product include:

1. Breaking down of another brand or company. I occasionally phone

around to see how other vendors operate. I have come across vendors who start their sales pitch with 'Oh my gosh, don't buy this or that brand because it is rubbish. It has so many flaws, etc.' Run from this guy. He is a liar and he intends to take your money from you.

2. Comparing a superior product to theirs. I have sat through technical workshops where the vendor spent all their time comparing every feature of his machine to another superior brand. What a joke. Reverse engineering does not offer the same as millions invested into R&D. Some brands do not even have a R&D department, only a reverse-engineering lab. This is fact.

3. Convincing you that because they sell 1000 other products that they are capable of selling you a quality product and offer proper support. If they don't specialise, stay away.


4. The convenience vendor. He convinces you to purchase from him because you are there and he can deliver and it will all be on one invoice, etc. Do your homework. A splice machine is not a toaster. Brand matters!

5. The cheaply guy with the big promises. If the product is so very great, then why is it so cheap? Great brands, like Fujikura and others, offer a range of splicers with different features. You will be able to afford a great brand, even with a small budget. Do your homework first before you leap into a bad deal.

Contact us at IC Logistix for proper assistance. If we cannot help you with your specific needs, then we will be able to point you in the right direction,

**Zach Yacumakis +2711 521 2353,
zachy@iclogistix.co.za**

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Features:


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- ▶ Fast splicing time 6sec. / tube heating time 15sec.
- ▶ Multi-functional carrying case with integrated workstation
- ▶ Service interval: 5000 splices



FUJIKURA-70S

Features:

- ▶ Core-to-Core alignment, Dual Axis observation system.
- ▶ World's quickest splicing 6sec. / tube-heating 9sec.
- ▶ Minimal manual operation. Splice in 4 steps.
- ▶ Multi-functional carrying case with integrated workstation.



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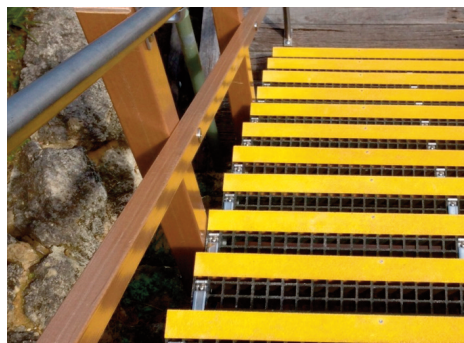
Zach Yacumakis SOLE ACCREDITED DISTRIBUTOR FOR SOUTHERN AFRICAN MARKET

Mine walkway safety assured with 'Vital' floor gratings and handrails

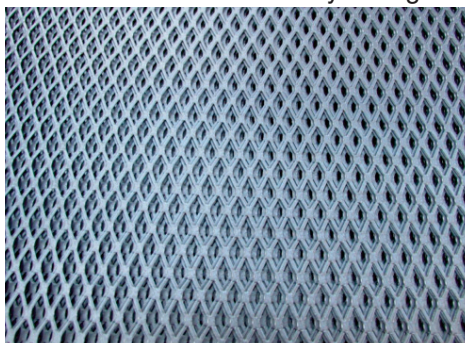
Ensuring safety is the number one concern for all mining operations. Vital Engineering understands this, and over the past few decades has produced a range of products of uncompromising quality which are now found on a growing number of mining operations throughout Africa and other parts of the world.

The company, established in 1939, specialises in a range of fully serrated, multi-directional non-slip floor gratings and stair treads, providing a durable, corrosion resistant and aesthetically pleasing solution for its customers. Under the brand name Vitagrid®, Vital Engineering's fully serrated gratings have been used extensively in large

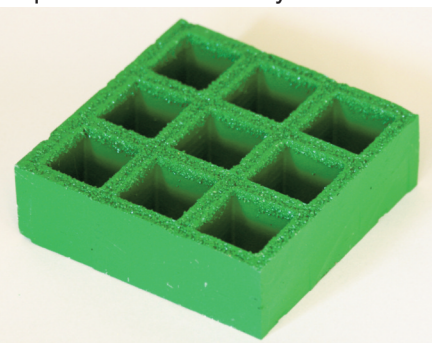
As a systems-driven and solutions-based company, Vital is not merely product-driven, or just a manufacturer or supplier. Rather, the company's decades of experience and innovation have led to the production of products which constantly meet the changing requirements of industry. A case in



Stair tread and Gratings



Vitex Photo2



"When it comes to safety in mining operations, there is no room for guesswork. That is why we ensure strict material controls for our products, which results in the benefits not only of minimising lost time injuries (LTIs), but of long life-cycle or LoM (life of mine) and low maintenance costs," says Dodds Pringle, Managing Director at Vital Engineering and Angus McLeod.

and small mining projects over many years.

"We receive positive feedback from these installations in terms of significant reductions in the number of accidents caused by slippage. This equates to a reduction in the number of employee compensation claims and the resultant downtime," Pringle notes.

point is its exemplary top fixing patented grating panel clips, designed for light, medium and heavy applications.

Informed by systems design which meets specific customer requirements, Vital Engineering also prides itself on the provision of a full **consultation service. Being closely**

Mine walkway safety assured with 'Vital' floor gratings and handrails



involved in the design phase of a mining or construction project, the company is able to offer expert advice when it comes to material choice and design parameters, ensuring fit-for-purpose performance and maximum safety. The company cautions its customers against making ill-advised choices of material which could be solely based on price and which may compromise human safety.

"Contractors and customers need to be aware of the dangers of cutting corners with respect to quality of materials used. When engineers design walkways they do so with specific performance in mind. By replacing this with unspecified material, or sub-standard workmanship, one is courting disaster," Pringle advises.

Vital Engineering's precision-made pressure-forged gratings are manufactured to international standards, using the only the highest grade steel, such as WA355. Floor gratings are manufactured in mild steel, aluminium and fibreglass, with galvanised mild steel a popular choice because of its resilient and hardy finish, according to Pringle. Vital's Maclock® range of handrails has also been developed for safety in applications such as mine walkways, using mild steel, galvanised mild steel and stainless steel.

In addition, Vital Engineering has, in response to the general demand for ease of fitment and versatility, introduced moulded fibreglass gratings and handrails to industry, and has seen a significant uptake, particularly on mining operations. "Fibreglass is anti-corrosive, fire-retardant, non-conductive, non-slip – and virtually maintenance free," notes Pringle. "As a viable alternative to steel, our fibreglass stair treads, walkways and gratings – under the Vitaglass® brand name - are gaining wide acceptance due to their long-term cost-saving implications and improved safety. They are particularly suitable in harsh, outdoor or highly corrosive conditions.

Vital Engineering's Vitex® range of expanded metal products is manufactured in mild steel, stainless steel and, if requested, more exotic materials. The company also recently launched its non-slip, serrated expanded metal walkways for conveyors and narrow, low walkways (of up to 800mm wide).

"The selection of material for handrails and gratings is a critical factor in safety, particularly when elevated such as in the context of a mine walkway. When one is 30 to 60 meters off the ground, the last thing one needs is a badly designed and constructed walkway. By making the 'Vital' choice, our mining customers

are assured of total safety at times," Pringle comments.

In addition to its many decades of successful supply of handrails, stair treads and gratings to the local and pan-African mining sector, Vital Engineering has also been closely involved in supplying these products to numerous local and international high-profile power generation projects.

This includes the recent supply of bespoke components to Medupi and Kusile local power generation projects, comprising of 8000 tons of grating panels, approximately 70km of hand railing and over 9,000 stair treads. This effectively makes it the largest gratings, handrail and stair tread supply contract to be undertaken in Africa.

"Vital Engineering is not a new contender to the power generation market and has supplied many other local power station projects such as Arnot, Komati, Koeberg, Kendal, Matimba, Majuba and many others. Our accurate fabrication and fitment systems ensure high quality work associated with world-class suppliers, reducing downtime, on-site costs and delays," says Pringle.

He adds that the Vital philosophy of 'cost of installation' has been refined over the many years of manufacture and supply of bespoke and tailored gratings and fittings, making the company the first choice in any project work.

"Vital Engineering also has extensive experience in the supply of components to power stations internationally. These include combined cycle, gas, nuclear, hydro and fossil fired stations in South Africa, Hong Kong, China, Turkey and South America," Pringle concludes.

Safe measurement, indication and control of rotational speed



Universal speed measurement for explosive areas Hand-tachometers = RHEINTACHO



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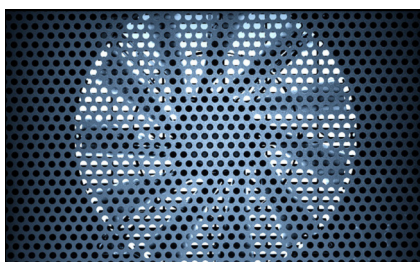


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Universal speed measurement for explosive areas: Hand-tachometers

RHEINTACHO

Our mechanical handheld tachometers, HTM's, are designed to accurately measure RPM and surface speed on a wide range of applications. The HTM is a favored measurement device in several industries, including elevator maintenance, the mining industry, yarn and wire measurement and others. The large, clear and easy-to-read dial as well as the wide reading range with high definition make the mechanical hand-tachometers easy to use - without the need for any batteries!

Keeping in mind the need to operate tachometers in areas where there is a risk of explosive atmospheres due to either dust particles or gas, our engineers have carried out modifications to enable this version to be certified for use in ATEX Zones 1 and 2 for use in all gas groups with a temperature class of T4 and also makes it suitable for mining applications I M2c. This certificate approves use in underground mining applications. The device has been designed for short term observation and measurement, not for continuous operation.

The ATEX HTM measures rotational or linear speed using various special contact adaptors supplied with the

instrument. With no need for batteries, it has the safety and flexibility to satisfy the most demanding requirements for maintenance and calibration. The reference numbers: EX II 2 G D C II C T4, I M2 c

Easily identified by its yellow, ergonomically-designed casing, the ATEX HTM is available in four different models and is supplied in a hard plastic carrying case complete with a set of adaptors.

RHEINTACHO UK Ltd, a subsidiary of the German company RHEINTACHO Messtechnik GmbH and formally known as Foundrometers Instrumentation, is specialized in the production of non-electronic measurement and indication instruments as well as tachogenerators, and acts as a sales and service center for the UK and Ireland.

For over 115 years now, the German parent company RHEINTACHO Messtechnik GmbH has had a long standing tradition and has been engaged in the field of rotational speed, a crucial control quantity for mechanical processes. In-house product development, production and assembly departments guarantee

quick and innovative solutions to customers' individual requirements. The production range incorporates a wide range of solutions of a high technical quality, principally in the field of rotational speed: sensors, hand-held measuring devices, rotary encoders and switching devices.

Further products from RHEINTACHO are:

- Rotational speed sensors for the harshest environments
- Digital hand-tachometers rotaro and redpoint as well as ATEX certified mechanical hand-tachometers htm that measure or record rotational speeds and run lengths
- Portable and stationary stroboscopes with LED or XENON technology that are instruments for the visualization of very fast movements
- Speed monitor systems, such as the programmable rotas, that measure the motion of engines, machines and systems
- Electrical indicators that visualize process factors such as rotational speed, velocity, flow, positions and filling levels

Typical applications of RHEINTACHO products are:

- **Mobile hydraulics**
- **Large engines**
- **Wind power**
- **Material handling**
- **Electric drives**
- **Service & Commissioning**

Our aim is to meet our customers' every need by consistently producing the best possible rotational speed measurement product at a competitive price. Since this also means providing an excellent all-round service we place great emphasis on optimizing levels of cooperation, reliability and continuity.



To invest or not to invest that is the question



The Zimbabwean government has undertaken new attempts toward accessing investment opportunities for state owned derelict mines. This program will be administered by their parastatal body the Zimbabwe Mining Development Corporation (ZMDC). With low investor confidence in the country and more notably the mining sector, it is hoped that this move will result in opportunities being made available to the private sector as means of encouraging joint venture agreements with foreign investors in the form of private public partnerships (ppp's).

"Sandawana", an emerald mine which lies within the Mweza green-stone belt is an example of one of the many mines ZMDC has opened

up to private citizens to access investment for rehabilitation. Sandawana mine is located in Mberengwa district of the Midlands province. Other notable mines in the area are Buchwa Mine, Vanguard Mine and C Mine.

Brief history of Sandawana Mine

The beryllium and lithium boom following the end of the Second World War triggered extensive exploration programs for Pegmatites and their associated minerals. In 1955, Lawrence Contat and Cornelius Oosthuizen visited the Mweza range in search of Beryllium and Lithium minerals. The two European prospectors encouraged

By Farai Gwaze

the indigenous locals to bring any peculiar stones for identification. The Shona speaking locals would say Chandawana "What I have found", showing the specimen to the European prospector. Being unable to pronounce Chandawana the Europeans ended up saying "Sandawana" and this was how the name of the mine was born.

Mineral deposits at Sandawana mine

The Sandawana mining lease and claims have immense mineral potential. It has a unique geological set-up hosting a variety of deposits in the same area. Exploration in the form of diamond drilling has been done, with some encouraging results

To invest or not to invest, that is the question

reflecting high emerald potential. All explored targets have high potential for emeralds however a major challenge presented is from:

1. the dwindling need for the gem in the market and
2. Size and quality of the gem is more appealing in neighbouring Zambia. The mining infrastructure present is limited to fixed structures meaning operational equipment is a prerequisite to engaging any sort of mining activity.

Mineral deposits at the mine are comprised of the following:

- **Gold**
- **Diamonds**
- **Chrome**
- **Tantalite**
- **Emeralds**



According to results (however outdated), Tantalite at the moment seems to be the most viable mineral to extract.

ECONOMIC POTENTIAL:

The Mweza Greenstone Belt hosts mines that are well known for emeralds, gold, tantalite, beryl, iron, chrome and slate.

IRON

Iron ore potential is confined to the banded ironstone formations within the Mweza Greenstone Belt. The main Mweza Greenstone Belt is more or less running parallel to the Limpopo Mobile Belt and a major shear zone separates the two belts. There is a noticeable metamorphic facies change from the high grade metamorphic zones to lower facies of the Greenstone Belt. The orthopyroxene isograd passes along the shear zone separating the two belts. The iron ore potential for the Sandawana area is enormous. The occurrences are on hills making mining initially easy until the base is reached.

EMERALD

Emerald mineralization is confined to the southern edges of the Mweza Greenstone Belt. This is an event strongly associated with the intrusion of the Razi granite into the major shear zone separating the Limpopo Mobile Belt (LMB) from the greenstone belt. This granitisation period led to the migration of granitic residual fluids into the Mweza greenstone belt through the major shear zone and parasitic shears.

To invest or not to invest, that is the question

GOLD

The Chibi granite has influenced geological events in the Mweza Greenstone Belt as well as the Mberengwa Greenstone Belt. Hydrothermal solutions triggered by the granitic mass leached auriferous components from the Mweza Greenstone Belt particularly its major satellite and the northern side of the major greenstone belt. The auriferous solutions were incorporated into the quartz veins and shear zones. Five gold mines in the Sandawana area are scattered along the northern boundary of the Mweza satellite and the main Mweza Greenstone Belt. Further north along the same greenstone-granite contact mines such as the Golden Gaze, Duiker, Golden Arrow, Iconas, and Twin H have a mining history.

CHROME

Chrome mineralisation is associated with ultramafic plutons within the Mweza range. The ultramafics trend from Gaha inselberg to areas beyond Magavakava area. The ultramafics have a thickness ranging from 1 to 2 kilometres in thickness. It is characterized by some unique vegetation comprising of some flowery shrubs, and some chinda trees known for their high magnesium content. The area is generally poor wooded though the *diplorrhynchus mossambicensis* (umkamamasani), the *umusesethu*, and the *umumbondo* feature a lot in the area.

TANTALITE

Tantalite mineralisation is associated with the older generation of pegmatites. The pegmatite swarm covers a vast area west of ZEUS mine. They originate as metamorphic segregates of the tonalitic gneisses. They are concordant with the foliation of the tonalitic gneisses. Mostly they are elongated and strike NE-SW and show a pinch and swell characteristic. Having undergone a lot of metamorphic episodes, they have been zoned and show a lot of quartz cores. These pegmatites show strong potential for tantalite and lithium minerals.

TIN

The area technically called Vulcan Lower is located to the north of Vulcan. It occupies the area below the Vulcan hill and hence its name of Vulcan Lower. It stretches westwards to the present boundary of the mining lease. The pegmatites in the area are poorly defined but they have been worked for tin and tantalite. They have very high grades of tin but very low grades of tantalite.

To invest or not to invest, that is the QUESTION

Zimbabwe's economic turnaround has been hedged on the mining sector. Initiatives such as these that look at private public partnerships being adopted are a clear sign that government has failed in their own capacity under the 51% local equity requirements currently in place, and are also a reflection of the dire need to encourage investor confidence through its private citizens. Mines have played an integral part in the development & implementation of

service delivery in the remote areas they are situated.

Programs such as these would not only benefit the people around the mines but the country as well. With the volatile nature of commodity prices in the global mining industry, one can only hope that investment opportunities will become more apparent.

Despite the challenges faced by the Zimbabwean economy concerning the looming adoption of "bond notes" due to a national cash crisis and the lack of confidence in government to manage resources gained from the mining sector, an opportunity for the private citizen to have a space in large scale mining is reason for optimism.





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An automated drill and bolt rig offering manoeuvrability and performance in confined soft and hard rock hanging walls as low as 1.8 metres, the Manitou ROOF BOLTER consists of a single rotating carousel head, which carries six roof bolts, and enables drilling, automatic epoxy injection and bolting functions in a single procedure.



MANITOU SCALER

The Manitou Scaler enables operators to scale hard and soft rock from secure area on its seven metre, 180 degree rotational turret, either from within its fully-enclosed cab, or from up to 20 metres away via remote control for maximum safety. Secondary functions include pipe and cylinder fitment, mesh erection and the destruction of large rocks.



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Designed for transporting and towing equipment, tools, skids and tanks, the ManiTrax utility vehicle combines exceptional hauling capabilities with maximum manoeuvrability, including full four-wheel drive and crab steering functionality allied to sleeker, more compact exterior designs. The flexibility of the vehicle design enables wide scope for modifications and optimisations for a variety of applications, including 1.5 ton crane to enhance loading and unloading functions.



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Scientific Engineering



50 years and counting.

Scientific Engineering celebrates its 50th year of manufacturing world class products in 2016. During this era, we have seen many technological advances in all sectors, the laboratory field being no exception. The test of time is no doubt how we all adapt to these constant innovations and changes. At Scientific, we have managed to keep abreast of these developments and embraced modern manufacturing techniques and systems. Together with a passionate, capable staff complement and our loyal dealer network has enabled us to grow from strength to strength.

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Other products in our range include platform, orbital and incubating shakers. Circulating baths, circulators, steam baths, heatable baths, hot plates, clean air laminar flow benches and trolleys.

We are a well-established manufacturer of laboratory products and the largest supplier of laboratory ovens and incubators in South Africa. As a shareholder managed company, customers have the assurance that a dedicated team is behind every successful delivery.

Once again thanks to all of you who have made this success story a reality and stuck with us through thick and thin over the last 50 years!!

THE EIA LEGISLATIVE POLICY IN ZIMBABWE



The Government of Zimbabwe passed the Environmental Management Act of 2002 and S.I. 7 of 2007 which compels prescribed projects listed under the first schedule of the EMA Act CAP 20:27 to undergo an EIA process prior to implementation. These projects are listed as follows:

1. **Dams and man-made lakes.**
2. **Drainage and irrigation—**
 - (a) Drainage of wetland or wild life habitat;
 - (b) Irrigation schemes.
3. **Forestry—**
 - (a) Conversion of forest land to other use;
 - (b) conversion of natural woodland to other use within the catchment area of reservoirs used for water supply, irrigation or hydropower generation or in areas adjacent to the Parks and Wild Life Estate.
4. **Housing developments.**
5. **Industry—**
 - (a) Chemical plants;
 - (b) Iron and steel smelters and plants;
 - (c) Smelters other than iron and steel;
 - (d) Petro chemical plants;
 - (e) Cément plants;
 - (f) Lime plants;
 - (g) Agro-industries;
 - (h) Pulp and paper mills;
 - (i) Tanneries;
 - (j) Breweries;
 - (k) Industries involving the use, manufacture, handling, storage, transport or disposal of hazardous or toxic materials.
6. **Infrastructure—**
 - (a) Highways;
 - (b) Airports and airport facilities;
 - (c) New railway routes and branch lines;
 - (d) New towns or townships;
 - (e) Industrial sites for medium and heavy industries.
7. **Mining and quarrying—**
 - (a) Mineral prospecting;
 - (b) Mineral mining;
 - (c) Ore Processing and concentrating;
 - (d) Quarrying.
8. **Petroleum production, storage and distribution—**
 - (a) Oil and gas exploration and development;
 - (b) Pipelines;
 - (c) Oil and gas separation, processing, handling and storage facilities;
 - (d) Oil refineries.



THE EIA LEGISLATIVE POLICY IN ZIMBABWE



9. Power generation and transmission—

- (a) Thermal power stations;
- (b) Hydropower schemes;
- (c) high-voltage transmission lines.

10. Tourist resorts and recreational developments—

- (a) Resort facilities and hotels;
- (b) Marinas;
- (c) Safari operations.

11. Waste treatment and disposal—

- (a) toxic and hazardous waste: incineration plants, recovery plants (off-site), wastewater treatment plants (off-site), landfill facilities, storage facilities (off-site);
- (b) Municipal solid waste: incineration, composting and recovery/recycling plants, landfill facilities;
- (c) Municipal sewage: waste treatment plants, outfalls into aquatic systems, effluent water irrigation schemes.

12. Water supply—

- (a) Groundwater development for industrial, agricultural or urban water supply;
- (b) Major canals;
- (c) cross-drainage water transfers;
- (d) Major pipelines;
- (e) Water withdrawals from rivers or reservoirs.

The EIA Review Process

The initial stage is to submit a prospectus to the Director General who has 20 days to review the prospectus.

1. The project can be exempted at prospectus stage or a full EIA can be required. If a full EIA is required then the developer has to engage an independent consultant registered with the Agency to prepare an EIA Report in terms of Section 98 of the Environmental Management Act.
2. In terms of Section 99 of the Environmental Management Act an environmental impact assessment report should include a detailed description of the project, likely impacts and mitigating measures.
3. The EIA review fees are between 0.8-1.2 % up to a maximum of \$ 2 000 000.00 of the total Project cost depending with project size and 5% administration fees. These new figures are a reduction from the previous figures of 1.5% across the board before.
4. The Director General has sixty days to review the document and notify the developer of the decision. Upon approval in terms of Section 100 of Environmental Management Act the developer is issued an Environmental Impact Assessment certificate.
5. A developer to whom a certificate has been issued shall not assign, cede, or transfer the certificate to any other person without the prior approval of the Director General.
6. In terms of Section 105 of the Environmental Management Act the developer is to notify the Director General if project not implemented or has been altered.
7. The Director General in consultation with such authorities shall carry out periodic environmental audits of any projects for the purpose of ensuring that their implementation complies with the requirements of the Act. The developer shall submit quarterly reports and ensure that all other licenses and permits these could include Effluent discharge permit, Air emissions, Solid waste disposal; Hazardous Substances are acquired and should be always kept on site.
8. An E.I.A licence is renewed after two years and the renewal fee includes a 5% administration fee.

MOBILE & SEMI-MOBILE CRUSHERS

the eco and economical option



Following international trends, Metso is currently expanding its interests into in-pit crushing and conveying in Africa's open cast mining industry.

"Our market for this equipment is huge in the US, Australia & Europe," says Charles Ntsele, general manager, Mining Sales, Metso South Africa, "As it is far more economical, safer and less harmful to the environment due to the drastic reduction of dump truck traffic."

Conveying ore and waste in the most efficient and environmentally friendly way is critical to the operation of any open-pit mine, albeit that the initial outlay is a bigger investment with payback realised quite rapidly. As mines get deeper, more difficult and expensive to navigate out of the depth, the biggest advantage to in-pit crushing and conveying is that primary crushing takes place in the pit with the crushed material conveyed to the next processing phase.

According to Nsteele, it is an investment now and save later offering with solutions applicable to both greenfields and expansion projects in existing mines. "We have fully mobile plants which are ideal for instances when pits are mined out, as it has the element of bailing all the crushing equipment and setting it up at the next plant." An

example is a mine in Sub-Saharan Africa where the pits are lucrative, but shallow and there are many pockets of them. The mobility of the equipment comes into play in a big way in this environment.

In a conventional open-pit mine or quarry, primary crushing is often synonymous with a parade of dump trucks driving around, generating dust, noise and consuming excessive amounts of fuel. A drill-and-blast team blasts the shot and develops a muck pile.

A front-end loader, hydraulic shovel or backhoe excavator at the muck pile loads the dump trucks, which transport the rock to a fixed primary crusher. This translates to a large number of trucks and people moving between the blast site and the fixed crushing plant, generating unnecessary CO₂ and dust emissions as well as exposing the workers to potential injuries caused by the traffic.

In a fully mobile in-pit crushing and conveying system, an excavator located on the muck pile loads material directly into the hopper of a mobile crushing plant, instead of feeding a dump truck. Crushed rock is then transported to an in-pit belt conveyor via mobile

conveyors.

The conveyor carries crushed rock from the mobile crusher to the fixed secondary crushing plant for further processing, no dump trucks are required. This cuts operational costs, reduces emissions and helps prevent traffic-related injuries: a conveyor has no exhaust pipe, nor does it need a driver.

When blasting is performed, the mobile primary crusher and the mobile conveyors move to a safe distance. After the blast, a wheel loader cleans the floor and the crusher moves to the new muck pile. Operation resumes with minimal production downtime.

Both the ore and the waste rock can be crushed and conveyed from the pit with the designs that allow for a variety of factors. One of these is the stripping ratio and ore blending requirements, which means that solutions for waste handling and ore handling are individually designed.

If waste rock has to be crushed and conveyed, this is the most economical method and money is saved by not spending on hauling waste. Pit crushing and properly sorting the waste rock also enables it to be used at backfill and for other site infrastructure purposes and prevent it from entering the other phases of the process such as grinding which has significant impact on profits per ton.

These systems are supported by Metso's Life Cycle Services. This supports mines and quarries to improve maintenance, operational efficiency and longevity of their equipment. It is a long term partnership to keep efficiency and production targets at a premium, minimise downtime and lower operating costs.

Distributed by Metso – Lindy Losper



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SiM Mining Consultants

The discussion over the predictability of earthquakes is a historic one. For centuries, scientists have exchanged what they believed to be fact-based opinions on the success rate of predicting when and where an earthquake will occur. The accepted rules of such predictions require not only the location and approximate time, but also the expected magnitude to be estimated.

In regions of continuous tectonic activity such as the San Andreas Fault Zone, central Italy, or the African Rift System, this is less difficult than where significant tremors have not occurred in the past, or where conditions change and historic records are not a good reflection of the future.

In the 1970s, through the increased funding and wide-range deployment of digital seismic sensors and communication technology, the prospects of more accurate data revived the discussions. But today, almost fifty years later, the geo-scientific community admits that success remains the rare exception, and that there are accepted reasons for this failure.

Our current understanding is that the very principles of dynamic rock mass failure prevent predictability. To illustrate the problem, consider a patch of dry grass land that has been hit by lightning. There is a high probability that a fire will be ignited and then spread across the area. Especially where the grass is dry, the vegetation is dense, or where there is a strong wind blowing. Thus, the local conditions determine whether the fire spreads or simply dies down without creating major damage when the grass is wet or scarcely grown.

Rupture in rock is subject to similar principles. Here, stored strain energy is

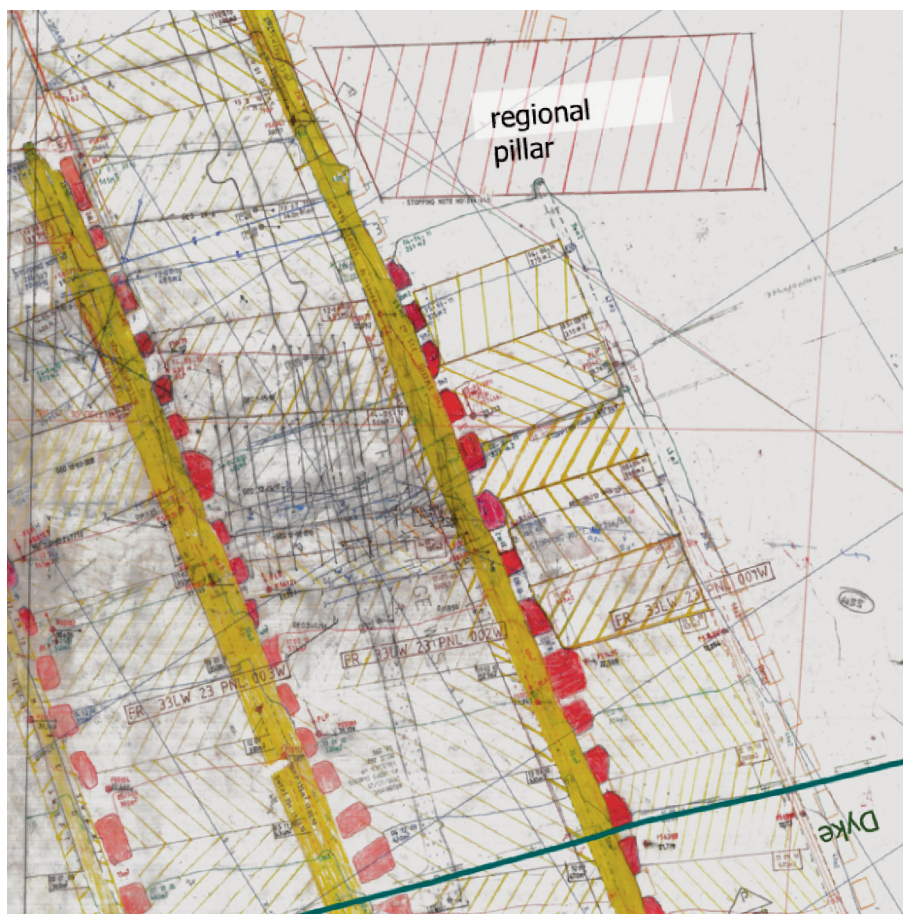
released and converted into kinetic energy, sound waves and heat, which reduces friction and leads to further slippage. But where the energy release is insufficient to break further bonds the breakage simple stops. Only where structural failure and overcoming friction results in sufficient energy release to overcome resistance to more failure, will the process continue to grow. Thus, small earthquakes develop into large earthquakes (or not) depending on the conditions at the initiation point.

To investigate this mechanism, research over the past decades concentrated on seismically active areas that are accessible for monitoring. Holes were drilled and instrumentation installed at the San Andreas Fault, the Unzen Volcano in Japan, in Iceland, India, central Europe, Brazil and a range of other locations. The funding was provided by the International Continental Scientific Drilling Program (ICDP). And, most

excitingly for South Africa, a new project proposal was recently accepted to drill into the source regions of seismically active structures on three South African gold mines.

Until the results become available in several years, the hard-rock tabular gold and platinum mines in South Africa focus on a different strategy. They attempt forecasting rather than predicting seismicity in their operations. Forecasting is a statistical approach rather than a case-based approach. It assesses the conditions under which mining induced seismicity occurs in detail, tries to understand to underlying causes and conditions, and then estimates the likelihood of failure where these conditions are met.

The platinum mines in the Bushveld Complex (BC), the world's largest PGM deposit, have experienced increased seismic response as mining depth increased in a



SiM Mining Consultants



increased in a range from around 900m below surface to the deepest operation reaching 2 300m below surface. The rock mass conditions are to some extent very similar to the Witwatersrand gold mines which established the Witwatersrand Earth Tremors Committee in 1915: Flat dipping reefs embedded in a hard rock environment, but not at the same field stresses the ultra-deep gold mines have to accommodate. Generally, rock strengths in the commonly occurring pyroxenites, anorthosites and norites are lower, regional faults and dykes are less frequent, k-ratios are higher and the horizontal stress component more variable than in deep gold mines.

Extraction of the Merensky reef is seen as almost exclusively responsible for triggering seismic response. The commonly deployed mining strategy is scattered with regional dip stabilising pillars on some of the mines, at least where they approach the current depth

limit in the Rustenburg area of approximately 1 300m below surface.

Rockbursts are almost exclusively associated with in-stope pillars: Three quarters are on-reef pillar failures, a further 20% are pillar foundation failures. Geological discontinuities (minor faults and dykes, joint sets, potholes and domes) are found to be associated with only one fifth of rockbursts. The magnitude range of most damaging events lies roughly between 0.5 and 3, but can stretch to below -1.5 as is the case with gold mines.

‘Geological discontinuities are found to be associated with only one fifth of rockbursts’

The typical Western BC rockburst results in on-reef damage either close to the face or in the back area. On at least one of the rockburst prone shafts, damage to tunnels, cross-cuts and raises is more frequent than in the face area. Rock ejection and shake-down are the most frequent damage mechanisms,

while bulging, buckling, lifting and dynamic closure all play minor roles. Depending on the shaft, 5 to 20% of reported rockbursts result in injuries compared to 75% on a sample West Wits gold mine.

The typical rockburst scenario identified on these mines deserves special attention:

Support pillars cut close to gullies with a rock engineering design that specifies shape,



dimension and position of each pillar. Where the pillar designs are not adhered to, i.e. where the pillar is cut too large, or where the gully is too deep or the rock strength in the footwall below the pillar is low, catastrophic pillar failure can occur which may damage not only the immediate surrounding area but also any tunnel placed below the reef.

The evidence suggests that where a specific set of conditions occurs in combination, the statistical likelihood of seismic failure is significantly increased. Avoiding these conditions prevents large-scale dynamic failure. Thus, without attempting the prediction of a specific rockburst at a certain location and time, the forecasting method can be successfully applied (and already has been applied on many PGM mines) to reduce the occurrence of large rockburst with the associated safety risk.



The Longest LASTING PUMPS IN THE Business”



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“The Longest Lasting Pumps in the Business”



Gorman Rupp has been revolutionizing the pumping industry since 1933. Today it is one of the world's leading pump manufacturers with a range of over 3000 different models covering many different applications. The mining industry has been an important part of this business and the company is currently undertaking major new initiatives to increase its presence in the African mining industry including the expansion of its distribution network.



Gorman Rupp Africa has its headquarters in Johannesburg from where it services and supports its clients and customers throughout Sub-Saharan Africa. The company manufactures high performance high quality pumps and pumping systems for many

mining applications. Gorman-Rupp Pumps are manufactured to last and provide years of robust and reliable operation in the difficult operating conditions typical of the sector. The company proudly claims to supply the “longest lasting pumps in the business” and provides the long term support, spares service (including its 24-Hour Fast Parts Service), and training to its clients to ensure this claim is delivered. Whether it's a copper mine in Zambia, a coal mine in South Africa, or a



gold mine in Ghana you'll find Gorman-Rupp pumps working reliably day after day, week after week, and year after year to keep mine operations running smoothly. Dependability and service are the key elements in above and below ground

mining applications and the company states that no one builds pumps that are more reliable or easier to maintain than Gorman-Rupp.

One of the company's areas of special expertise is self-priming solids-handling pumps. This includes both self-priming pumps and prime assisted pumps. The self-priming centrifugal pump was an innovation first in-

troduced by Gorman-Rupp. These pumps are ideal in many mining dewatering or water transfer applications where pumps (and motors) can be located “high and dry” above the level of the liquid rather than submerged. This approach means pumps and motors are easy to install and maintain. The pumpsets can be skid or trailer mounted allowing easy movement and location/relocation. They can be supplied close coupled, flex coupled or V-belt driven with electric motors or petrol/diesel engines to suit. A wide range of materials of construction and parts combinations are available to cover specific applications such as the pumping of abrasive and/or corrosive materials. Gorman Rupp offer a unique industry leading warranty on its pumps and its Super T and Ultra V series self-priming solids handling pumps come with 5 year cover as standard. The company's worldwide international service centres and local distribution network is available for on-going service and support.



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Our vision

To enhance our client productivity by getting to be part of its productive tools and expertise

Our mission

To achieve customer satisfaction through superior service delivery, innovative technical solutions, responsiveness and reliability in everything we do.



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INTERNATIONAL

Filtration Solutions

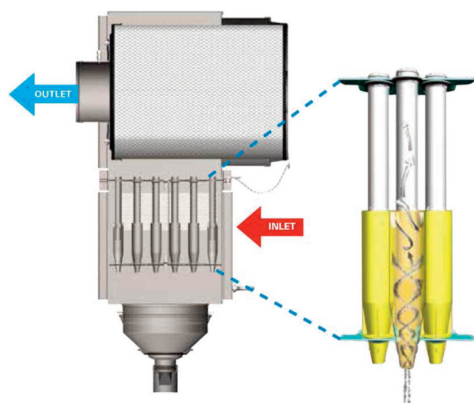


Air cleaners for Heavy Duty Conditions

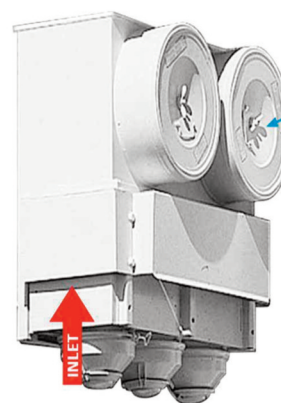
-Heavy construction vehicles (haul trucks, crawlers, dozers) above ground and underground mining machines, agricultural equipment (combines, tractors) and other off-highway vehicles and engines that operate daily in intensively dusty environments need powerful, reliable air filtration systems to protect them and keep them running reliably.

STG AIR CLEANER

SSG AIR CLEANER



FHG AIR CLEANER



- Durable, reliable protection
- Choice of filtration efficiency
- Low restriction so the engine receives a high volume of air.

BOLT GAS[®]



HYDRAULIC FILTERS



Low pressure filters

Low pressure filters are the most common type of filter in hydraulic circuits. They are often used as return line filters in applications with working pressures up to 150 psi, depending on model selected.



Medium pressure filters

The HMK series of spin-on hydraulic filters feature high performance, high flow and medium pressure. They are designed for return line and side loop systems. Applications include fluid conditioning, process systems, lube oil systems, power transmission, case drains, hydrostatic charge pumps and cooling systems. The element has a heavy-duty steel body with die-cast top plate and the head is made from die-cast aluminium.



Bulk Hp filters

high pressure hydraulic assemblies used on in-plant and mobile hydraulic systems. Applications include hydrostatic transmissions and high pressure circuit systems. Made from ductile iron for strength and durability, they are available with a reverse flow check valve which allows bi-directional flow through the filter head.

Off-line filtration

Donaldson provides offline and fluid transfer capabilities in convenient portable packages. These can be used in workshops, within plant machinery or mobile equipment to achieve and maintain the ISO cleanliness standards of your fluids.

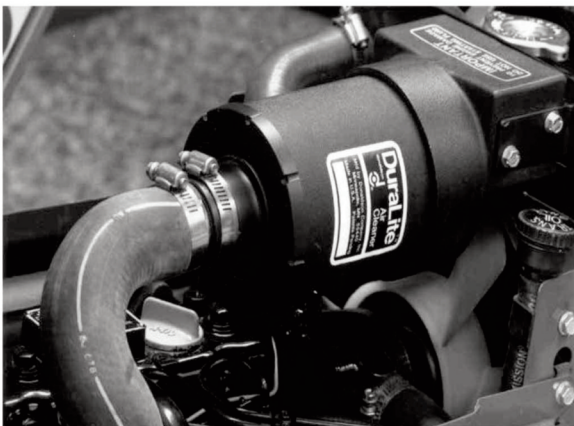


Light Dust Air Cleaners



For Diesel, Gasoline and Compressed Natural Gas Engines, and Hybrid Vehicles Operating in Light to Light/Medium Dust Conditions

Over-highway trucks, stationary engines, light industrial vehicles, and sport utility/light trucks generally operate in low-dust environments. They still need top quality air filtration systems to protect them and keep them running at peak efficiency. Those operating in high carbon environments particularly need protection.



Donaldson's DuraLite Air Cleaners are tough, non-metallic, lightweight, self-supporting, and completely disposable. They are also easy to install, durable, and reliable.

They are designed to function well under high and severe pulsation conditions found in many applications, especially two- and three-cylinder engines. Vibration-resistant media is potted into molded housings of rugged ABS plastic — so they don't fall apart as other designs might.

Applications

- Provides up to 1325 cfm airflow per air cleaner — double airflow to engine by using two units
- Horizontal or vertical installation

Ideal for

- On-highway vehicles
- Marine and offshore equipment
- Light construction vehicles
- Agricultural vehicles
- Compressors and generator sets



BOLT GAS

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INTERNATIONAL

Hydraulics Solutions



Low-Pressure Hose

Gates markets a variety of low-pressure hydraulic hose. These hoses are designed for use in various applications with operating pressures under 300 psi. Their reinforcement is usually textile. They are used on low-pressure hydraulic equipment or they are used to transmit petroleum-base fluids, diesel fuel, hot lubricating oil, air, glycol anti-freeze and water. Some low-pressure hose such as GMV is also rated for suction applications.



Medium-Pressure Hose

These hoses are used for hydraulic applications requiring operating pressures of 300 psi to 3,000 psi. They may be one-wire braid or multiple wire and/or textile braid construction.

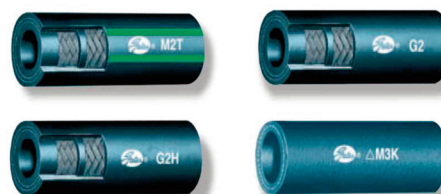
In addition to being used on medium-pressure hydraulic equipment, medium-pressure hoses are often used in heavy-duty truck and fleet vehicle applications.



Because of their superior resistance to heat, oil and abrasion, hydraulic hoses are used extensively on trucks, buses and large diesel-powered vehicles.

High-Pressure Hose

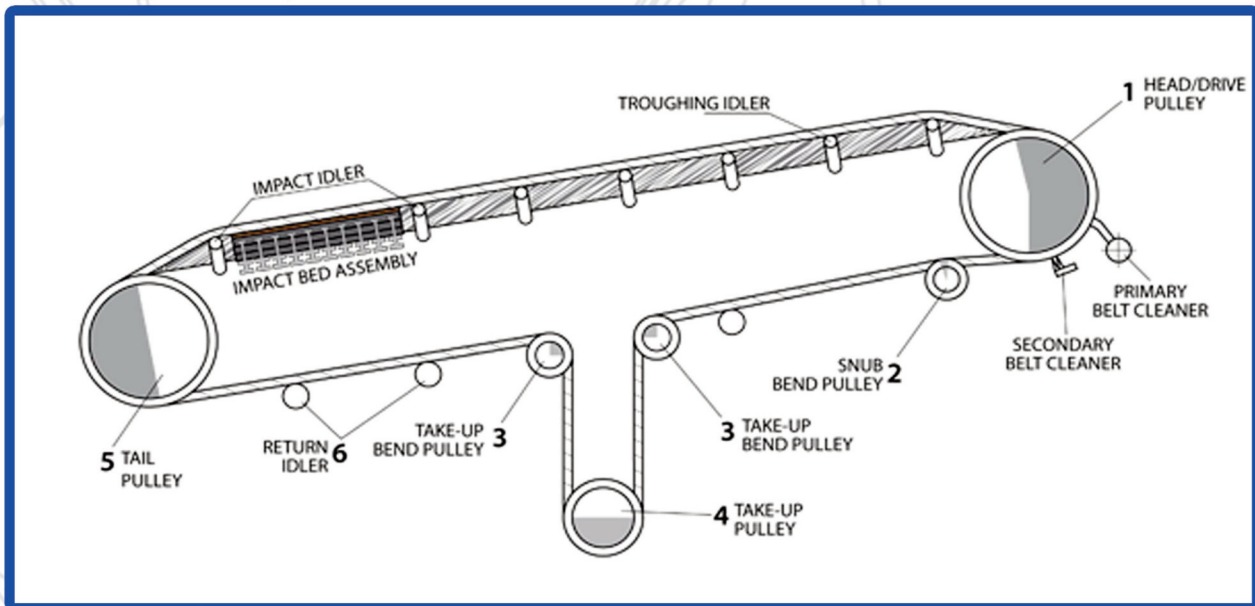
These hoses are often called "two-wire" braid hose because they generally have a reinforcement of two wire braids of high tensile strength steel. They are frequently found in high-pressure hydraulic applications such as construction equipment. Operating pressures range from 6,000 psi for a 3/16" I.D. to 1825 psi for a 2" I.D. Some proprietary hoses such as M3K have the same pressure rating for all sizes.



BOLT GAS[®]

Processing and Engineering Products

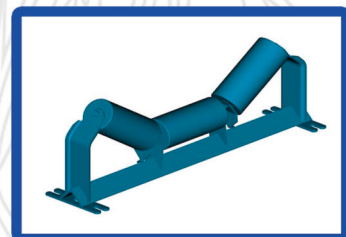
Conveyor belting



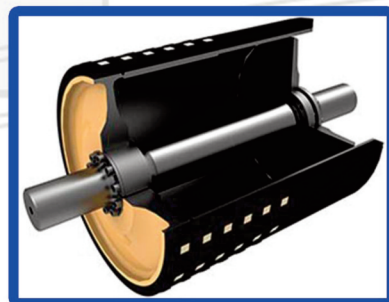
Conveyor rollers



Idlers

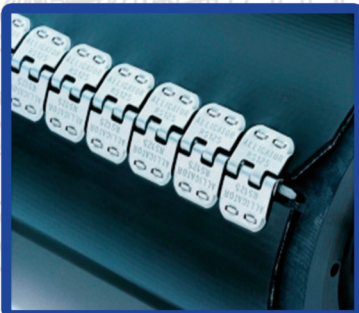
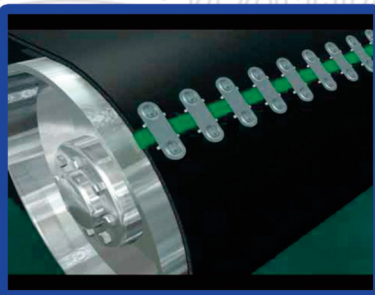
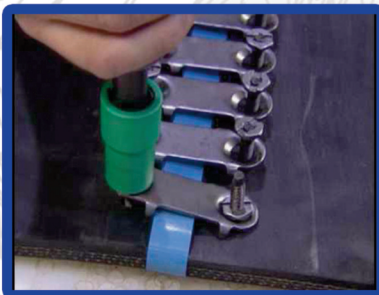


Pulleys



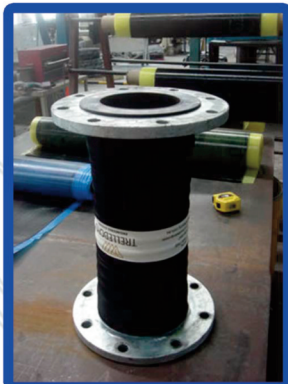
BELTING ACCESSORIES

FLEXCO FASTENERS



BOLT[®]**GAS**
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Mining hoses



Suction hoses



Pressure hoses



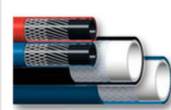
Hand-built hoses



OTHER HOSE RANGE



Flexible Metal Hoses



Thermoplastic Hoses



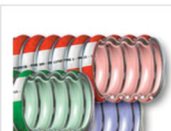
Industrial Rubber Hoses



Hydraulic Hoses



PTFE Hoses



Composite Hoses

WE REPRESENT

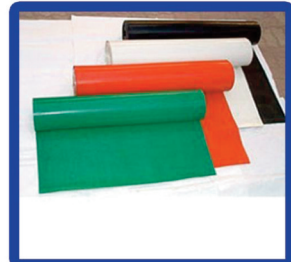
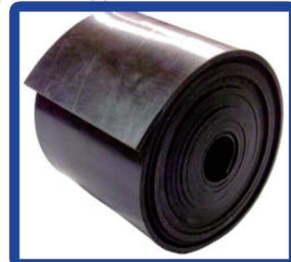
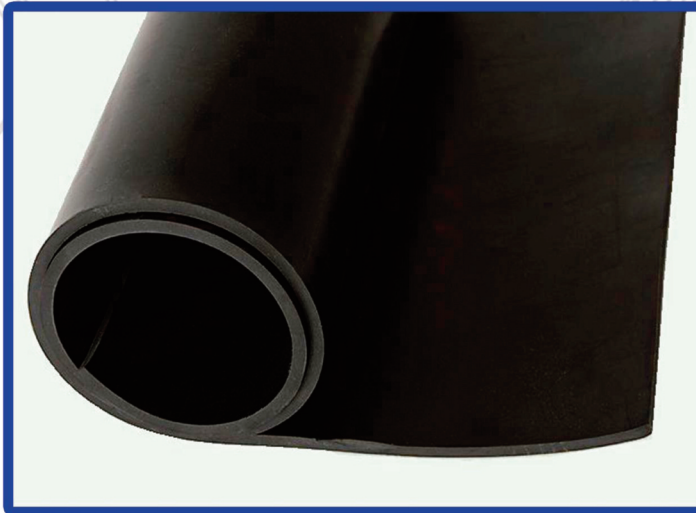


PVC Hoses

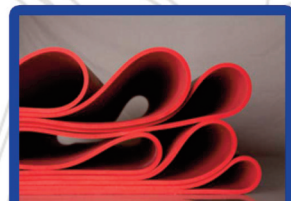
BOLT GAS

OTHER RUBBER PRODUCTS

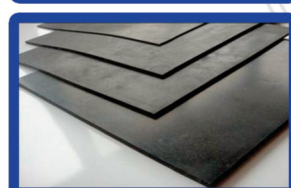
Plain rubber sheeting



Linatex rubber

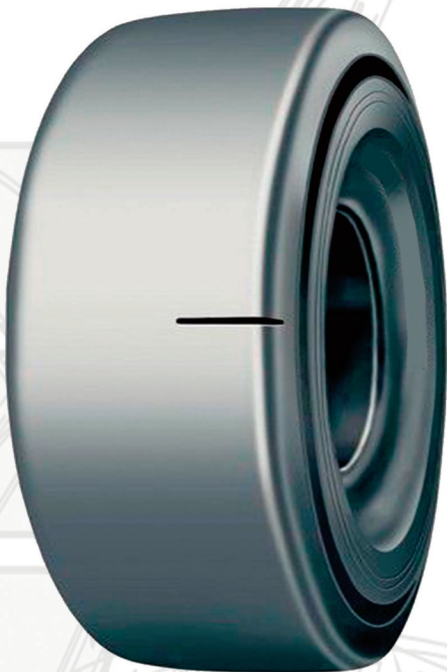


Insertion rubber



Earth moving Equipment and spares

Earth moving tyres



SLICK TYRES



SEMI SLICK



NON SLICK TYRES

BOLT GAS

100% FUEL EFFICIENCY



EARTH MOVING SPARES

Sourcing and supplying of OEM spare parts for:

LIEBHERR

SANDVIK

Atlas Copco

CAT

BELL

VOLVO

JCB



HYUNDAI

HITACHI



SANY

KOMATSU



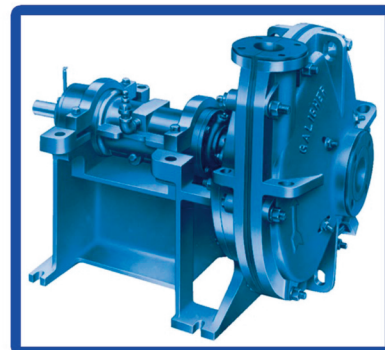
TEREX

Processing equipment

Pump and Pump spares:



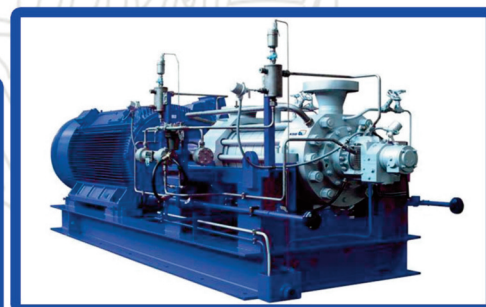
Weir Warman pumps



Buccaneer pumps



KSB pumps

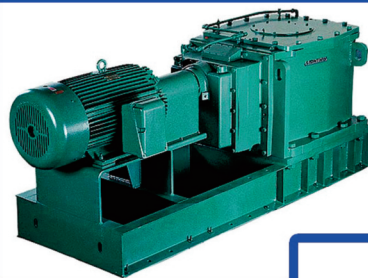


BOLTGAS

Crusher spares

Mixing, sizing and separation equipment

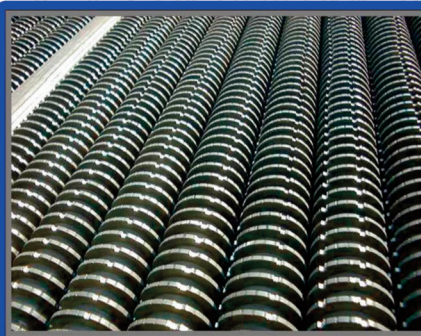
SPX



JOEST



FEEDERS



ROLLER SCREENS



SCREENS

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Premium Components for the Aggregate and Mining Industries



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Symons®
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Allis Chalmers®
Svedala®
Gyradisc®
Telsmith®
Cedarapids®



Hydraulic Excavators

Hitachi®
Terex®
O&K®
Komatsu®
Demag®



Gyratory Crushers

Metso®
Nordberg®
Sandvik®
Allis Chalmers®
Svedala®
Krupp®



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P&H®
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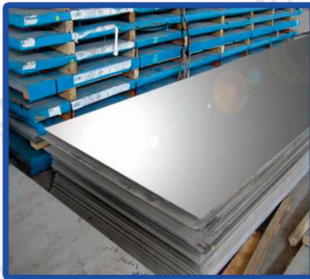
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ENGINEERING

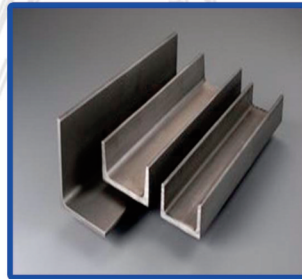
Steel products



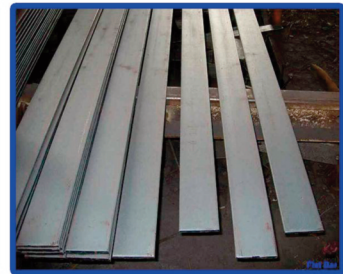
pipes



sheets



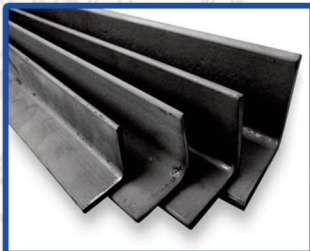
channels



flat bars



round bars



angles



reinforcement

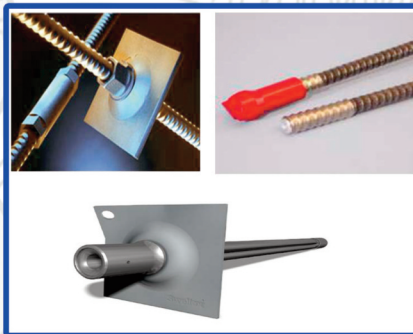


wire

Value Added Products and services



pinch bars



underground roofing support



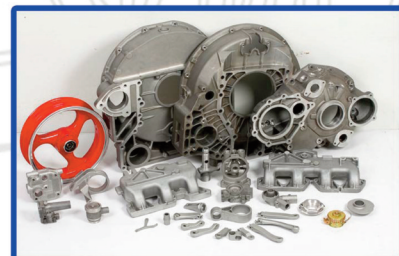
shafts



wheel barrows



picks and shovels



**Machined spares for
pumps and gear boxes**

BOLT GAS[®]

ENGINEERING

Scope Of work

- Engineering Designing and Detailing
- Structural Steel Works
- Plateworks
- Pipeworks
- Plant Refurbishment, Rehabilitation & Maintenance
- Siteworks
- Crane Hiring Services
- Mechanicals
- Projects Consultancy & Management Services
- Aftersales Technical Support
- Engineering skills outsourcing



The Bauma -

Why not in Zimbabwe

The Bauma (International Trade Fair for Construction Machinery, Building Material Machines, Mining Machines, Construction Vehicles and Construction Equipment) is the world's largest trade fair in the construction/ mining industry.

It is a global driving force behind innovations, an engine for success and a marketplace. It is the only trade fair in the world that brings together the industry for construction machinery in its entire breadth and depth. This is where significant new developments are presented. This is where suppliers and solutions come together perfectly. All branches of industry, all leading manufacturers, all important innovations meet at Bauma.

KEY FACTS BAUMA 2016

- 605,000 m² of exhibition space
- 3,423 exhibitors from 58 countries
- +580,000 visitors from 200 countries
- 1,423 journalists and media representatives from 49 countries

As well as breaking records in terms of exhibitor and visitor numbers and exhibition space, bauma is also a great place for filling the order books. Stefan Heissler, a member of the Board of Directors of Liebherr-International AG, confirms: "bauma 2016 was a tremendous success for Liebherr. We received many orders from a wide variety of different markets. In some segments our expectations were even exceeded." For Michael Heidemann, Vice-Chairman of the Management Board of Zeppelin, noted "that bauma 2016 has once again shown everyone that it does indeed boost innovation and it has lived up to its reputation for being the leading trade fair." Jürgen and Stefan Wirtgen, Managing Partners in the Wirtgen Group, can only agree with this assessment: "bauma as the leading trade fair has always been a kind of barometer for the industry and from the start it had a very special significance for our company. Our presentation at this year's bauma is the most successful so far in the history of the company." The mining section at bauma also received a very positive response in this context, as Erwin Schneller, Managing Director of SBM Minerals, reports: "bauma is very international. We had visitors from Chile to Canada, from China to Russia, from Africa to Norway.

Seeing visuals of the Bauma is inspiring and leaves you with a question are we even doing enough to grow our industry and maybe one day have a Mega fair like the Bauma. We love Mine Entra and we also hope to bring the world together one day with this breath taking Trade Fair



LVITs for Cylinder and Actuator Feedback

Introducing the SS-7 Subsea series to ASG's Line of Sensors

Alliance Sensors Group is pleased to announce the continued success and expansion of the ME, MR, MHP, and now the SS-7 Series Linear Position Sensors used to measure the ram position of hydraulic and pneumatic cylinders in industrial, mobile, or subsea applications. With NO MAGNET REQUIRED the installation and cost of ownership is dramatically reduced without sacrificing accuracy specifications. The ME (embedded version), MR (port-mount version), MHP (port mount 25mm hex housing) and SS-7 (Subsea port-mount) Series fit into a gun-drilled cylinder in the same way a magnetostrictive sensor would be installed but without the counterbore necessary for the magnet.

Features:

- NO MAGNET REQUIRED !!!
- NEW SS-7 Series operates to a depth of 12000ft !!!!
- MHP with 25mm hex housing
- Measurement ranges from 1 to 24 inches (25 to 600 mm)
- IEC IP-67 aluminum or stainless steel housing
- Contactless; no wearout
- 85 C operation (105 C option)
- DC voltage or current analog output
- SenSet™ Field Adjustable Scaling



ME/MR/MHP sensors use a simple coil design rather than “time-of-flight” technology or resistive film. They are based on a patented contactless inductive sensing technology that employs a solid probe construction style which requires only a simple conductive tubular target or a small diameter deep hole gun drilled in the cylinder rod for operation rather than needing a permanent magnet ring or some other type of special target. The ME/MR/MHP/SS-7 Series sensors can withstand intense shocks and vibration, and operating temperatures up to 85 C for standard products and 125 C for custom units. Resembling a magnetostrictive sensor with its sensor head and male o-ring port threads, an ME/MR/MHP/SS-7 sensor has a shorter stroke-to-probe length ratio and can thread into the same o-ring bosses (either SAE J1926-8 or ISO 6149-1 M18) that accept a magnetostrictive sensor.

For those applications where an ME/MR/MHP/SS-7 is replacing an existing magnetostrictive sensor, the magnet ring can usually be left in place without affecting the performance of the sensor. The IP-67 sealed housing uses no trimmer pots for setting Zero and Full Scale. Instead, ASG's proprietary SenSet™ calibration feature permits the user to match the analog output of the sensor to the motion of the actuator or cylinder on a stand-alone basis rather than the user having to scale the sensor's basic output in an associated control system.

B&D Manufacturing

increases productivity by revolutionizing tyre & shovel maintenance practice



B&D Manufacturing is a Canadian company that is quickly becoming known worldwide in the mining industry for their innovative solutions for haul truck maintenance. Their OEM line offers a full series dedicated to significantly reducing truck's downtime related to tyre and component maintenance while creating a safe environment and work practices for maintenance personnel.

Tyre Maintenance

The B&D Super Jack can lift and secure the world's largest haul trucks. The Super Jack is the only certified two point lift jacking system for 240 ton to 400 ton (217 MT to 363 MT) haul trucks. It enables personnel to perform maintenance to vehicles in a safe and secure manner and doubles as a safety stand. The jack is wireless radio remote operated and requires only one individual to maneuver.

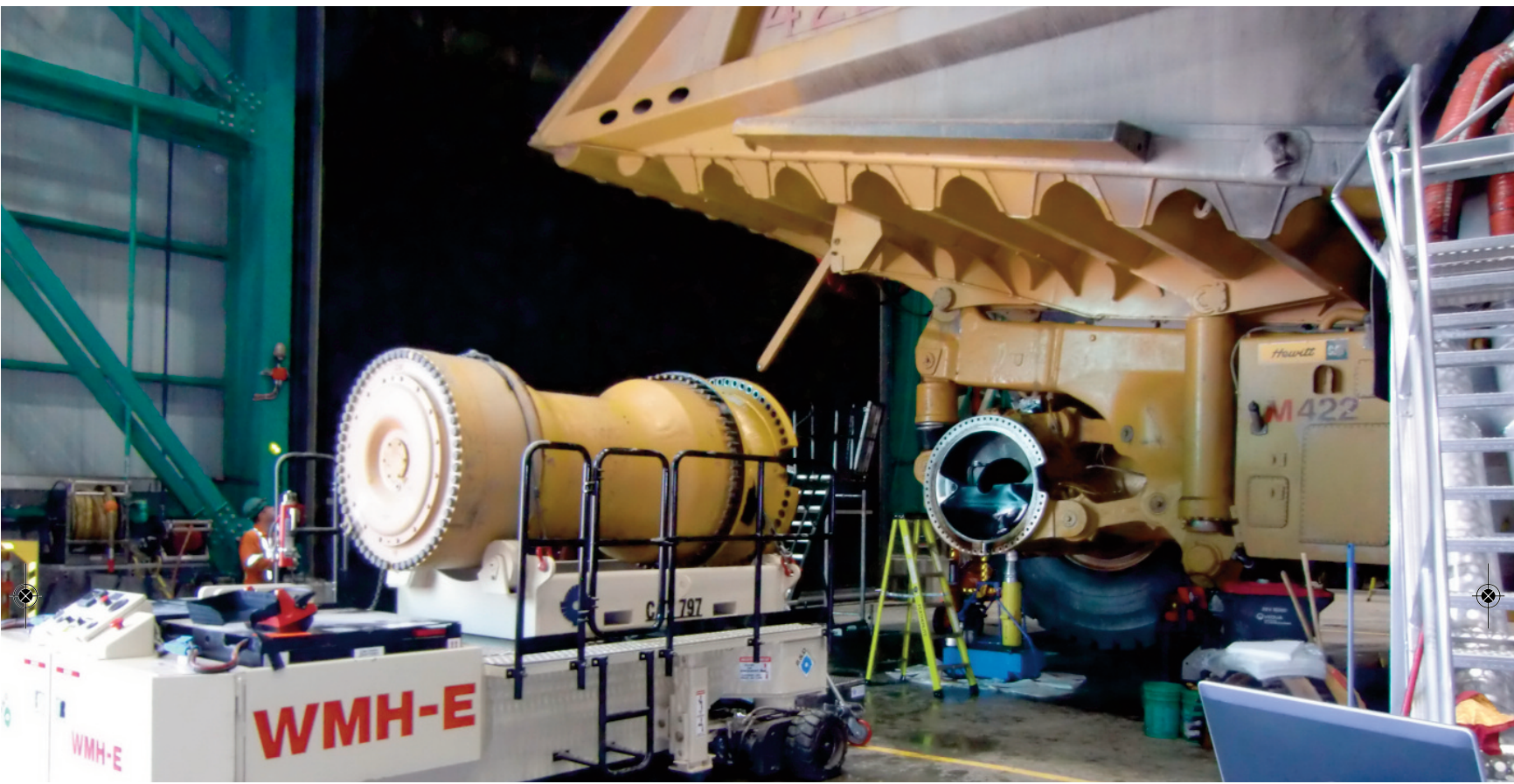
Once the truck is lifted, the B&D Tire Handler Station can easily remove, install and transport tyres. The Tire Handler Station is also wireless radio remote operated and, with its small footprint, is a must for handling tires in a shop environments with limited workspace. This nimble, but heavy-duty, machine can pick tyres up from, or lay them down on to, the shop floor or tire pad.

Finally is the versatile B&D Multi Handler. The Multi Handler has a heavy-duty frame certified to support 50 tons (45MT). On its own, the Multi Handler handles rear wheel groups or final drives with ease, offering complete movement. The Multi Handler has an array of attachments including a pedestal boom for installation and removal or rear struts and hoist cylinders, as well as front strut removal tools.

Paired with B&D's quality light-weight, heavy-duty wheel chocks, this line of equipment is redefining the standard for safe and efficient practices in truck shops globally.

B&D Manufacturing

increases productivity by revolutionizing tyre & shovel maintenance practice



Shovel Maintenance

For shovel maintenance, the B&D Swing Shaft Changer offers a fast and safe way to replace and service swing pinion shafts for P&H 2300, 2800 and 4100 shovels.

Traditionally, changing the pinion is a risky and time consuming process whereby the existing component was removed by workers on platforms or ladders who would unbolt the 3.5 ton part and allow it to fall to the ground. A telehandler would be made to fit under the counterweight by digging a pit in order to install the new swing shaft. The entire process would reportedly take approximately 24- 48 hours. With safety and efficiency in mind, B&D Manufacturing developed the B&D Swing Shaft Changer which has effectively reduced the time to perform this maintenance from 24- 48 hours down to an average of just 2.5 hours.

The track-equipped Swing Shaft Changer's profile is low enough to fit under the various P&H shovel counterweights. Once manoeuvred in position, the Swing Shaft Changer allows service personnel to safely perform service from a fully enclosed work deck. The pinion shaft can be safely lowered and raised in a controlled manner by means of the Swing Shaft Changer's cradle assembly. This work practice not only saves time and money, but significantly decreases the safety risk involved compared to the way the job is traditionally done.

With B&D Manufacturing's primary focus on improving safety while increasing production, their safe, efficient solutions will continue to revolutionize the way maintenance personnel work in the global mining industry.

Contact us: B&D Manufacturing
Phone: +1-705-752-3868 | Web: <http://www.bdmfg.com>

Komatsu introduces the new **D85EXi/PXi-18** Crawler Dozer



Start sooner and finish faster, courtesy of factory integration and a host of intelligent capabilities

Komatsu America Corp. has introduced the new 264HP D85EXi/PXi-18 crawler dozer, the smart choice for any machine owner looking for intelligence and efficiency beyond what is typically available in machine control systems.

Eliminating the need to install and remove blade-mounted sensors each day not only saves on machine and operator wear and tear, it converts potential downtime into more time spent running the machine.

"With the monthly production gains from starting sooner, finishing faster and using less fuel, the more owners of the D85EXi/PXi-18 run their machines, the more they save," said Sebastian Witkowski, Komatsu product marketing manager. "From heavy dozing to finish grading, this wide-blade dozer is perfect for large, earthmoving jobs, where accuracy and efficiency are important," Witkowski said.

Intelligent value

First-to-last pass, rough-to-finish automatic dozing extends production gains. Once engaged, the system automatically cuts and lowers the blade to grade in a typical dozing pass. If the load increases to a maximum, the blade automatically raises to minimize track slip to keep dozing productively. According to the company, this intelligence achieves up to 8 percent greater efficiency in moving material, based on start-to-finish grade testing against typical aftermarket machine control systems.

New Komatsu D155AXi-8

Crawler Dozer with radio control option



Komatsu America Corp. has introduced the new D155AXi-8 Radio Control dozer, Komatsu's first radio controlled machine with intelligent Machine Control technology. It is the latest addition to the next generation of machine control and dozer technology.

"The D155AXi-8 Radio Control dozer is ideal for applications where customers may want to remove the operator from the machine and still maintain high levels of efficiency and productivity," said Sebastian Witkowski, product manager, Komatsu America Corp. "This dozer meets customer demands in those applications, while utilizing Komatsu's proven, automated, rough-cut-to-finish-grade technology," Witkowski said.

Innovative, integrated, intelligent

For many operators, the ability to feel machine response to blade load is an important factor in effective dozing. This is naturally difficult for a radio control

application where the operator is separated from the machine. The D155AXi-8 RC dozer is unique among radio control dozers thanks to the enhanced "intelligence" that automates operation from heavy dozing to fine grading to efficiently doze material. The D155AXi-8 RC has the ability to sense and control blade load, optimize the start of the cut, and minimize track slip.

Radio control, big dozer productivity and rough cut to finish-grade automated efficiency

Powered by a 354-hp Komatsu SAA6D140E-7, Tier 4 Final emissions certified engine, the D155AXi-8 emits 80 percent less nitrogen oxides (NOx) than its Tier 4 Interim predecessor. The variable geometry,

turbocharged and after-cooled, 15.24 litre diesel engine features Komatsu Diesel Particulate Filter (KDPF) and Selective Catalytic Reduction (SCR) systems and achieves fluid-neutral fuel economy.

Time-saving productivity

An automatic gearshift transmission and lock-up torque converter team up to select the optimal gear range, depending on job-site conditions and load. They are designed to provide maximum operation efficiency. The electronically controlled transmission locks up the torque converter to transfer engine power directly to the transmission, eliminating horsepower loss and cutting fuel consumption by up to 10 percent.

The patented SIGMADOZER blade, designed to dig and roll up more soil at the blade's centre, holds more material, reduces digging resistance and dozes up to 15 percent more soil while using less power, compared to a typical semi-u blade.

The D155AXi-8 radio control dozer, whether rented, leased or purchased, is covered by the Komatsu CARE program for the first three years or 2,000 hours, whichever comes first. Komatsu CARE includes scheduled factory maintenance, a 50-point inspection at each service, and two complimentary Komatsu Diesel Particulate Filter exchanges and DEF tank flushes in the first five years.

TERRAMAC introduces 360 degree Rotating RT14R Crawler Carrier

Terramac, has announced the launch of its newest model, the RT14R. Equipped with unique rotational functionality, the RT14R allows operators to offload materials in a more efficient, precise and safe manner than ever before.

Manufactured in the USA, the RT14R is made entirely of premium components. Built with a rugged upper frame that rotates a full 360 degrees, the Terramac RT14R can carry and dump up to 28,000-lb. of material at any position, even while driving. This feature allows the RT14R to offload materials faster than a standard straight frame unit since the tracks don't need to be counter rotated to drive another direction. Environmental damage and land restoration costs are also minimized as the RT14R dumps material without tearing up the surrounding ground.

The 40,000-lb. machine is powered by a QSL9.0 320-hp Tier 4 Final Cummins diesel engine (non DPF), boosting jobsite productivity while remaining highly fuel efficient, regardless of the application. In addition, the new unit showcases Terramac's rubber track technology; a minimal 7.9-psi ground pressure while fully-loaded allows it to conquer soft or wet ground conditions and mountainous terrain where wheeled machines are likely to create ruts and get stuck. Low ground pressure and rotating functionality make the RT14R ideal for work in confined spaces and environmentally sensitive areas, such as: railroad track right of way access, rivers and

levees, as well as general earthmoving, site prep and utility jobsites.

"The RT14R is a natural evolution of Terramac's product line and we are excited to bring it to the market," says Andrew Konopka, President of Terramac. "This new model provides contractors with a solution to tackle a range of applications while improving efficiency and cost savings."

When it comes to safety and comfort, the Terramac RT14R is second to none. The innovative RT14R enhances jobsite safety by eliminating the amount of time an operator spends reversing a unit. This model offers rollover protective structure (ROPS) and falling object protective structure (FOPS). Terramac's new RT14R is also ergonomically designed with upgraded

features, including: a wide access door for easy entry and exit, windows on all sides and a large mirror for increased visibility. A multi-function joystick with dump controls provides user-friendly operation and a touch screen Parker IQAN-MD4 control system allows for full graphical, diagnostic and controller area network (CAN J-1939) gateway capability.

Furthermore, maintenance on the new RT14R is easy and cost effective. Track wear is significantly less as the upper structure can spin, resulting in reduced downtime and expenses for repairs. Additionally, a tilt hood on top of the engine enclosure provides access to the engine bay and a rear cab enclosure for fluid/filter checks makes routine maintenance quick and simple.





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Karl's Plant

New and Used

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