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MINExpo 2012 PREVIEW

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Looking ahead to MINExpo 2012

With momentum gathering prior to the event in Las Vegas from 24-26 September, *IM* looks at some of the machines and technologies attendees can expect to see on the show floor

Sandvik Mining says it will showcase an efficiency-focused portfolio of new machines and services. It says it will introduce "innovative new products and services that push the boundaries of mining machinery while helping customers improve safety and productivity in today's increasingly competitive environment."

This bold portfolio includes a new dimension of comminution. The exhibition will mark the world premier for Sandvik's revolutionary eco-efficient comminution machine - a machine which produces a finer mill feed that boosts the downstream milling process. This will help customers productively address the energy challenges facing

them both now and in the future.

It will also launch machines which feature safety-oriented designs, reliable productivity and the latest technology. The bolter miner, MB610, offers fast and easy access to maintenance points, large and ergonomic working platforms, enhanced cutting forces, and world-class performance.

Sandvik Mining will introduce newly enhanced automation concepts that open up a new era in mining. The Sandvik AutoMine product family is already the most comprehensive automation offering for underground and surface mining. Increasing fleet utilisation and production rates, improving working conditions and reducing maintenance costs, it promotes safety, productivity and peace of mind for mining operations. Sandvik Mining's automation focuses not only on equipment autonomy, but also on mining process automation and management.

"We're driving innovation throughout our entire portfolio, from new equipment to ever smarter customer services," said Anna Sörelius, Vice President, Business Development. "From the Sandvik comminution machine to Sandvik AutoMine, we are bringing compelling, safety-focused and productive new products and services to the market faster than ever before. I'm incredibly proud of this new equipment and service advancements." Demonstrating some of these capabilities will be an underground simulator, available for 'test rides'.

"Since Sandvik's major strategic shift only six months ago, the company has found a new energy. It has provided substantial improvements in time-to-market, managed to differentiate on customer services and it continues to build on its strong portfolio in mining equipment and services. Sandvik Mining is delivering on its pledges, and is clearly demonstrating its path to future success."

In addition to key technologies such as automation, production enhancement, fracture detection and drilling optimisation, Sörelius reinforces the importance of human talent and creativity. "MINExpo is an important venue to meet with dealers and customers, who provide valuable feedback that we use to improve our services, tools, and equipment. Sandvik Mining makes certain we stay in tune with our customers."

The company will also feature several innovative surface, underground drilling and load and haul machines, including the high-



pressure DR560 DTH drill rig, now available with compressor management system and AutoMine Drilling; the machine also combines different pressure options, manoeuvrability and reliability with maximum drilling performance.

Since the introduction of its PF300 fully-mobile In-Pit Crushing and Conveying (IPCC) system in March 2009, renewed interest in mobile crushing concepts in the major mining markets has been extraordinary. Sandvik Mining's newly developed fully-mobile crushing plant makes the IPCC method a better alternative to traditional truck haulage due to lower operating and maintenance costs, higher energy efficiency, significant reduction of CO₂ footprint, and radical decline in dust emission.

The PF300 uses proven crushing technology to offer a full range of roll crushers flexible enough to suit even the most challenging applications. Taking advantage of the many years of expertise in designing steel structures, crawler travel systems and apron feeders, as well as all types of conveyors and conveyor components, the entire system is custom-engineered by Sandvik Mining and equipped with genuine parts. With commissioning of the two first units scheduled for the middle of 2012, Sandvik believes that the PF300, with its compact and stable design, has major potential for future market share for IPCC applications.

On the exploration side there will be an 'x' version of the DE130 compact core drill for use in explosive underground environments such as coal, an improved RC hammer with patented bit design providing a 30% performance advantage,

and a redesigned line of diamond products.

Sandvik continues its mission to deliver high quality rock tools that provide the best productivity in the industry, all with the superior user experience for which it is known. New tophammer tools for mine development, the innovative Sandvik Alpha 330, improves the service life of the current model by up to 15%, with up to 80% improvement vs. R32 models.

The Alpha 330 is a patented product unique



to Sandvik. The short thread design and hexagonal rods in the tool system result in a rigid, integrated power pack drill string with superior resistance to bending stresses, in addition to improved bit guidance and perfect energy transfer. The sturdy thread is well guided inside the bit skirt, offering high precision in collaring – even in complex rock formations and uneven surfaces.

Cutter picks featuring the XT grade tungsten carbide can cut materials up to 180 MPa.

Cubex is set to introduce a new In-The-Hole (ITH) production drill at MINExpo. The drill delivers advances in comfort and safety for the operator, ease of use, a more rapid learning curve, and a platform for drilling automation. It has been developed through more than three decades of ITH drilling experience and maintains Cubex's high build quality. Sandvik is the sole global distributor for Cubex ITH underground drilling products.

Caterpillar has the largest exhibit at MINExpo 2012 and will display many new and upgraded mining products – for surface mining and underground mining, hard rock and soft rock. It says it "will showcase the broadest line of mining and materials handling equipment available – and backed by the most extensive and capable product support team in the worldwide mining industry." It will reveal a number of innovative mining systems and machines. One such machine, never before

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presented to the mining public, will offer an unprecedented, efficient means to step up production loading of ultra class haulers. "Making best use of size and energy storage technology, the new loading tool promises to lower cost per tonne in world class mining operations." Whether this is a new ultraclass hydraulic machine beyond the former RH400 (now the 6090 FS) or an updated version of the planned 795 rope shovel design remains to be seen.

In addition to innovative new products, Caterpillar builds on proven ones to make the next generation of mining machines, technology and support equipment. For example, the new AD60 underground truck, with 60-t capacity, and the new R3000H underground loader, with 20-t payload capability, represent the largest such machines Caterpillar has ever made.

For underground coal and soft rock miners, the next generation EL3000 longwall shearer features a state-of-the-art communication system for advanced automation and monitoring. The Cat longwall system includes personnel proximity detection and underground cameras that can be linked to a surface monitoring centre.

Surface miners will see a Cat engine powering the MD6240 rotary blasthole drill. They also will get to kick the tyres of the latest edition of the workhorse 777 truck, the 777G, which meets North American Tier 4 emission standards. The 777G also has adjustable fuel saving strategies, performance improvements and enhanced safety features for sustainable, low cost

production. The next generation D11T track-type tractor also features Tier 4 emissions compliance as well as the Enhanced Auto Shift system, designed to conserve fuel by automatically selecting the optimal reverse gear and engine speed, based on load and desired ground speed.

The three largest trucks in the Cat line—797F, 795F AC, 793F—will share space with loading tools, the 994H Extended High Lift designed to efficiently load 250-short-ton size class trucks and the 6030B FS hydraulic front shovel representing the extensive line of Cat shovels. The 6030B is the first of the Cat B Series hydraulic shovels and features a state-of-the-art new cab and operator environment with productivity enhancing on-board electronics.

Support equipment on display includes the new Cat CT660 vocational truck equipped as a service truck. The CT660, available only in North America, is the first Cat branded on-highway truck and can be fitted with many different bodies, including a dump body, to serve the needs at hand. Additional support equipment includes the recently introduced C175-20 generator set, which produces the greatest output, as much as 4

MW, of any single high-speed diesel generator set available today.

The new 777G WTR is one of the specialised off-highway truck chassis that the group offers in a configuration designed specifically for water truck applications. OEM Solutions also will offer information about the new Cat water delivery/control system that is being field tested now and will be available on the 777G WTR.

Mining professionals in North America will get their first look at what **Hitachi** describes as "remarkable new AC-drive technology advancements in [its] trucks." The company will introduce the advancements, which include Hitachi's next-generation IGBT propulsion technology. The technology enhancements will be showcased in a next-generation rigid-frame hauler at Hitachi's booth.



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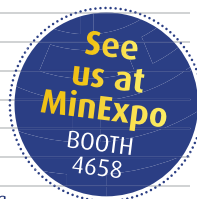
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"The truck features advanced propulsion technology that delivers a whole new level of efficiency, vastly enhancing machine operations for mining professionals everywhere. In addition, the new technology, which also powers Japan's famous bullet trains, outperforms previous and competitive systems through its simplicity, improved efficiency, and enhanced dependability."

"By specialising only on shovels and haulers, Hitachi is able to focus, without compromise, on producing highly-efficient and productive machinery," said Ryan Blades, Division Manager, Hitachi Mining. "The new AC-drive technology advancements are a perfect example of the superior quality and performance of this approach."

Consistently delivering a number of new products and services to the market, **Boart Longyear** will allow attendees to get a first hand



impression of the recently released LS 600 sonic rig. With advanced sonic drill technology featuring innovative and patented designs, the LS600 delivers continuous-undisturbed core samples and will be onsite at MINExpo.

Product experts will be on-site to highlight the latest releases in drilling equipment and tools, including the new 10UMX a high-performance diamond coring bit with the freest-cutting matrix available. The 10UMX is part of the award winning Ultramatrix (UMX) diamond coring bit family, which includes the SSUMX, 07UMX and 09UMX.

Boart Longyear also offers water exploration, environmental sampling, energy, and oil sands exploration services. It offers drilling services in over 40 countries and provides mining products in over 100 countries.

Thompson Pump and Manufacturing will introduce the 152-mm (6 in), high-head 6JCC pump. The portable 6JCC delivers 70 litres/s (1,100 g/min), high heads to 150 m (490 ft) and 14.6 bar (212 psi) with automatic initial priming and re-priming. The 6JCC is ideal for high pressure applications in mining. It offers Thompson Pump's exclusive Enviroprime System® that provides automatic initial priming and re-priming with the environmental

advantage of not spilling pump fluids during operation. Additional options such as Thompson's Silent Knight® sound attenuated canopy, accessories, applications assistance and alternatives are available.

Astec Mining's display will feature products, such as Breaker Technology's RMS 18 mobile scaler vehicle, KPI-JCI's K500 cone crusher and Telsmith's 3858 mine duty jaw crusher with patented hydraulic overload relief. MINExpo 2012 will also serve as the worldwide product launch for the Telsmith T900 mine duty cone crusher. Astec Mining consultants will be on-hand throughout MINExpo to discuss solutions that deliver process improvements to mine sites throughout the world.

"By leveraging the individual experience and expertise of Astec Mobile Screens, Breaker Technology, KPI-JCI, Osborn and Telsmith, Astec Mining is well positioned to support mine sites around the world with equipment, parts and service," said

Rick Patek, Group Vice President, Astec Aggregate & Mining.

Pioneer Solutions LLC, the engineering services and project management company, has introduced its new front and rear axle oil-cooled disc brake product line for off-highway dump trucks. This brake represents Pioneer's first endeavour into component supply and launches a new manufactured products business segment. The statement said the company "uses its 30 plus years of off highway equipment design, manufacturing, and product support experience to provide valuable lifecycle solutions to its customers."

Pioneer's brakes are designed to exceed industry braking standard requirements and easily interface with different OEM axle configurations. Each series is designed to be



expandable within a given payload range. The brakes are manufactured with high quality materials to provide excellent performance and reliable operation. Pioneer's plans include a series of brakes for use on mechanical and electric drive dump trucks with 25 to 400 short ton payloads. The business will support customers throughout new product development, prototype, testing, production, and field service, including availability of aftermarket parts.

In addition to the brake product, Pioneer's manufacturing operations will focus on other highly engineered components, such as differential gearing and final drive planetary assemblies. These components require advanced manufacturing processes and a high level of quality to perform in the extreme applications of the off highway equipment industry. Pioneer Solutions will be displaying one of the new brakes, designed to be used on 320 short ton electric drive dump trucks, at MINExpo 2012.

Weir Minerals is to debut a variety of new products at MINExpo 2012. A key launch is the Linatex Wear Indicator System, which transmits and receives messages, providing a revolutionary early warning system to mine operators. Weir believes the system to be superior to competitors' models because it detects more than just a break in the wire – it





measures a change in resistance for more accurate results. The company states that the system "saves time, money, and lives by notifying when a pipe needs to be replaced or fixed." Overall, the Weir Minerals booth will have ten kiosks and two seating areas. The Wear Indicator System is not the only product that will be on display, which include Warman centrifugal pumps, Cavex cyclones, Multiflo dewatering solutions and Isogate slurry valves.

Flexco will be addressing splicing, cleaning, tracking, belt slippage, and material transfer needs with two booths. Attendees can visit the

operations maximise the performance of their belt conveyors. Flexco will be showcasing the breadth of its product offering, demonstrating how everything – from maintenance tools to conveyor rollers – work in conjunction with each

other for optimal system performance.

Newest products will include an in-depth look at Flexco transfer chutes, featuring exclusive Tasman Warajay Technology. Flexco will also be showcasing the Pneumatic Single Rivet Drivers, which speed

installation of SR fasteners by up to 33%, the EZ Series of impact and slider beds, which

improves performance in the load zone, and the latest in the line of innovative Mineline belt cleaners for serviceability and wear resistance in the toughest applications.

Experienced Flexco team members will be available to discuss the entire system and help attendees identify challenges and ways to increase the efficiency and productivity of their operations.

Flexco is able to address almost any conveyor challenge – from slippage and spillage, to mistracking and wear and tear, to safety and environmental concerns. Even after a belt is up and running, Flexco stays involved to ensure that its products are delivering best performance for maximum productivity.



Atlas Copco has a few surprises in store at MINExpo. Watch out for the next generation of RCS and the launch of a new Pit Viper. Another unveiling will be a new, top secret underground product that the manufacturer isn't talking about before the show.

On the surface, the new SmartROC D65 DTH drill rig has advanced automation and is ideal for presplitting. Visitors will also get the chance to see hands-on how RCS works with an actual cab outfitted with a simulator.

Underground the Simba M7 C topammer longhole drill provides efficient, high precision drilling for longer consumable life. The Boomer M2 C is a modern, hydraulic face-drilling rig with an EPA III approved engine. The new Pedestal Boom System RB600XD is part of the extreme duty series that offers nine models from light to heavy duty for secondary breaking. SwedVent high pressure fans deliver air through long ductwork with high efficiency for low energy costs.

The Chargetec UV2 provides high speed and density ANFO charging with radio remote control. The Unigrout Flex-E grouting system can pump at low or high pressure. Swellex rock bolts are made with patented materials and manufacturing techniques.


For exploration, the Diamec U8 APC is designed for deep hole drilling in an ergonomic and safe manner. The Excore line of premium diamond tools is more consistent and lasts up to three times longer than other bits, the company claims.

In tools, Atlas Copco Secoroc EDGE is reported to be the world's first continuous monitoring system that shows the driller what the bit is doing at the bottom of the hole. Other tools that will be on display include PARD hammer, raiseboring cutters, tricone bits, COP 44 Gold Secoroc COP hammer, Rocket Bits, COPROD system, sharpening systems and SmoothDrive shock absorbers.

Atlas Copco's new division, Mining and Rock Excavation Service, will be at MINExpo showing ▶





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WS Tyler Canada will be highlighting its new Pro-Deck Consulting Approach, described as “a unique approach to selecting the right blend of screening media for each of the three phases of



screening.” The service is designed to optimise screening operations – both for increased efficiency and reduced maintenance and wear. Additional products and services that will be featured include the F-Class Vibrating Screen – a four-bearing, double-eccentric machine, designed to transmit minimal vibration into the existing structure and deliver constant stroke for optimal screening results. A Hydro-Clean machine will also be featured, a high-pressure cleaning system that can achieve production rates of up to 400 t/h of material output. Other highlights include the Scarabaeus Pelletising Disc, which uses cutting-edge technology to turn fines into saleable material; and the CPA – Computerised Particle Analysis machine, which offers more precise particle analysis beyond traditional sieve analysis. Finally, Vibration Analysis will be performed onsite by a WS Tyler-certified service technician. This performance analysis evaluates the product, screen media and vibrating screen, as well as testing the speed, stroke and overall performance.

For the past 15 years, **ThoroughTec** has been applying high standards of engineering and



production quality to the design and manufacture of simulators for the mining industry. This expertise has culminated in the

fourth-generation mining simulator system, **CYBERMINE4**.

Examples of the latest range of ThoroughTec's underground and surface simulator cabs, including a Komatsu 960E haul truck, will be available for test drives at MINExpo 2012. ThoroughTec's unique 3 Degree Of Freedom (3DOF) motion platform and adaptor plate will be used for these displays, exhibiting how 6DOF surface cabs can be effectively used on a 3DOF motion base fitted with the adaptor plate. This allows a single simulator to replicate the entire working fleet of a mine, reducing costs and maximising return on investment.

All ThoroughTec simulator cabs use CYBERMINE4 technology to create the realistic sensation of driving the actual vehicle in an actual mine, with all the correct visual, auditory and tactile feedback. Instructors can configure training scenarios to specific training objectives – not just generic scenarios, but those specifically faced on their mine site. According to ThoroughTec's CEO, Rob Letschert, “Our new fourth generation mine truck simulators have redefined the technology benchmark. We now provide an enhanced scoring system, a mission planner for simulating dispatch systems, simulated reversing aids and a replicated two-way radio”. Hands-on demonstrations will be available for visitors to the ThoroughTec stand.

ThoroughTec states that it is able to simulate any machine from any OEM in the industry, surface or underground, and has the largest development pipeline by far, so is able to customise on every build it does, going beyond the OEM specification “to deliver the exact operating procedure the customer wants and needs.” ThoroughTec currently simulates over 73 different mining machines, covering both underground and surface machines, from drills and bolters to draglines and haul trucks.

Mine Site Technologies (MST), a global leader in communication technologies dedicated to mining, has been a driving force in bringing new technologies to the industry over the years, including the creation of the ‘ImPact - One Network’ solution for today's digital mine. The company says “the primary drivers for all MST product development s are in providing the customer with the opportunity for improving their productivity and at the same time enhancing their safety.” At MINExpo, MST will showcase its newest and most advanced communication technologies. Known as ‘ImPact’

the wireless, 802.11 standards based network communications system provides its users with, MST says, “simplicity, reliability, expandability and unsurpassed functionality in the mining environment.” There will be operational systems on the stand to provide potential customers with first-hand, hands-on demonstrations of the real functionality of the ImPact system. Included will be the MinePhone VoIP telephone handset and the ICCL (Integrated Communications Cap Lamp) that incorporates text messaging and tracking into a single cap lamp product.

MST will showcase its full range of products, including several complementary partner products:

- **ImPact - Underground Digital Communications and Tracking System** (IEEE 802.11b/g, 802.11i, 802.11e)
- **Tagging Systems - Personnel and vehicle tracking.**



- **VIP - Vehicle Intelligence Platform:** real-time vehicle diagnostics and payload data system.
- **VDV - Leaky Feeder Radio System**
- **Wireless Mesh - High bandwidth mobile networks;** underground and surface.
- **ICCL - Integrated Communications Cap Lamp**
- **MinePhone - In mine / mine purposed VoIP** wireless communications from any area at a mine covered by wireless network (including underground to surface)
- **PED - Personal Emergency Device:** TTE (Through-The-Earth) emergency and general communications system
- **BlastPED - Remote blast initiation system** using the PED transmission system.

Phoenix Process Equipment, the exclusive US distributor for Diemme recessed chamber and membrane filter presses and piston-membrane pumps, will feature its Diemme filter press field demonstration system. The trailer mounted system includes a Diemme KE500 filter press, ▶



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Sleipner will be showcasing its unique system of transporting tracked excavators in open pit mines. The system is based on axles and heavy tyres with ramps. With the aid of a



set of Sleipners and a haul truck the excavator is easily and quickly moved to the desired location. In addition, the system offers considerable reduction to the wear of the excavator's undercarriage and tracks. There are currently 11 models in the manufacturing program covering excavator weights from 30 t up to 550 t. Most models incorporate different ramp sizes to fit different excavator brands and models. The newest model, the E550, is also the largest one and can move excavators up to 550 t and in some cases, larger. The larger the

transported excavator is, the more proportional benefits in wear and work-site efficiency the Sleipner system offers.

In the early part of 2012, Sleipner has sold the system to mines located in Australia, South Africa, Ghana, Indonesia, Austria, Angola and Chile. Sleipner shares its MINExpo stand with HSM Tire Co, which has its headquarters in Houston, Texas. HSM is specialised in heavy mining and OTR tyres and is Sleipner's agent in US and Mexico.

Advantage PressurePro, the developer and distributor of the PressurePro line of tyre pressure monitoring systems (TPMS) and technologies, was incorporated in 1991. The company was the "original" TPMS provider to the worldwide commercial vehicle markets and sees itself as a pioneer in TPMS technologies. Providing numerous advanced monitoring options

including large bore Sensors, RS232, J1708 and J1939CAN, data logging, fully automated drop-and-hook solutions, remote monitoring options and full integration to leading Telematic offerings, the company states that "PressurePro brings your entire mining fleet the tools needed to increase efficiency and profits through reduced downtime and maintenance and increased performance and safety."

At MINExpo, PressurePro's leading global distributors will be showing the market's most advanced TPMS technologies. Featuring

standalone monitoring systems as well as integrated monitoring solutions, PressurePro's comprehensive offerings will also be on display at numerous technology partners' booths. They include standalone monitoring options that utilise RF technology to transmit real time tyre pressure and temperature information from a monitor, which sits in-cab; as well as sensors that fit to equipment valve stems. Providing two levels of low pressure alerts, a user settable high pressure alert and a high temperature alert,



PressurePro's standalone units give drivers the ability to monitor their tyre performance at all times and to correct problem situations before they become costly or hazardous. Built in data logging abilities also allow fleet managers or maintenance personnel the ability to monitor trends in tyre and driver performance, allowing even greater efficiencies.

Partnering with leading telematics providers, PressurePro's comprehensive line of integrated options allows fleets to utilise PressurePro's full TPMS capabilities without the addition of screens in-cab. Communicating over the truck-line, or direct to a box or screen, PressurePro is able to provide real time pressures, temperatures and alerts for drivers while eliminating driver distraction and cab

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clutter. Further integrated options also provide fleets with the ability to tie into current or future communications options allowing remote monitoring to a home base or office.

Mining tyre manufacturer and solutions provider, **Eurotire**, will be unveiling its new EuroCare program at MINExpo, described as an "innovative 360° program" and the first of its kind in the industry. EuroCare is a complete portfolio of value added components "that provides customers with the training, tools, service and support they need to run a safer and more profitable mining operation." The EuroCare program is designed specifically around Key Performance Indicators and is customised and tailored to a specific mining operation. Each component is measurable and its "value" proven by directly answering specific KPI requests.

A team of Eurotire experts will be present to respond to queries about tyre maintenance and performance, talk through the complete range of the group's leading tyres, as well as advising on which tyres will deliver

the best results under specific mine conditions, and how the mine operator can partner with Eurotire's service and support network.

Following the launch of an industry leading three year warranty on its gearbox repairs in July 2012, **David Brown** is gearing up for the unveiling of a new product range at MINExpo. The group is known as a leading global supplier of mining gearing solutions and services. The company states: "David Brown uses its 150



years of engineering innovation to understand and solve its customers' gearing problems. Our gearboxes are renowned for their strength and reliability in critical applications." Key mining applications include conveyor drives, stacker/reclaimer drives, pump drives, girth gears, pinions and mill drives, as well as shovel and dragline components. The company states that the need to minimise disruption and optimise capacity in harsh environments had led to the development of the new product range backed up with the three year service warranty.

The team has also added to its global manufacturing capability with service centres and sales offices in the key mining regions of Chile, South Africa, Zambia, Australia, Indonesia, the US and Canada. The company told *IM*: "By expanding its global network David Brown can now deliver its proven expertise with vital on-the-ground support, helping customers reduce downtime and run their operations with

highest efficiency."

At **Joy Global**, P&H and JOY say they are combining resources to better serve their customers worldwide. As a worldwide leader in the design, manufacture and field support of equipment for surface and underground mining, Joy Global states that it will be demonstrating its

"singular focus on mining" at MINExpo 2012 with innovative products and systems along with life cycle services to help make mining operations safer and more productive.

One of these is the Joy Global Smart Services remote health monitoring technology. Visitors to the Joy Global exhibit will be able to see real examples demonstrating the power of technology that transforms data into valuable knowledge, helping optimise machine and system performances.

Joy Global added world-class wheel loaders to its product portfolio during 2011 with the acquisition of LeTourneau. To highlight this addition, a "P&H LeTourneau-Series" wheel loader will be on display within the booth. Rounding-out the real-iron examples of high performance products in the exhibit, will be a high-production Joy low seam longwall system, complete with shearing machine, armoured face conveyor and roof supports. Also, underground room and pillar mining systems will be featured, ►

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Joy Global will also showcase several more examples of advancing technology that can help mines increase operations efficiency. Those include an innovative P&H drill operator cab, the P&H LeTourneau-Series SR or Switched Reluctance motor technology, and new training simulators. These simulators help support mines by fast-tracking new equipment operators into recommended best operating practices that optimise asset utilization, safety, availability and productivity.

In addition to the products and systems on display, a central stage will feature Joy Global's leadership and direct service support. The company will use this platform to introduce new surface and underground mining systems – including a “first-of-its-kind” generation of loading equipment.

Engineering Dobersek, the German specialist for planning, designing and commissioning of turnkey plants and plant components in the field of mining and metallurgy, water treatment, power and environmental engineering as well as chemical and special plant engineering is taking part at MINExpo this year for the first time. The company will present its latest projects in backfilling, mine dewatering, mineral processing and metallurgy at the German Pavilion. These include the Conticlass System for separation and classification, with various applications in mining and mineral processing.

Conticlass is patented by Engineering Dobersek and provides continuous classification of ores. An essential precondition

for perfect separation is constant pressure at the hydrocyclone inlet. The system is designed to enable pressure variations to be counterbalanced by a speed-controlled pump. As an additional effect the pump lifetime is extended tenfold, because, amongst further positive effects, cavitation is avoided.

A regular problem in ore treatment plants is that constant ore feed cannot be guaranteed. In order to counteract feed variations, mills and pumps have to be switched on and off. This is not necessary for those plants equipped with Conticlass.

Martin Engineering is set to launch Haul Mass at MINExpo 2012, described as “the next big thing” in the bulk materials handling industry, and represents a new technology specifically designed for the mining industry.

Founded in 1944, Martin Engineering is a leading international developer, manufacturer and supplier of innovations to make the handling of bulk materials cleaner, safer and more productive. Martin offers technologies that boost flow, reduce dust and spillage, extend component life and reduce downtime, resulting in improved operating environments and increased profitability.

The group has an established network of subsidiaries, licensees and representatives across the globe. Business locations include Mexico, Brazil, China, France, Germany, United Kingdom, South Africa, Turkey, Indonesia, India, Canada, Australia, Japan, Chile and Colombia.

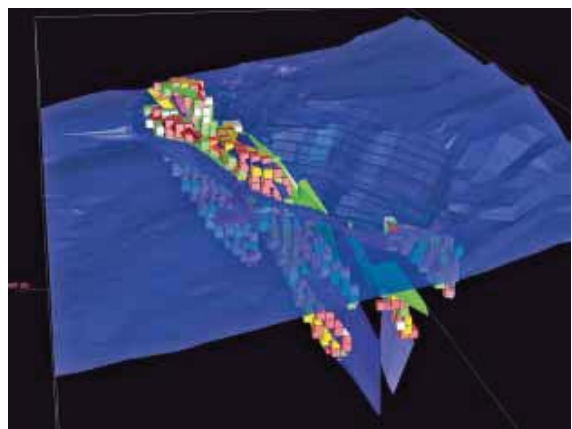
The company states: “Throughout the mine and mill, Martin Engineering reduces fugitive material and improves productivity. We offer a variety of products and solutions to help make mining cleaner, safer and more productive.”

Visitors to **Gemcom's** MINExpo 2012 booth can expect numerous key product announcements, see software demos, and

watch informative presentations at its theatre. In addition, Gemcom's mining professionals will be present at the booth, ready to help operations in all stages of production learn how to address challenges with the use of Gemcom's software and services. Visitors will also get a preview of how leading technologies from other industries can be applied to mining following its acquisition by Dassault Systèmes.

Dassault Systèmes provides business and people with virtual universes to imagine sustainable innovations, with solutions that transform the way products are designed, produced and supported. With the acquisition of Gemcom, Dassault Systèmes' objective is to “model and simulate our planet, improving predictability, efficiency, safety and sustainability within the natural resources industry and beyond”. In order to support this goal, the company has created a new brand, GEOVIA, which Gemcom will become.

In addition to the acquisition by Dassault Systèmes, the last four years since MINExpo 2008 have seen significant changes for



Gemcom, including new releases for all of its software products, new technology introduced to the market, and an expanded portfolio of services offerings.

Gemcom's products include the geology and mine planning software Gemcom Surpac, Gemcom GEMS, and Gemcom Minex (specific to stratified deposits); Gemcom Whittle for strategic mine planning; and Gemcom InSite which supports mine production management. Other software from Gemcom includes Gemcom MineSched for surface and underground scheduling; Gemcom Hub for secure remote collaboration and data centralisation; and the block caving software Gemcom PCBC.

Vermeer is introducing its newest Terrain Leveler surface excavation machine at MINExpo 2012. The Vermeer T1655 Terrain Leveler surface excavation machine (SEM) is designed for precision surface mining applications and is also featured in this month's Operation Focus article on the use of the machine at FMG's Christmas Creek iron ore mine.

At 181.4 t, the T1655 is significantly larger than its predecessor – the T1255 Terrain Leveler SEM. It stands 17.5.2 m high from ground to the top of the cab at full extension. Its length spans ►





13.4 m and its width is 6.4 m. The T1655 is designed specifically for precision surface mining, a process that allows mine operators to selectively extract mineral seams in surface mining applications. Operators can also influence material sizing — producing consistent-sized material in a uniform configuration so minerals can be handled more efficiently than product produced by drilling and blasting. The uniform product size allows more efficient settings on secondary and tertiary crushing systems; savings that can continue well past the primary crushing stage.

An important feature contributing to the ease of operation is the TEC Plus display, which allows the T1655 to communicate with the various control modules situated throughout the machine, as well as the two engines. The TEC Plus display allows the operator to easily monitor and control machine functions and improves the onboard diagnostic capabilities. *See the in-depth article beginning on page 144 for more detail on the new T1655.*

The productivity of the T1655 centres on the direct drive drum with the drive motors attached directly to the cutter drum. The cutter drum is located on the rear of the machine, allowing the drum to cut material while the tracks remain on uncut ground so not to spoil the excavated material. The T1655 has dual hydrostatic tracks for independent rotation in either direction. The machine can quickly reposition up to 360° in either direction for the next cut.

The whole MTU product portfolio for mining applications will be shown at MINExpo and comprises diesel engines delivering power outputs of 75 to 3,000 kW for haul trucks, mining vehicles, underground mining machines, wheel-loaders, excavators, and mobile drilling rigs. Services with remote data transmission enable efficient remote diagnosis, maintenance, and engine condition monitoring. These are complemented by automation systems with a modular design for flexible monitoring and control of the propulsion plant. Completing the product portfolio is MTU ValueCare service support at over 1,200 locations. Service includes engine maintenance, spare parts supply, and remanufacturing of engine components and complete drive systems.

The company is probably best known for the

Series 4000 engines that will be displayed at the show. These are widely used on ultraclass trucks and large excavators. At a gold mine in Nevada, the company is currently field testing a 12V4000 Tier 4 compliant engine in a Komatsu 930E haul truck.

MTU Series 2000 engines cover a power range from 561 to 1,163 kW (752 to 1,560 hp) and fulfil the EPA Tier 4

interim emissions regulations (as with the S4000 engine) using only in-engine technology and no exhaust gas aftertreatment. The latest version has been totally re-designed using knowledge gained from Series 2000 and 4000 engines in other applications. The no aftertreatment has been accomplished through a combination of key engine technologies, including 2-stage regulated turbocharging, a patented EGR system, and a new combustion system design.



Finally, the company will be highlighting its Lower Power Range (LPR) of engines, which include the new Series 1000, 1300, 1500 and 1600, all based on a cooled EGR, common rail fuel system, multi-valve per cylinder technology and with no diesel particulate filters, with the range moving to Airless SCR for inline engines.

Flanders, the privately-owned, third-generation company headquartered in Evansville, Indiana, develops advanced technologies and designs, manufactures, sells and services motors, complete power systems and automation solutions that deliver higher return on investment (ROI) and lowest total cost of ownership (TCO) for mining, metals, utilities, alternative energy and other heavy industries.

At MINExpo, Flanders will be featuring several innovations. The Flanders Advanced Rotary Drill Vector Automated Radio Control (ARDVARC) “revolutionises surface mining operations” by automating the drilling process itself—anywhere from operator-initiated to complete autonomous

operation—delivering significant improvements in productivity, safety, fragmentation predictability, and machine life cycle management. The company will also be featuring the new Flanders ARDVARC Command Center that allows the operator to control all aspects of the ARDVARC drill automation system from the safety and comfort of a remote environment—in the field or the office. The ARDVARC Command Center provides complete surveillance and supervision of up to four autonomously operating drill rigs. Video and data integration, together with control and safety systems, all exist within the Command Center configuration.

In addition, the Flanders SureTrip Dipper Trip System will be featured, which helps to improve shovel productivity by virtually eliminating an unexpected dipper trip system failure, one of the largest contributing factors to productivity loss for shovel operations. Failed ropes and components can take 30 minutes to hours to repair and replace, which cripples productivity for shovel-truck operations. Dipper trips that fail to actuate can also be problematic. The SureTrip Dipper Trip System incorporates a state-of-the-art digital drive system and

excavator-duty components including a ring and pinion gear and cable reel assembly. The reel applies constant tension during the dig cycle to maintain full control of the tripping cable, and optimises torque to ensure reliable and consistent gate activation. Flanders believes that SureTrip is the only long-life dipper trip system that shovel operators can count on for 99% activation reliability or adjust to a custom setting based on the digging situation.

Finally, the company has completed North America's first DC to AC dragline upgrade, stating: “mine operators who convert from DC to AC draglines stand to realize a quick ROI and ongoing improvements in productivity and safety, decreased cost-per-tonne, and decreased total cost of ownership. Flanders’ designed-for purpose AC motors and MG sets can breathe new life into existing DC draglines.”

Fordia will showcase

two recent technology developments at MINExpo 2012. In April it launched a new diamond bit that adds to its HERO range. Just like the HERO 3, HERO 7 and HERO 11, the all-new HERO 9 offers “a penetration/lifespan ratio that surpasses other core bits in its

class.” The core bit is also more resistant to high drilling pressures, making it easier to use. ►



Together, the HERO range of four core bits can now tackle ground ranging from 3.5 to 7.5 on the Mohs hardness scale. The HERO 9 is designed for very hard ground rated between 6 and 7.5 on the Mohs scale. It stands out says Fordia, due to its longer lifespan and impressive penetration rate, which allow it to drill faster and longer.

Fordia's R&D team created the matrix through extensive field tests that enabled its optimisation. Dozens of tests with numerous drilling companies across multiple sites have demonstrated that the HERO 9 has a lifespan as much as 150% longer than other bits. It is aimed at projects that are drilling through plutonic and volcanic rocks, such as granite or syenite, or similar rock formations. The HERO 9 is available in diamond impregnation heights of 13 mm and 16 mm to further increase the metres drilled.

In addition to HERO 9, Fordia's booth will feature the CorientR, a mechanical core orientation device that "integrates seamlessly into drilling operations and provides easy marking of core samples to record their original orientation in the ground." This data allows geologists to plan campaigns more effectively and optimise drilling costs. Fordia states that the CorientR is exceptionally user-friendly, requires no supplies, batteries or calibration and employs no fragile electronic components.

It was first made available for rental in Canada, followed by its launch in Australia and now in the wider market.

Varel International, the world's largest independent supplier of drill bits to the mining industry, will be showcasing new technology at MINExpo, including more than 60 roller cone drill bits for multiple mining applications including Horizontal Directional Drilling bits with EdgeGuard features, the Rotary Percussion System (RPS), a massive 44 in drilling bit, claimed to be the world's largest roller cone

drill bit, as well as introducing the Avenger series of sealed bearing roller cone bits for mining applications.

Specifically introduced for long lasting bearing life in highly abrasive rock formations and horizontal directional drilling, the new EdgeGuard patent pending insert technology allows wear resistant material to be directly applied to the edge of the bit shirrtail resulting in protection of both the bottom and the leading edge of the shirrtail. According to Varel, this can dramatically extend bit life in applications where shirrtail wear is a primary failure mode as well as protect the bearing by providing extended wear protection on previously vulnerable areas.

Varel acquired the Rotary Percussion System (RPS) in 2011, and says it has continued to improve upon the platform of using these high frequency, low impact percussion tools in rock destruction. This

product line, under development since 2005, allows drillers to utilise traditional roller cone drill bits in air, mist, or foam fluid applications, increasing the rate of penetration through efficiently combining the complimentary forces of both rotary and hammer drilling.

The record 44 in steel-toothed roller cone bits are used for top-hole drilling. This design is more than 22% larger in diameter than any previous roller cone bit, and features an advanced cutting structure with optimised row placement, tooth spacing and cutter geometry for increased drilling efficiency. These attributes also work to minimise tooth wear

and prevent cutter tracking in a wide variety of formations and conditions.

Designed and built for long life and drilling efficiency in blast hole applications the all new Avenger series sealed bearing bits add another dimension to Varel's offering. Avenger benefits from the company's proven technology innovations in sealing and bearing technology used in its successful oil and gas drilling High Energy series drill bits.

For the first time in the US, **Manitou Group**, *The Material Handling Reference*, will display its



broad range of Manitou, Gehl and Mustang brand equipment dedicated to the mining sector at MINExpo 2012. The company states that the "Manitou, Gehl & Mustang brand machines provide immediate operational cost reduction for mine sites because of their versatility....these machines can be used for maintenance of large mining equipment, construction of structures and for operational tasks throughout the site."

Attendees will be able to learn more about Manitou telescopic handlers, heavy-capacity telescopic handlers, rotating telescopic handlers and rough terrain forklifts. Mustang will be displaying its compact skid steer loaders. All machines displayed will feature a variety of available attachments applicable to the mining industry. The company will also be releasing

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new solutions, tailored specifically to the mining market, at the show.

Live demonstrations of the Manitou MHT 10225, the highest capacity rough terrain telescopic handler in the world, which has a 22.5 t lift capacity, will be conducted throughout the event. Demonstrations of high-capacity cylinder and tyre handling attachments, controlled remotely, will also be conducted.

Redpath Group, the international mine contracting and engineering company, is to



showcase the newest member of the Redbore fleet of raised drills, the Redbore 30 at MINExpo 2012. Redpath states: "This nimble and economical raise drill was specifically built for raised drills by raised drills, to make light work of rapid boxhole development. It is the lightest, most compact drill in the blind hole, box hole market. The drill's energy efficient power pack and operating console have been combined into one unit making this 2 piece compact drill extremely mobile, maximising mobility." In addition to introducing the Redbore 30, The Redpath Group will be continuing its 50th anniversary celebrations at the event. With fifty years of mine contracting and engineering experience, the milestone is expected to be a "reunion of sorts", with past, present and future clients invited to stop by the exhibit and meet the international team representing Redpath's global regional offices.

Cummins Inc will be showing the new QSK95 mining engine at MINExpo 2012. This engine will provide a 4,000 hp (2,983 kW) capability for ultra-class mine haul trucks, representing the highest-ever power output introduced by the company for severe duty-cycle operation. The 95-litre displacement QSK95 is purpose-designed to provide enhanced strength for 327 and 363 t payload-class trucks, with the capability to increase truck speeds for climbing steep-gradient haul roads and boost hauling productivity with reduced operating cycle times.

The QSK95 will be available as a global mining engine platform capable of operating at mine sites anywhere in the world and meeting

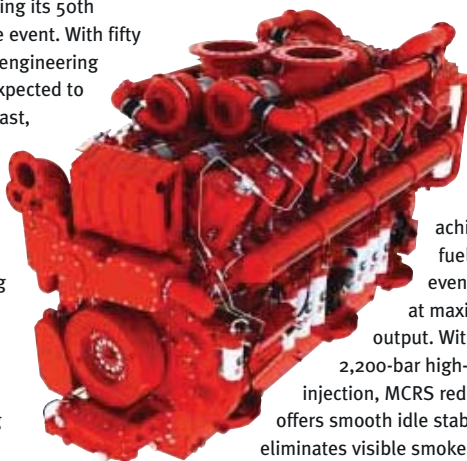
all emissions standards, including Tier 4 Final in North America by using Cummins proven Selective Catalytic Reduction (SCR) after-treatment.

The 16-cylinder QSK95 reaches the mining power output previously available only from 20-cylinder engines. High power density is achieved with a hardened power cylinder piston available in the industry. Deep structural strength is provided by an all-new ductile iron skirted block. This increased strength contributes to higher engine uptime availability, extended life-to-overhaul and more cost-effective rebuilds.

The output of the QSK95 engine is described as "well within its design capabilities", with potential power increases available in the future to provide the

possibility for the next generation of ultra-class haul trucks to move beyond 363 t payload capacity.

Cummins states: "The stronger engine design of the QSK95 means more reliability in-service and less to rebuild at engine overhaul, considerably reducing total life cycle costs. The QSK95 will provide an exceptionally long life-to-overhaul, capable of achieving 1.7 Mgal and above of fuel consumed before rebuild, with the added advantage of no midlife intervention required."



Cummins next-generation Modular Common-Rail System (MCRS) enables the QSK95 to achieve high fuel-efficiency, even when operating at maximum power output. With up to 2,200-bar high-pressure fuel injection, MCRS reduces noise, offers smooth idle stability and eliminates visible smoke

across the entire operating range. Cummins' new NanoNet fuel filtration gives superior fuel cleanliness and enhances the durability of the MCRS system – an important advantage for mining engines required to operate anywhere in the world with varying fuel quality.

A quad-turbocharging system brings the simplicity of a

single-stage air handling system already proven on the QSK60 engine. The four compact turbochargers, one arranged for each bank of four cylinders, provide outstanding step-load acceptance and transient response. This enables the QSK95 to deliver more rapid power across the entire rpm range to improve haul truck speed at full payload capacity.

Advanced electronics enable the QSK95 to be custom-calibrated for specific duty cycles, with the flexibility for performance to be optimised among fuel consumption, transient response and emissions reduction to suit different haul truck applications.

RDH Mining Equipment's Muckmaster 800D is the Sudbury-based company's first large capacity LHD. The compact, powerful workhorse can get into tighter spaces and has more power than other models in its class, RDH claims. The 14,000 kg tramming capacity LHD can be fitted with a range of bucket capacities between 4.6 and 7.6 m³. To reduce wear and increase lifespan, buckets are fitted with wear strips and a bolt-on lip, allowing users to replace the bucket lip without welding. The loader linkage geometry has been designed to provide optimal mucking and loading performance.

The Muckmaster 800D's powertrain provides power and performance to perform under tough conditions. Its powerful 258 kW Mercedes Tier IV Interim engine meets stringent emissions limits while also achieving valuable cost savings through low fuel consumption. The LHD features heavy duty Dana 21D axles, a full power-shift four speed Dana 6000 series transmission and Dana 9000 series torque converter. Its powertrain has been designed to deliver constant power to the wheels, providing high operating efficiency for virtually any application.

With bi-directional seating, the ergonomic operator station comes standard with ROPS/FOPS canopy or optional fully enclosed cab and includes an electronic touch screen monitoring system which provides a constant display of vital machine functions as well as service and diagnostic tools. A door mounted electric joystick provides steering and transmission shifter controls. A responsive armrest mounted joystick controls boom/bucket functions. The ride control system feature dampens movement of the boom and bucket during travel over rough terrain, increasing efficiencies by improving cycle times and load retention as well as providing a more comfortable ride for operators. **IM**

