



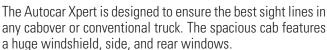
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# **InfraStructures**

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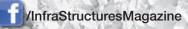
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#### A Brief Word...

One might be tempted to say here we are in 2022 and it is "Déjà vu All Over Again". I don't mean that just as regards Covid, but there is a cultural and technical similarity to our current times and those of a Century past.

Transoceanic air travel was coming into existence, for the well-heeled, just as space tourism is consuming the cash of the well-to-do presently. In 1922 shortwave voice communications proved the hoi-polloi could virtually venture out and create a global network in a similar way that social media is doing in our own times.

A century ago, steam power was beginning to give way to internal combustion technology just as hydrogen and electric propulsion are taking over a modern jobsite. Remember it wasn't THAT long ago contractor-grade cordless tooling was jeered. Recent developments in battery and hybrid systems are being seen on jobs and at trade events, enticing even the most skeptic with their power and reliability.

InfraStructures has been documenting and reporting to you on many of these trends for over 26 years now. We have witnessed innovative ideas become commonplace mainstays of daily operations. We've even maintained the most thorough record of this evolution in our easily to access archive should you wish to reminisce.

Canada's National Equipment Publication isn't just "Here Today", we've been around for a whole lot of Tomorrows.

Be safe, keep well, and together we can help put Covid in the past as well.





On the cover:

In tunneling and underground operations, the C20 Rock Splitter series provides contractors with a safe and quiet alternative to explosives and hydraulic breakers. They work with Brokk 300 models and larger to quickly break up large boulders and solid rock in mining and shaft sinking applications as well as cross passage work in tunneling.

#### HOLCIM LAUNCHES DYNAMAX HIGH-PERFORMANCE CONCRETE

Holcim recently announced the introduction of DYNAMax delivering high strength, durability and rigidity with design freedom and sustainability. The latest global concrete innovation coming out of Holcim's R&D Center, DYNAMax will be launched in close to 10 markets across Europe, Latin America, North America and Asia Pacific in 2022. Delivering high performance and

design freedom in a sustainable way, DYNAMax is suitable for a broad range of applications, from complex infrastructure to high-rise buildings.

"I'm excited by the launch of our DYNAMax high-performance concrete, advancing our global range of innovative and sustainable building solutions. With today's population and urbanization trends, DYNAMax is an ideal material to build smarter cities. It offers high performance to

build more with less with no compromise on aesthetics and functionality," said Jan Jenisch, CEO Holcim.

DYNAMax is the ultimate performance concrete for demanding construction projects. It enables smart design, with thinner and longer structures and higher functionality. With optimal material use, it allows more usable space and greater variability in floor plans. Its durability minimizes maintenance and lifecycle costs of a building. Its sustainable footprint is driven by reduced material use, local production and short transport routes as well as its circular and fully recyclable profile.

DYNAMax offers the broadest range of high-performance concrete, delivering superior compressive strength along with additional technical benefits from rigidity to durability. With its ultimate high performance, DYNAMax offers value to all stakeholders across the construction value chain, from architects and designers to homeowners.

Source: Holcim

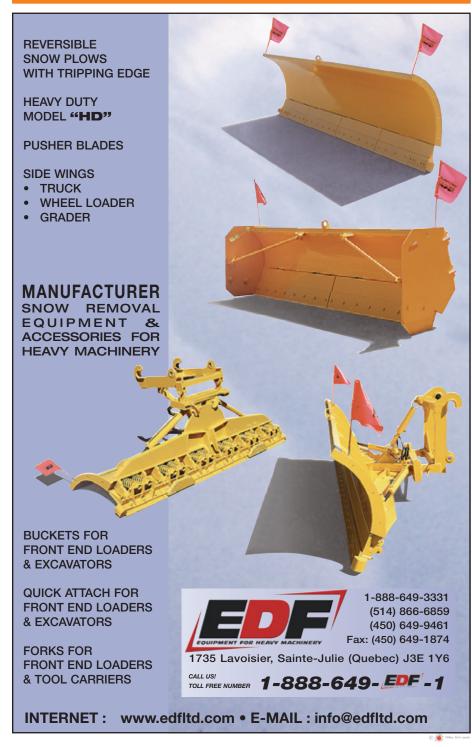
# BECHTEL PRESENTS HEXAGON WITH SUPPLY CHAIN RECOGNITION AWARD

Hexagon's PPM division, a global provider of engineering software for the design, construction and operation of plants, ships and offshore facilities, has been recognized by one of its longtime customers as a recipient of Bechtel Corporation's 2020/2021 Supply Chain Recognition Award.

Companies were evaluated on multiple factors, including: overall performance, ability to deliver quality services, and meeting or exceeding expectations in aspects of safety, performance, technical expertise and environmental compliance.

Hexagon software plays a key role at Bechtel from engineering design and data management, structure and piping analysis, project controls and completions across Bechtel's Global Business Units. The partnership Hexagon's PPM division has built with Bechtel is rooted in a lengthy history of jointly working through challenges that invariably manifest with such a large software footprint.

"Hexagon is elated to receive such a unique honor from one of the world's largest EPC firms. We have stood shoulder-to-shoulder with Bechtel for more than 2 decades and look forward to accelerating future results as a Bechtel partner. We look forward to continued collaboration with



Bechtel," said Mattias Stenberg, president, Hexagon's PPM division.

"The partnerships we have with our subcontractors and suppliers are fundamental in delivering projects to our customers," said Tarek Amine, Bechtel's manager, Procurement & Contracts. "Collaboration with subcontractors and suppliers enhances our ability to align to our customers' goals, achieve their objectives and deliver a lasting positive impact in the communities where we live and work."

As a global partner in engineering, procurement and construction, Bechtel is committed to building positive, long-term relationships with key suppliers and subcontractors to facilitate a culture of responsible procurement and drive innovation in the industry.

Bechtel is an engineering, construction and project management partner to industry and government. Since 1898, it has helped customers complete more than 25,000 projects in 160 countries on all 7 continents that have created jobs, grown economies, improved the resiliency of the world's infrastructure, increased access to energy, resources, and vital services, and made the world a safer, cleaner place.

Source: Bechtel

# GRAHAM TO CREATE WESTERN CANADA'S LARGEST INDUSTRIAL SERVICES COMPANY

Graham Group of Companies recently announced an agreement with global infrastructure consulting firm AECOM to acquire the North American assets of AECOM's Energy Operations and Maintenance Division (EOM).

The acquisition, subject to regulatory approvals expected to be completed by the end of January 2022, will significantly expand Graham's capacity to provide maintenance, turnaround, fabrication and sustaining capital services for major energy, industrial and petrochemical companies in Western Canada, Ontario, and the U.S.

"The acquisition of AECOM's EOM Division is part of Graham's strategic plan for expanding and diversifying our industrial operations across North America," said Andy Trewick, Graham's president and CEO. "It dramatically enhances our ability to provide one-stop services for major industrial clients, from initial construction through lifetime asset maintenance."

Acquiring AECOM's EOM Division will

immediately boost employee-owned Graham's annual revenues by more than \$550 million, making it Canada's 3rd largest construction company and one of North America's top 50 largest construction companies, providing access to a 3,000-worker pool of skilled labor through allied subcontractors. Post-acquisition, the company will be a leading player in the industrial services sector in Western Canada, creating opportunities for growth there, in Ontario and the U.S. Headquartered in Calgary, Alberta, the acquisition of the EOM Division reflects confidence in the Western Canadian economies and in the case of Alberta, a favorable business climate.

The acquisition coincides with surging energy demand and economic growth as the world recovers from the 2020 pandemic recession. It also positions Graham to play a leading role, in partnership with large energy and petrochemical producers, in accelerating the transition to a lower carbon economy and advancing Canada's national objective of Indigenous reconciliation through meaningful resource industry partnerships with Indigenous groups.

"Through more than 9 decades in the construction business, Graham has a long and proud history of building industrial infrastructure – the mines, refineries, pipelines, petrochemical plants, power generation and hydroelectric facilities that have driven economic growth and prosperity across the continent," said Cecil Dawe, executive vice president of Graham's Industrial Division. "Graham was an early pioneer in building alternate energy infrastructure. The addition of the EOM

Division expands our capability to build and maintain the energy and industrial infrastructure of the 21st century, building on Graham's expertise delivering wind farms, LNG plants, biofuel refineries and carbon capture and storage facilities. Bringing in EOM's operations and skilled workers to our team of allied subcontractors raises our game to a whole new level for our clients and our Indigenous partners, and firmly establishes our company as a leader in North American industrial construction and services."

Source: Graham Group of Companies

## URBAN LIFE SOLUTIONS ACQUIRES FOREST RIDGE LANDSCAPING IN THE GTA

Urban Life Solutions Inc. recently announced the combination and merger of Forest Ridge Landscaping Inc. into its operations.

Founded over 22 years ago, Forest Ridge Landscaping is one of the most respected landscape entities operating in the Greater Toronto Area (GTA). With 3 separate operating hubs, Forest Ridge provides comprehensive coverage to the north of Toronto and connected areas. The company provides year-round maintenance, snow and ice management, landscape enhancements, and several other specialized outdoor property services.

"When we first met with the current management of Urban Life Solutions and Signal Hill Equity Partners, it didn't take long for us to realize that we had the good fortune to connect with like-minded individuals who experienced the same challenges as us and were achieving remarkable success. We are a family-based

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business and we founded Forest Ridge Landscaping with the moniker dream, build, cherish, and that has now been reinvigorated! Coming together with Urban Life Solutions provides an opportunity to expand the vision of bringing quality services combined with wonderful team members that look to expand across Canada and into the U.S.," commented Gerry Visco, owner and president of Forest Ridge Landscaping.

"It is extremely exciting to see our company continue to evolve into a National Outdoor Service Solution Provider. Bringing Forest Ridge onto our growing team gives us a great springboard into the GTA as we continue to expand our presence. As a Canadian company we are all proud to find a way to bring the best together under one brand, with one common goal," stated Steve Wheatcroft, CEO of Urban Life Solutions. "As we grow, it is key that we find quality partners like Gerry and the Forest Ridge team to continue to build our brand and service offering. We know that top quality companies with great teams behind them add value, not only to us, but to the

great clients we work with daily."

Urban Life Solutions currently provides snow and ice management, landscape maintenance, landscape enhancements, waste collection, street sweeping, and asphalt maintenance to over 110 cities, towns, and municipalities across Canada.

Source: Urban Life Solutions Inc.

#### HATZ BUYS TECHNOLOGY START-UP

Motorenfabrik Hatz recently announced the acquisition of the technology start-up Inecosys. The young company from Munich, Germany, is specialized in developing innovative control and electronics systems. This step has secured more expertise and know-how for drive solutions of the future for Hatz.

By acquiring the technology start-up Inecosys in July, the drive specialist has now added the next building block to its innovation strategy.

"At the moment, we are busy transforming ourselves from being a diesel engine specialist into an open technology drive manufacturer. Even if our engines already meet the strictest exhaust emission stan-

dards and are the benchmark in their class—our long-term objective, apart from emission-reduced combustion engines, is in particular zero-emission operation for our drives," said Bernd Krüper, Hatz CEO.

The takeover of Inecosys is the latest highlight in the Hatz innovation offensive.

"The products of tomorrow will feature full electronic control and their own artificial intelligence. In future, our planning will also integrate hybrid solutions and electric drives along with alternative fuels. The know-how of our latest company addition will provide us with enormous support in converting these visions into market-ready innovations," added Dr.-Ing. Simon Thierfelder in explaining the future path of Motorenfabrik Hatz.

Inecosys was established in 2014 by 3 doctoral candidates at the Technical University Munich. Currently, it employs 8 people at the Munich Technology Center MTZ. The last 7 years have seen several of the big names in the automotive and engine industry become customers of the young company.

Source: Motorenfabrik Hatz

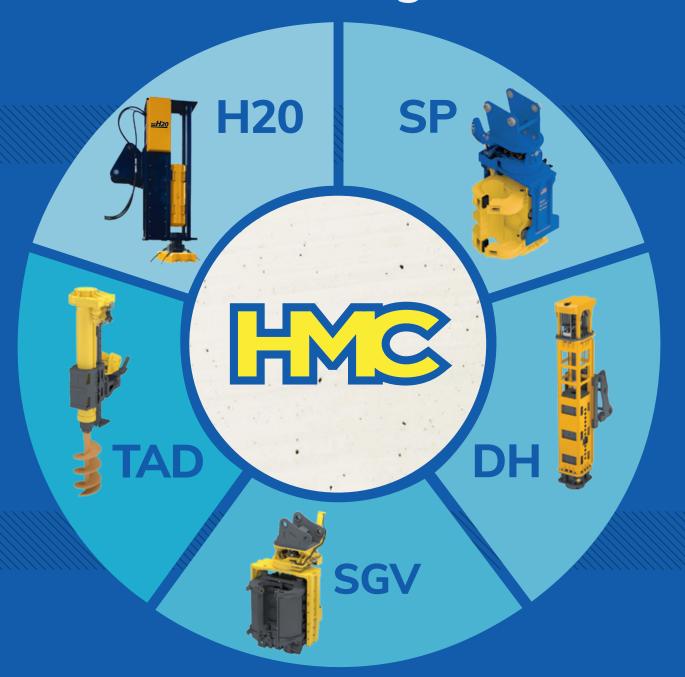


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With the SENNEBOGEN 728 E-Series, the company has expanded its product line while solving the problem of large trees falling in residential areas and streets. The 728 E is joining the 718 E and 738 E tree care handlers on the market as another industry-leading machine with a reach of up to 21 m.

When you talk to professionals in the tree care industry, one thing is very clear: safety and precision are crucial and key elements to any project. So, when the manual use of the chainsaw reaches its limits, SENNEBOGEN's tree care handler comes to the rescue. The new SENNEBOGEN 728 E has extremely long work equipment consisting of a 9.2 m compact boom and a 6 m telescopic stick, which can be quickly retracted and extended continuously by an additional 2.5 m even while under load at the push of a button. Complete with equipment, the machine easily achieves a working range of up to 21 m. Thanks to a mobile undercarriage with a width of around 4 m and pneumatic tires, the machine is always stable.

Optimized for use along roads and forest paths, the 728 E comes equipped with a transport dimension of 3 m. It can also be transported quickly and easily by a lowboy trailer. It can also easily be moved directly from site to site as a rubber tired mobile machine. This flexibility and application demonstrates the superiority of the machine when compared to other working methods. Trees and shrubs along traffic routes can be removed safely and precisely with minimal manpower. Thanks to the machine's compact dimensions and quick cycle time, traffic disruptions are minimized, a major bonus for municipalities. The SENNEBOGEN 728 E avoids heavy complex roadblocks while reducing the risk of accidents among workers.

When SENNEBOGEN's engineers were designing the 728 E tree care handler, special attention was paid to safety and operator comfort. In the Maxcab, there was already the outstanding all-round visibility, which can be raised by 2.7 m and tilted by 30°. The operator station features special ergonomic controls and a comfort seat which can make long days go by quickly. For additional safety, the operators are protected by roof and front grilles, windshields and side windows are made of bulletproof glass. The spacious cab itself offers a panoramic view over the entire working area, while cameras provide additional support to ensure 360° visibility.

The power of the 728 E is provided by a 187 hp Tier 4 final diesel engine which reliably drives the 2 hydraulic circuits. Like all SENNEBOGEN tree care handlers, the 728 E comes standard with a separate, high flow capacity auxiliary hydraulic system for independent operation of the attachments. Depending on the intended use, the machine can be operated with a grapple saw, mulcher, cutting unit and more.

With a growing number of high-risk tree care applications, occupational safety is a primary concern for service providers and municipalities. Modern machine concepts like the 728 E offers an effective and efficient solution, but above all, a safe alternative to manual tree care maintenance and removal. Thanks to the long range, powerful hydraulics for a wide range of attachments and the mobile rubber-tired undercarriage, the 728 E is amazingly quick in maintenance, with a constant focus on "safety first" for roadway and right-of-way maintenance.

Source: SENNEBOGEN LLC

Michelin Introduces New X TWEEL Turf Sizes

Michelin North America, Inc., is adding available to accompany

Michelin North America, Inc., is adding to the portfolio of its TWEEL airless radial line. Michelin will introduce new TURF products coming to the commercial zeroturn radius (ZTR) line.

Available as original equipment or as an aftermarket fitment, operators of John Deere ZTrak 900 Series ZTR mowers with 48" mower decks can buy the MICHELIN® X® TWEEL® TURF airless solution using 24", rear tire/wheels with 4x4" bolt-pattern hubs for their commercial mowers. The 24x12N12 size 4x4" bolt pattern has a 340 kg load capacity.

Operators of Kubota Z700 Series mowers with 54" and 60" mower decks can buy the MICHELIN® X® TWEEL® TURF airless solution using 24", rear tire/wheels with 5-4.5" bolt-pattern hubs for their commercial mowers. The 24x12N12 size has a 340 kg load capacity and is available as original equipment or aftermarket.

Delayed due to COVID-19, the 15"
MICHELIN® X® TWEEL® TURF caster is now

available to accompany large diesel ZTR mowers that use a 26" rear drive tire. The 15x6N6 size configuration is designed to provide enhanced performance and more stability with its flat, smooth tread design and has a load capacity of 168 kg and a 25 km/h speed rating. It fits a large range of mowers, including:

- Bad Boy Renegade Diesel 6100
- Cub Cadet Pro Z
- Gravely Pro-Turn 400 & 600
- Hustler Super 104
- John Deere ZTrak Z997R Diesel
- Kubota ZD1211 & ZD1511 Diesel
- Toro 7500D series

Once mounted, there is no air pressure to maintain, thus eliminating the need to carry spare tires, tools or repair kits. This



Source: Michelin North America, Inc.

dealer network.





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# PERI Assists with the Construction of the New Headquarters of HeidelbergCement

The new group headquarters of the building materials manufacturer HeidelbergCement, in Heidelberg, Germany, is stunning with its bright, light-flooded rooms and the radial elements made of white concrete. Within a 16-month construction period, almost 97,500 m² of formwork solutions were used – including customized PERI special formwork elements.

The building clearly demonstrates what is possible with concrete – and do so in the most impressive way possible. The results of using SB 4 architectural concrete and the finest white concrete are visible in the many architectural highlights. Spectacularly twisted tree-like supports, creatively patterned facade prefabricated concrete elements and sharp-edged beams in a radial pattern, are particularly eye-catching. A total of 31,500 m³ of concrete was used for the construction of the building, which consists of 3 interconnected parts of different heights.



The architectural firm AS+P Albert Speer + Partner was responsible for the project as general planner and carried out the design in cooperation with W+ Architekturund Ingenieurgesellschaft mbH, with the latter providing the consulting office for the client's project manager. The complex construction work was carried out by the building contractor Diringer & Scheidel.

PERI and HeidelbergCement combined their architectural concrete expertise for

the execution of this project. In doing so, existing limits were extended, and the wide range of possibilities offered by concrete and the PERI products were exploited.

The bright, curved facade of the new headquarters impresses with its delicate filigree – despite the use of the solid building material concrete. The 11.75 m-high facade supports are particularly striking. In order to construct the facade columns and their particularly smooth concrete surfaces in the highest quality, PERI timber girder formwork with multi-layer panels coated with melamine resin was used.

The focal point of the approximately 11 m-high foyer of the HeidelbergCement headquarters is formed by 2 groups of tree-like supports, which from a structural point of view, serve as the root of the building. Each consist of 3 square cross-sections inclined towards each other, crossing approximately in the lower third. In compliance with the architectural concrete quality required, only one panel joint is visible over the entire column height and no fastening screws, clamping holes and formlining joints are visible.

Due to the very high architectural concrete requirements, the required fresh concrete static pressure of 200 kN/m² and the tough space limitations in the foyer, special formwork made of wood was not an option for implementing the tree-like supports. PERI therefore developed a highly complex 3D special formwork made of steel elements with an overall height of 150 mm. The basis for which was carried out completely via the CAD systems PERI CAD and RHINO.

The supporting structure of the prepared special column formwork was a sophis-



ticated honeycomb structure consisting of 63 CNC laser-cut individual parts. They were assembled as a plug-in system to avoid time-consuming welding. Each individual component had to be newly constructed and statically-dimensioned. A total of around 12.7 t of steel was used to produce this formwork. The 5 mm-thick steel formlining was then attached to the supporting structure to withstand the high level of fresh concrete pressure. At the point where the arms of the 3 tree-like supports cross, additional external ring constructions were attached to specifically counteract deformation of the steel.

In addition to the requirements for the color and structure of the architectural concrete surface, another special feature was the pouring of the concrete. Unlike in most other cases, the concrete was not poured from above but from below. A concrete distribution system transported a total of 30 m³ of concrete simultaneously into 3 column sections and pressed the concrete upwards up to 11 m via 3 pump hoses in the formwork.

Additional sensors of the PERI In-Site Construction (ISC) Pressure Monitoring Set integrated into the formwork made it possible to measure the fresh concrete pressure in real time during the concreting process and to monitor it via the ISC Web Application on the mobile phone. The determined characteristic data for the formwork pressure provided a precise picture of the concreting process of the tree supports.

The walls of the foyer also stand out due to their architectural design. The so-called feature wall is characterized by its recessed, radial pattern, which consists of several prefabricated concrete elements that were retrofitted to the in-situ concrete wall. No visible fastening points or tension holes negatively impact the appearance and there are no visible vertical joints and a only 2 visible horizontal joints at the height of the galleries. The butt joints were concealed by an overcut. In order to be able to realize the 8 cm-thick prefabricated concrete elements (4 cm in the recesses), special formwork was used.

Another challenge was encountered with the dome ceiling, which consists of an uneven cross vault with a circumferential edge upstand in SB 4 grey concrete. This was expected to be formed at a height of up to 7 m and a slab thickness of 25 cm. The



formwork solution that PERI developed consisted of a total of 82 3D-designed architectural concrete timber formers. They were mounted onto components of the PERI UP scaffold construction kit and finally sealed. The PERI UP Weather Protection Roof ensured that work could

used, which was later implemented with a total of 64 different diamond-shaped elements preassembled in the factory. The special feature of the casino: first, the beams were created by simultaneously forming them from the outside to the inside with 2 pumps. Only then, after the beams



be carried out regardless of the weather conditions.

The casino on the ground floor of the new headquarters offers HeidelbergCement employees ample seating and a commercial kitchen. As one of the project highlights, this room features a special reinforced concrete ceiling with radial sharp-edged beams. These stand out in SB 4 white concrete from the underlying ceiling in SB 2 grey concrete mainly due to the striking shapes and colors. Again, no visible fixing points of the formlining or bracing points of the beam formwork are visible.

For the slab, PERI special formwork developed especially for the project was

had hardened, was the ceiling concreted.

A total of around 3,000 m² of project-specific architectural concrete girder wall formwork was used during the project, most of which was preassembled in the factory and delivered to Heidelberg on schedule. The special challenges for the PERI engineers therefore included the intensive planning, the creation of individual special formwork solutions, as well as the support of the site personnel during the implementation of the complex geometries and shapes, and also the punctual provision of materials and coordination of the delivery dates.

Source: PERI Germany

# Demarec and Steelwrist recently

announced a cooperation agreement for Steelwrist SQ full automatic work tool adaptors for Demarec products and SQ quick couplers.

The global demand for full automatic coupler systems for excavators continues to grow in the demolition and construction industry. Steelwrist SQ couplers are appreciated by customers for the increased safety and ability to change hydraulic powered work tools in seconds without leaving the cab. Steelwrist SQ products follow the Open-S industry standard for full automatic couplers for excavators.

Demarec is one of the top manufacturers of hydraulic attachments for the demolition and recycling industry, with more than 25 years of experience in the sector.

"We at Demarec know the advantages of the full automatic couplers in combination with our demolition and recycling equipment like no other. In the past years, supply and demand in the market of automatic

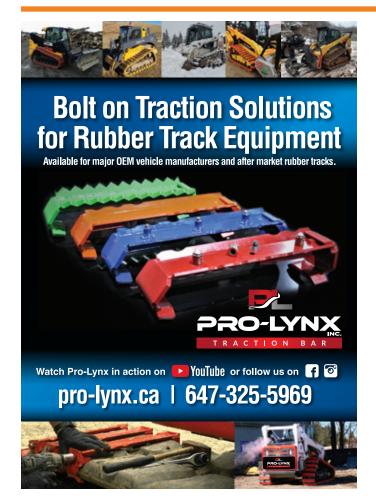


quick coupler systems has undergone a significant change. Nowadays, more suppliers of such systems are active on the market to meet the continuously growing demand for fully automatic systems. As a specialist in full hydraulic couplers we have also started this cooperation with Steelwrist," said Marcel Vening, managing director marketing and sales at Demarec.

"Owners and operators are really starting to adopt to the full automatic

coupler technology, and in the demolition industry it is moving toward a must in many countries. With the Steelwrist SQ and Oplus technology we can support the Demarec organization directly from factory. Demarec with their focus on quality products and support is a good example of an equipment manufacturer that we are very happy to work with," said Stefan Stockhaus, CEO of Steelwrist AB.

Source: Steelwrist AB





FBR Limited recently completed its

first house structure using Wienerberger Porotherm clay blocks in an outdoor environment.

Built on the outdoor test slab at FBR's premises, the house structure was built in a style commonly found in Europe, featuring gable ends approximately 5 m high. The Wienerberger blocks used in the structure are the largest blocks ever used by the Hadrian X® and the largest produced by Wienerberger, and the first clay blocks to be passed through the robot. FBR used 2 different block types - double leaf blocks for the external walls and single leaf blocks for the internal walls to form a monolithic wall system already approved for use in European markets. Each R25 Porotherm is equivalent to 12 standard bricks.

A shipment of assorted Wienerberger blocks arrived at FBR's premises earlier this year, with a volume of testing completed indoors to ensure the blocks would be suitable for use with the Hadrian X®. Upon satisfaction of a number of performance stage gates, the Hadrian X® was deployed to FBR's outdoor test slab and completed its first clay block structure in an outdoor environment. The structure was built using the 2 separate adhesive products at different stages of the build. One of the adhesives was that which is usually used by FBR, and the other was an adhesive product already used by Wienerberger with its blocks in Europe.

While FBR and Wienerberger had intended to complete a Pilot Building Program in Europe, the parties undertook an Australian-based Pilot Building Program to enable FBR and Wienerberger to continue to develop their collaboration within the limitations of the economic conditions and travel restrictions resulting from the COVID-19 pandemic, with a view to progressing the commercialization of FBR's technology with Wienerberger's clay block products in key international territories by demonstrating the commercial operation of the Hadrian X® with Wienerberger clay blocks in Australia.

The parties have continued interest in conducting a European Pilot Building Program when external circumstances allow. The completion of the Australianbased Pilot Building Program sufficiently



demonstrates the ability of the Hadrian X® to work with the architectural style and construction materials commonly found in the European market, where an estimated

700,000 new low-rise homes are built each vear.

"We are very pleased to be progressing our relationship with Wienerberger, the largest producer of clay blocks in the world. Although we expected to have a Hadrian X® deployed to Europe this year to complete this Pilot Program, the global conditions caused by COVID-19 have meant that we must conduct the Program here in Australia, with a view to deploying to Europe when conditions have improved such that it makes sense to do so. Both parties are committed to advancing robotic construction together and improving the efficiency, sustainability and digitalization of the construction in-

dustry, and we look forward to continuing our work with Wienerberger," said FBR's managing director & CEO, Mike Pivac.

The next step in the ongoing relationship between Wienerberger and FBR is to conduct further optimization of both the

Hadrian X® and the Porotherm blocks to ensure field readiness for European Pilot Programs. FBR will provide updates on this optimization program as it progresses.





Based in High Wycombe, Western Australia, FBR Limited designs, develops and builds dynamically stabilized robots to address global needs.

Source: FBR Limited



**Brokk Increases Safety and Productivity in Confined Spaces With Shaft and Tunneling Tools** 

Brokk offers a range of attachments ideally suited for shaft and tunneling applications. The attachments are perfectly matched with Brokk's remote-controlled demolition robots to provide the best possible performance, allowing contractors to excel in underground and confined space operations. The range of attachments includes Brokk's BHB hydraulic breaker series, as well as drum cutters, buckets, TEI Rock Drill series and the C20 Rock Splitter series.

"Demolition is often the first thing that comes to mind when people think of Brokk, but our customers prove, time and again, that with the right attachment these machines are capable of so much more," said Lars Lindgren, president of Brokk Inc. "From opening a face to installing rock bolts, Brokk machines provide unparalleled productivity and safety throughout the tunnel development process."

Brokk robots are engineered starting

at the tip of the breaker for maximum compatibility. This includes reducing back pressure and optimizing machine oil flow, oil pressure and down pressure to allow for more hydraulic power while using less energy. The result is that pound for pound, Brokk demolition robots provide the highest power-to-weight ratios in the industry, allowing contractors to substitute robots for much larger excavators, and

achieve the same removal rates.

The BHB series includes 8 breaker models, starting with the 50-kg BHB 55 breaker for the compact Brokk 70 and going all the way up to the 1,500-kg BHB 1500 for the new Brokk 900, which is ideal for heavy-duty tunnel and demolition applications.

For detailed excavation applications such as contouring and trenching, Brokk's





drum cutters offer an ideal solution. Brokk also offers a range of bucket attachments to increase versatility for digging, loading, sorting and separation of materials and debris.

"In tunneling, you never know exactly what's behind the rock face, so having the right tool is important," said Mr. Lindgren. "We work with industry experts to make sure our tunneling and mining attachments provide the power, precision and versatility necessary for tackling difficult underground tasks. With a suite of these attachments, Brokk owners can streamline operations and increase efficiency."

The TEI Rock Drill series is a collaboration between Brokk and TEI Rock Drills. The 6 drills bring Goliath-sized drilling power in a David-sized package for mining and tunneling applications. Drill controls are integrated into Brokk's ergonomic remote for easy "one button" operation. The Brokk/TEI combination eliminates fatigue caused by operating the heavy handheld

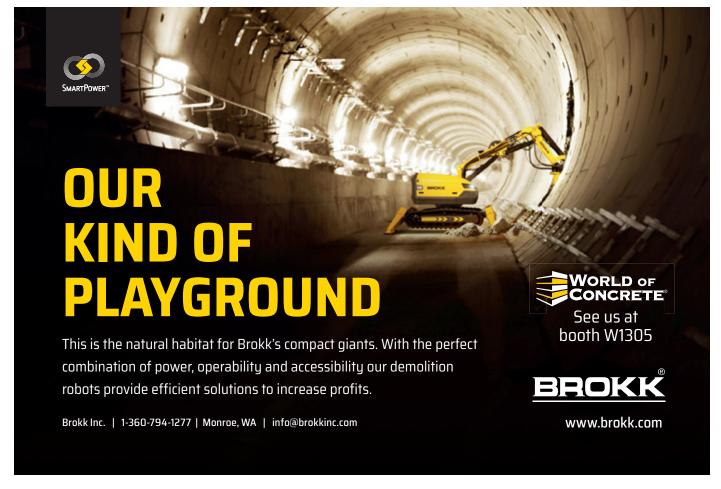


tools, improves overall drilling accuracy and promotes safety by allowing operators to stand farther away from the drilling site.

In tunneling and underground operations, the C20 Rock Splitter series provides contractors with a safe and quiet alternative to explosives and hydraulic breakers. The series works with Brokk 300 models and larger to quickly break up large boulders and solid rock in mining and

shaft sinking applications as well as cross passage work in tunneling. For vertical applications, contactors can choose between the C20 C and C20 V. The C20 H can be used in horizontal applications, while the C20 J offers optimal flexibility, operating both horizontally and vertically.

Source: Brokk Inc.



# **CMD.CTRL™** System for Dominator® Mechanics Trucks

lowa Mold Tooling Co., Inc., an Oshkosh Corporation company recently introduced the CMD.CTRL™ system. The new controls system will now come standard with IMT Dominator mechanics trucks and combines strong, reliable hardware with flexible, intuitive software to give operators a productive, user-friendly experience. Core components of the new system include convenient cab controls, service body compartment controls and the wireless remote-control system. Operators will be fully equipped to handle crane and body operation remotely.

The CMD.CTRL™ system is the only controls platform on the market that can operate crane, stabilizers, lights, compressor and auxiliary equipment remotely from the wireless controller.

"We are taking the industry standard to a whole new level by enabling all components in our Dominator trucks to be operated remotely from the same system," says Justin Anderson, marketing representative at IMT. "The new system really provides a one-stop-shop for operators and provides them with the safety, productivity and reliability they deserve."

The CMD.CTRL™ system features an advanced Load Moment Indicator (LMI) provides the operator real time load and safety information. The wireless remote control allows operators to operate all functions remotely. Operators can customize multiple operations, including flood lights, compartment lights, etc. An IP67-rated crane compartment display and remote control modules ensure protection

from the elements, an improved, remote and easy-to-understand diagnostics reduce



error in troubleshooting.
Source: Iowa Mold Tooling Co., Inc.



When the Cordless Screwdriver Replaces the Crane

Can you really turn moulds, tools and even particularly large workpieces with a cordless screwdriver? Yes, you can, thanks to the new RUD Tecdos TMB Tool Mover Workbench from RUD.

The latest innovation from the German drive technology specialist is a novel 2-in-1 combination of workbench and turnover device. It not only allows lightweight and medium-heavy tools to be turned efficiently, but it can also be used to service them directly on the spot, with no loss of time. In addition, the RUD Tecdos TMB saves space and protects the infrastructure in the workshop and during operation.

The new RUD Tecdos TMB has a table size of 80 x 80 cm and can accommodate tools and moulds weighing up to 2.5 t. The latest innovation from RUD is perfect for use in the tool and mould-making and the automotive industries.

"So far, users have been faced with a dilemma, especially in this weight class – because most parts are simply too heavy to be handled manually, but a crane is

also not an efficient solution for something weighing just 2.5 t. This is no longer necessary because our new Tool Mover Workbench makes it so simple to turn the piece using just a cordless screwdriver. It's great that we were able to come up with an innovative solution for efficient, ergonomic and safe handling, especially

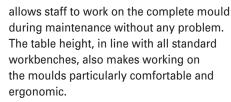
for lightweight and medium-weight pieces. This is a real enrichment and rounding off of our portfolio," explained Anne Kühling, product manager for the Conveyor & Drive division of RUD Ketten Rieger & Dietz GmbH u. Co. KG.

"The Tecdos TMB from RUD lets us safely turn injection moulds, even if there is no crane available at the respective site. In particular, the high level of work safety you get when working with this table is absolutely outstanding," added graduate engineer (FH) Ralph Straberger, managing director of E. Straberger + Söhne Werkzeugbau GmbH, based in Kirchheim, Germany.



Following the RUD Tecdos TM turning table and the RUD Tecdos TS tool separator, the new workbench with integrated turning table is now the 3<sup>rd</sup> innovation from RUD Tecdos mechanical engineering in just under 2 years.

The impetus for the new development came directly from the market, from the Netherlands in fact.



The RUD Tecdos TMB can be attached directly to existing workbenches and can thus be perfectly integrated into factory





"In the Benelux countries, tools are generally somewhat smaller and lighter. For the ranges up to 2.5 t, however, there was no appropriate handling solution to date, mostly just ropes and cranes were used. But that's dangerous and not good for the employees' backs either," said Mrs. Kühling. To address this, RUD not only configured its tried-and-tested RUD Tecdos TM turning table somewhat smaller - for pieces weighing up to 2.5 t - but also integrated a workbench. As a result, both steps (i.e. turning and then working on the tool) can be carried out in one place and on a single piece of equipment - accelerating and optimizing the whole process. This

equipment and processes. Optional side tabletop surfaces serve as an extension to the workbench, shelf or assembly surface.

Compact dimensions of approximately 118 x 67 cm (L x W) make the RUD Tecdos TMB particularly space-saving and flexible to use in the factory and workshop. It can be moved using a pallet truck, forklift or crane. And yet another benefit: The RUD Tecdos TMB also protects the entire infrastructure, such as the production hall floor or crane, because tools and machine components no longer have to be dragged across the hall to maintenance points.

Source: RUD Ketten Rieger & Dietz GmbH u. Co. KG

# Insta-Mix Becomes Distributor of Kovaco Electric-Powered Machines for Ontario and Quebec

Kovaco Company, a Slovak company which has been in business since 1991, established Kovaco Electric in 2020 to bring revolutionary electrical equipments to the world market.



The main goal of Kovaco Electric is to promote a revolutionary all-electric product line, such as the Elise 900 skid steer loader.

The Elise 900 has an operating weight of 3,300 kg, a maximum boom height of 3.4 m and a rated tipping load of 1,800 kg.

Imagine a skid steer loader with superior



performance and capacity but with one difference: its functionality has no impact on the environment!

Kovaco Electric has always seen power in simplicity. This is why it has developed a new type of 100% electric skid steer loader, operating for up to 8 hours on a single charge and being zero emission, it offers a wide range of applications thanks to a large number of accessories. By removing all unnecessary functionality, KOVACO Electric products have become more user-friendly, more intuitive to control and maintain, and based on more future technology. A live presentation is an experience like no other. This knowledge can be implemented in your own business. The concept of simplicity has become one of the goals of the company and since then it has been part of its DNA "Living in the present is not enough, let's think about the future".

One of the peculiarities of the Elise 900 skid steer loader is that it can be operated from the cab like a regular machine, by remote control with a console (optional) or using an application (Samsung phone supplied – which is placed in the cabin, where it serves as an on-board computer and battery control). The app can also be downloaded to the user's mobile phone.

The electric-powered Elise 900 skid steer loader is ideal for agriculture, earthworks and landscaping. Insta-Mix has machines available for demonstration in Toronto, Ontario, and Montreal, Quebec.

Source: Insta-Mix



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# Rolls-Royce Celebrates 25 Years of Excellence with Its mtu Series 2000 and Series 4000

With more than 100,000 engines sold, and with over 320 million operating hours under their belts, Rolls-Royce's mtu Series 2000 and Series 4000 engines are a real success story. Rolls-Royce is now celebrating the 25th anniversary of these engines which have been setting new standards in their class. Rolls-Royce Power Systems has already shipped 52,000 Series 4000 and over 65,000 Series 2000 engines, which are used all over the world in mobile and stationary applications and impress customers with their reliability, efficiency and ever-decreasing fuel consumption and emissions.

When MTU Friedrichshafen (as the company was then known) unveiled the engines at the SMM shipping show in Hamburg, Germany, in October 1996, they impressed the experts right away. The Series 4000 diesels were the first of their kind to feature common-rail injection as standard – even before this technology became de rigueur in the automotive industry.

"The engines were far ahead of their time, and have since been regarded as the industry standard," said Otto Buecheler, who has been involved in the development of these engines from the very beginning and is now in charge of development for mtu Series 4000 marine engines.

"Not only can these engines look back on an impressive history, they're also going to help take Rolls-Royce Power Systems into an even more successful future," said Andreas Schell, CEO of Rolls-Royce Power Systems. "Both the Series 4000 and the Series 2000 are to be certified to run on sustainable fuels from 2023."

"Sustainable fuels are putting carbonneutral mobility and power generation well within reach, even using internal combustion engines," added Dr Otto Preiss, COO of the company.

High performance and high reliability with low emissions are at the forefront of ongoing development work. Most recently, Series 4000 engines for yachts and commercial vessels have reached the pinnacle of emissions regulations with EPA Tier 4 certification. The fact that these emission limits vary depending on engine application and country of use is an additional

challenge for developers.

What makes the Series 4000 engines unique to this day is their versatility. They are used in generator sets for generating electricity, and in haul trucks, luxury yachts and locomotives. The

smaller Series 2000 also has a lot going for it, including its wide range of potential uses. Like its big brother, it powers yachts, ferries, construction site vehicles, haul trucks and gensets, which require lower power ratings. The Series 4000 is available with 8, 12, 16 or 20 cylinders, and with power outputs ranging from 720 to 4,300 kW (965-5,766 hp). The Series 2000 is available in 8, 10, 12, 16 or 18-cylinder configurations, and with power outputs ranging from 452 to 1,939 kW (606-2,600 hp). The



engines share a common platform which allows them to be configured easily for their respective applications.

In future, development work will continue to be minimizing pollutant and greenhouse gas emissions. In addition to releasing the engines for sustainable fuels that enable CO2-neutral operation, their increasing use in hybrid systems is also an important development goal.

Source: Rolls-Royce Holdings plc

# IPD Xtra Expands Product Reach to Emissions Products

Now IPD customers in the U.S. and Canada can gain access to hundreds of emissions products through the new IPD Xtra partnership with Diesel **Emissions** Service (DES) featuring the Redline **Emissions** 



Product brand. The addition of these emissions products will expand IPD's product reach to include a full range of aftermarket replacement parts with Diesel Particulate Filter (DPF), Diesel Oxidation Catalyst (DOC) and associated components for the heavy-duty diesel market, particularly the on-highway market segment.

Source: IPD

## **Safe Transportation for Wind Turbine Components**

Wind turbines of the latest generation are bigger than ever. In order to transport the long and heavy components quickly and safely to their destinations, P. Schwandner Logistik + Transport GmbH, based in Pfreimd, Germany, has added a number of new Goldhofer transportation solutions to its special vehicle fleet. That includes 3 trailers for the reliable transportation of turbine blades with a length of more than 80 m. The hydraulically steerable trailing dollies are fitted with a new hydraulic blade tip carrier certified by Vestas Wind Energy A/S, the Danish manufacturer of wind power solutions.

The larger the wind turbine, the more stable the supporting structure must be. In order to transport the heavy and voluminous tower sections, the oversized cargo transportation specialist has once again placed its trust in Goldhofer's knowhow. Schwandner will be using the new RA 2-110 tower adapters, which can handle tower sections with a weight of up to 110 t and a diameter of up to 6.8 m. The extra payload comes from the combination of a front bogie in the form of a 4-axle dolly with pendulum axles and a heavy-duty THP/SL-S (285) module as the trailing dolly.

Instead of the usual configuration with 2 free-turning devices (gooseneck with bogie and trailing module), the new system has only one, located between the front dolly and the tower adapter. The rear tower adapter is mounted directly on the module. Compared with a completely free-turning solution, this concept gives the entire vehicle much greater lateral stability for greater safety, even at high tilt angles.



Schwandner has also added new Goldhofer blade carriers to its fleet. They are designed to transport extra-long wind turbine blades, i.e. with a length of more than 80 m. This solution is based on a self-tracking trailing dolly for enhanced maneuverability on challenging journeys and at higher speeds, resulting in greatly simplified route planning. To handle the weights, Schwandner uses a combination of a 2-axle front dolly and a 4-axle trailing dolly with pneumatic suspension plus turntable and the Vestas hydraulic Interface located between the turntable and the friction clamp. This additional component serves to absorb the impacts of uneven surfaces on the route, thus minimizing the forces acting on the blades during transportation.

Since the wind turbine blade itself functions as a structural element within the system, it offers significantly more ground clearance than extendable vehicles.

"With this design, the blade simply passes over various obstacles, so that we can negotiate roundabouts and tight turns faster than before," said Peter Schwandner. "In addition, lateral tilt in the blade is indicated on the vehicle itself and also shown on a display in the tractor unit. This is a major contribution to safety, one that we have not seen elsewhere."

The Goldhofer solutions for transporting wind turbine components have already proven their worth in an operation performed by Schwandner for Vestas Wind Energy. The company was awarded the contract by Stena Renewalbe AB, from Stockholm, Sweden, to build the Riskebo onshore wind farm – 39 MW installed capacity with 7 EnVentus V162 turbines, with a rated power of 5.6 MW each. With a blade length of around 80 m, this is the largest rotor size in the Vestas portfolio. It is designed for low to moderate wind speed sites, although the turbine also remains operational at high wind speeds.

For Schwandner, the task was to transport tower sections and turbine blades from the port in Gävle, to Hedemora, about 100 km inland.

Source: Goldhofer AG



**Bosch Expands Its Hydrogen Portfolio** 

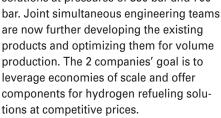
Bosch has expanded its product portfolio for mobile hydrogen applications: as of now, it also includes components for H2 tank systems such as tank valves or pressure regulators. For this purpose, the supplier of technology and services has entered into an engineering partnership with the Italian specialist OMB Saleri in which the products are jointly further developed.

"In the drive to achieve climate neutrality, hydrogen will be an important building block in the future powertrain mix," said Dr. Uwe Gackstatter, president of the Bosch Powertrain Solutions division. "Together with OMB Saleri, we are making H2 tank components ready for volume production."

Demand for powertrains that run on hydrogen will experience strong growth in the years ahead, especially in commercial vehicles. Bosch expects that by 2030, around 1 in 8 newly registered commercial vehicles worldwide will be powered by a fuel cell. Bosch and OMB Saleri hope that the partnership they

have now put in place for components for hydrogen refueling systems will expand their market positions in the H2 sector. Their collaboration includes a licensing and engineering agreement for several products relating to hydrogen storage





#### **BOSCH AND OMB SALERI POOL EXPERTISE**

The partnership brings together the two partners' know-how. The Italian technology company OMB Saleri, based in Brescia in Northern Italy, is considered one of the world's leading specialists in components for hydrogen storage solutions. As a partner, Bosch will benefit from its engineering expertise, a modern H<sub>2</sub> test infrastructure and testing stations, and components that have already proven their worth in initial applications. In return, Bosch will contribute its experience in the commercialization of innovative products as well as a global development and manufacturing network for large volumes.

#### **BOSCH IS WORKING ON MOBILE AND** STATIONARY FUEL CELLS

Bosch believes that hydrogen has a bright future as an energy carrier, and is making considerable upfront investments in this area. From 2021 to 2024, the company plans to invest around 600 million € (850 millions \$) in mobile fuel-cell applications and a further 400 million € (570 millions \$) in stationary ones for the generation of electricity and heat. The portfolio for vehicles ranges from individual sensors to core components such as the electric air compressor and the stack to the complete fuel-cell module.

Source: Bosch Group

## **Isuzu Enters Class 7 Market** in North America with F-Series **Featuring Allison Transmission**

Allison Transmission recently announced that its 2500 Rugged Duty Series™ (RDS) 6-speed fully automatic transmission has been integrated into Isuzu Commercial Truck of America's first F-Series Class 7 truck model. In addition, Isuzu's new F-Series Class 6 truck model will feature Allison's 2550 RDS 6-speed fully automatic transmission.



Allison's 2500 and 2550 RDS transmissions, with available FuelSense 2.0 software, will be paired with the proven Cummins B6.7 diesel engine to increase performance and provide drivers with superior control. The Allison 2500 without park pawl has been integrated in the Class 7 capable Isuzu FVR model. The Allison 2550 with park pawl has been integrated in the Class 6 FTR model. The robust powertrain is engineered to provide the optimum blend of power that drivers demand with the fuel economy and reliability that owners know and expect from this proven combination.

The highly anticipated 2022 F-Series Class 6 and Class 7 trucks are now in production, exclusively with the Allison fully automatic transmission. Their low cab forward design provides more cargo capacity versus conventional cab competitors with a comparable wheelbase. This gives customers more versatility with their body application choices to accommodate heavier or bulkier cargo loads. Allison fully automatics are also available on Isuzu's N-Series Class 5 truck models.

Source: Allison Transmission

### **Appointments**

MAN Truck & Bus SE recently announced the appointment of Mikael Lindner as head of MAN Engines and senior vice president of MAN Truck & Bus.

MAN Engines has operated as an independent business unit within the Group since the beginning of 2018, which has significantly improved its market and business management.

Mr. Lindner will lead the team of management.

ers responsible for strategy & business development, sales, finance, and development at the international engine competence center in Nuremberg, Germany. His goal will be to ensure that the well-established components business of MAN Truck & Bus continues to thrive, to benefit from the strengths within the Group, and to position the company firmly in the direction of future technologies.

Mikael Lindner has been in the engine industry since 2003. He studied mechanical engineering at the Royal Institute of Technology in Stockholm and graduated with a Master of Science (M. Sc.) degree specializing in industrial engineering and business administration. He was also nominated to a study place on the IFL Executive Management Program FEM at the Stockholm School of Economics. In his previous position, Mr. Lindner headed up the national organization in Japan for the distribution and service of trucks, buses and engines from Swedish commercial vehicle manufacturer Scania, which, like MAN Truck & Bus, is also part of the Traton Group.

Source: MAN Truck & Bus



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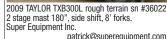
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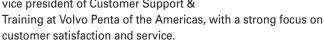
New PETTIBONE T944X, 74 hp Cummins QSF3.8, 9,000 lb capacity, 70" horizontal boom transfer. Super Equipment Inc.

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Volvo Penta recently announced the appointment of **Tony Kelleher** as a new member of the Volvo Penta executive group. As of December 1<sup>st</sup>, he has been appointed as the acting president of **Volvo Penta of the Americas**. Mr. Kelleher has several years of experience within Volvo Penta in a wide range of roles and locations around the world. In his current role, he serves as the vice president of Customer Support &



"It is exciting to have Tony on board within the Volvo Penta Executive Group," said Heléne Mellquist, president of Volvo Penta. "He has a strong focus on the customer perspective and is well-respected across the Volvo Penta organization. I am confident he will support our employees, customers, and key stakeholders in a leading way."

Martin Bjuve left the Volvo Penta executive group. Since January 1<sup>st</sup>, 2020, he has served as president of Volvo Penta of the Americas. This is a mutual agreement between Martin Bjuve and Volvo Penta. Mr. Bjuve will remain in the Volvo Group and has decided to take the lead on a new assignment reporting to the president of Volvo Penta.

The recruitment of a new president of Volvo Penta of the Americas is ongoing.

Source: Volvo Penta

Visiconsult GmbH recently announced that Jeff Darby joined as general manager, Americas Region, including Canada, North America, and Mexico. Mr. Darby comes to VisiConsult with 30 years of diverse multi-industry experience working in the X-ray and CT markets with world-class companies like Philips, Carestream, and Creative Electron. His work with channel partners and strategic accounts is grounded in a customer-centric philosophy that promotes long-term relationships and mutual success.

"There are currently two more open positions for automation engineers and service technicians in the U.S. This shows our strong focus and commitment on the North American market and reflects our growth in that region," said Lennart Schulenburg, general manager of VisiConsult.

VisiConsult, located in Northern Germany, is a leading supplier for customized and standard X-ray inspection systems for non-destructive testing and security.

Source: Visiconsult GmbH



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#### • WEIGHTS

Rated operating weight Total weight of the loader

#### ELECTRICAL SYSTEM 7 275 lb

9 259 lb

Battery life under load 240 Ah Battery 2 - 6 h Battery life under load 400 Ah Battery
Charging time 100% 8+ h 53h

#### Charging time 80% Battery type

#### 3 h lead-acid

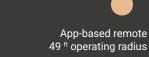
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## **Agenda**

#### bauma CONEXPO INDIA

Rescheduled to 2022 Greater Noida/Delhi, India

#### **Landscape Ontario CONGRESS**

January 11-13, 2022 Toronto, ON Canada

#### **World of Concrete**

January 17-20, 2022 (Education) January 18-20, 2022 (Exhibition) Las Vegas, NV USA

#### Work Truck Show

March 8-11, 2022 Indianapolis, IN USA

#### World of Asphalt

March 29-31, 2022 Nashville, TN USA

#### **National Heavy Equipment Show**

March 31 - April 1, 2022 Toronto, ON Canada

#### **Atlantic Heavy Equipment Show**

April 13-14, 2022 Moncton, NB Canada

#### **APOM Technical Day**

May 12, 2022 Granby, QC Canada

#### ΙΕΔΤ

May 30 - June 3, 2022 Munich, Germany

#### **AORS Municipal Public Works Trade Show**

June 1-2, 2022 Barrie, ON Canada

#### Svenska Maskinmässan

June 2-4, 2022 Stockholm, Sweden

#### Canadian Mining Expo

June 8-9, 2022 Timmins, ON Canada

#### Hillhead

June 21-23, 2022 Buxton, Derbyshire, UK

#### M&T Expo - Trade Fair for Construction and Mining Equipment

August 30 - September 2, 2022 São Paulo, Brazil

#### **APOM Technical Day**

September 15, 2022 Saint-Zotique, QC Canada

#### InnoTrans

September 20-23, 2022 Berlin, Germany

#### hauma

Rescheduled to October 24-30, 2022 Munich, Germany

#### CONEXPO-CON/AGG

March 14-18, 2023 Las Vegas, NV USA



bauma

#### International Rental Exhibition (IRE) / APEX access show

Rescheduled to 2023 Maastricht, the Netherlands

#### stein*expo*

Rescheduled to Summer 2023 Homberg/Nieder-Ofleiden, Germany



#### **INTERMAT Paris**

Rescheduled to April 2024 Paris, France







# **LEADING ASPHALT TRADE SHOW AND CONFERENCE**

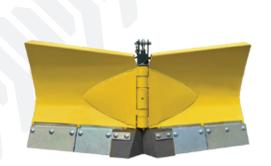
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March 29-31, 2022 Nashville, Tennessee

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