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The Power of One

Hexagon's Mining division introduced the Power of One, describing the concept as a holistic, life-of-mine smart solution connecting sensors and software, infield apps and cloudware to empower digital transformation. For mining professionals, it offers the scalable, platform-agnostic answer to challenges previously addressed by point solutions and multiple vendors: drill-and-blast, collision avoidance, operator alertness, fleet management, operator assist, machine control, asset health and more. It points the way to a safer, more productive and sustainable future.

"The Power of One marks the next step in Hexagon's convergence journey and the fulfillment of a commitment to connect all parts of a mine," Hexagon Mining Division President Nick Hare said. "By harnessing data from multiple sensors in a simple and consolidated software architecture, we empower mines to become situationally aware, self-learning and autonomously connected in the field and in the cloud.

For the mines, the Power of One approach means reduced cost of ownership, reduced deployment and training time, reduced supply chain complexity and increased operator adoption. "This is a landmark enabler for next-generation autonomy, offering mines a uniquely intelligent approach based on open architecture," Hare said.

"This is a milestone in a journey that began during the last MINExpo, soon after we announced the mining division," Hare said. "Since then, we have assembled a team and established the brand, now we're doing what the industry always expected, bringing all of this technology together on one platform."

Hexagon Geosystems COO Josh Weiss knows the challenges firsthand. Before moving to Hexagon from the mining industry, he had to maintain 50 different applications including some DOS apps. These systems were complex with different technical details and architectural strategies, Weiss explained. He encountered a similar situation at Hexagon and in 2016, he led an effort to organize all the disparate technologies, breaking down silos to connect what's planned in the office with what's happening at the mine site.

"With this path toward automation, we are optimizing the process by connecting the mine plan to the fleet management system and connecting that to the truck," Weiss said. "With the Power of One, there is the culmination of the technology and now the evolution of it."

For the mines, however, the return on investment needs to be quantifiable. "Each application has its own tangible approach," Weiss said. "With autonomy, we know the industry had some technology hurdles to address, so we developed a building block approach with various semi-autonomous capabilities to address immediate needs, such as reverse assist, which automates the truck spotting process to prevent metal-to-metal contact. This has now become a cycle time optimization tool. With the building-block approach, we are also calculating the optimal path for autonomy if the customer decides to eventually move in that direction."

As a technology provider, Hexagon's biggest advantage is its safety ecosystem — collision avoidance, fatigue monitoring and personnel alerts. "Our safety portfolio is by far the market leader," Hare said. "We have 45,000 to 50,000 vehicles equipped with collision avoidance and 10,000 miners protected by operator alertness systems.

"We came to the realization a few years ago that convergence, as in bringing it altogether, was the best approach for the future," Hare said. "Convergence combines everything in one common platform, which saves money and time, especially when you consider that a haul truck has eight GPS antennae, four computer boxes and an operator display. If six different vendors were supplying those systems, the truck would experience a great deal of downtime with system installation, trouble shooting and maintenance. Hexagon serves many different industries and it has a centralized group called the Innovation Hub. They perform pure research and try to solve industry agnostic challenges, such as machine learning and artificial intelligence (AI), Weiss explained. "We can draw on those resources and the company's experience with the construction and automotive sector," Weiss said. "People used to say the mining industry lagged 10 years behind in technology adoption. In the last five years, we have not only caught up, we have leapfrogged other industries especially with this path of intelligent autonomous mining. We also lead all other industries when it comes to safety programs and procedures."

During MINExpo 2021, Hexagon's Mining division and Liebherr announced a global framework agreement that advances the next generation of mine automation. Hexagon technology, including its autonomous mission management system, will be used in the mine automation options offered by Liebherr to customers. The autonomous mission management system will orchestrate autonomous fleet and unmanned mine traffic movements throughout the mine for optimized autonomous haulage. Integrating the power of Hexagon's technologies with Liebherr's interoperable solutions will enhance on-board intelligence, reducing dependency on site infrastructure and centralized supervisory systems.

Hexagon's Mining division also announced a partnership with Hard-Line, a leading supplier of automation, teleoperation and remote-control technology for underground mining. Hard-Line's TeleOp product allows for the teleremote operation of trucks and LHDs from a control station in a safe area on the surface or underground, regardless of distance. Hexagon will distribute TeleOp, further strengthening its market-leading portfolios for safety and autonomous solutions.

Hexagon also launched HxGN Mine-Measure, a tailored solution combining blast design software, high-precision drilling, blast movement monitoring, fragmentation analysis and enterprise analytics. Backed by a consultative team of dedicated technical experts, the company said MineMeasure would bring accuracy and precision to every step of the drill and blast (D&B) process with the potential to save companies millions of dollars.