Hexagon reshapes tech landscape

Richard Roberts, of *Mining Journal*, attended the HxGN Live 2014 event in Las Vegas in June. Here he reports on the event and the launch of new company Hexagon Mining

Hexagon AB CEO Ola Rollén … Hexagon Mining story starts here

Hexagon Mining will look to be a key partner in the global mining industry's drive to use technology more effectively, and be a central player in long-awaited technology convergence in the mobile equipment arena, as it bids to more than triple in size in the next five years.

Already one of the world's largest mining technology suppliers after the recent joining of Brazil's Devex, Switzerland-based SAFEmine, and US-based Mintec with Leica Geosystems under the Hexagon Mining umbrella, the newly created mining vertical within publicly-owned Swedish tech-firm Hexagon was the big story at the group's annual technical and customer event in Las Vegas, Nevada, in June.

"Hexagon Mining… is the biggest, most important message this week," senior Hexagon Mining executive Haydn Roberts said at the conference.

The group's charismatic chief executive, Ola Rollén, has backed an aggressive acquisition strategy over the past decade that has seen Hexagon's annual sales surge past €2 billion (US$2.7 billion) and its business footprint extend to most parts of the globe.

"Why mining makes sense right now is because mining is going through a trough," Rollén said in Las Vegas. "And we're not about volume, we are about making clever mines; improving productivity and cost. This is what the mining industry is looking for right now – for a solution to reduce OPEX, reduce production costs and maintain profitability."

Specifically, said new Hexagon Mining president Guilherme Bastos, the company is about delivering recognised market-leading mine-fleet management, planning software, vehicle collision avoidance and operator fatigue monitoring, surveying and machine guidance, and mine automation and supervisory products and systems to an expanding customer base – and creating a new suite of integrated solutions.

HARNESSING POTENTIAL

Hexagon Mining has about 750 direct employees and offices in most of the world's main mining regions. It has products carrying its brands in hundreds of mines across the globe. Ironically, according to Mintec president John

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Davies, there might only be one or two sites where all the Hexagon products are being used.

That is both a hint of the enormous opportunity in front of the new business, and confirmation that the technologies that could really transform mine fleet and resource management over the next decade are generally at an early stage of adoption across the industry.

Every key supplier has its 'champions' in terms of implementing the core planning, mine-asset and people management technologies – all areas where potential benefits have been magnified by big computing power and better communications infrastructure – but the broader narrative is very much about the productivity and safety improvements still to come from more standardised implementation across the industry.

"The 'fixed-plant' component of many mine sites – the grinding and mineral processing complexes – was generally '20 years ahead of us in the pit' in the implementation and effective use of industrial automation and asset management technologies," Teck Resources' operational technologies director Peter Cunningham said at the Hexagon event.

Cunningham described a "golden age of putting technology on everything that moves" in mining that created a need to integrate and streamline in-vehicle monitoring and control systems, and a greater need for transparency, "one source of the truth", and smart analytics at the supervisory level.

"What's new for us is now we've got networking capacity and computing capacity where you can stream 600 vital signs from a haul truck into a database in the office and then figure out what to do with that data," he said.

"So now when we're selecting our

technologies, we select them not only for meeting the requirements that operations need to address safety, asset management or optimisation, but we can also put into the mix that the technologies need to integrate – that things need to converge, and often there is no integrator that my team can turn to. We [Teck] are the integrator, and I think that other mining companies will be starting to do this more in the future. This is something that I think Hexagon is in an immediate position to seize."

Cunningham echoed the views of a number of Hexagon mining customer presenters at the event when he said that better change management was vital to effecting the cultural adjustment needed in the industry to speed technology adoption and success rates.

"Change management, culture change, education… are absolutely critical with all these technologies, because otherwise I'm the guy who deals with all the cut wires, you would be surprised how much of that goes on in a mine where things have not been rolled out properly," he said, referring to operator perceptions that some fatigue monitoring devices, for example, were too invasive.

"The technology strategy must support an ecosystem of culture change and of education, and the workforce [*and in some cases unions*] really need to be bought into this," he added.

Baldomero Gutierrez, IT director at Fresnillo, said the Mexican precious metals producer saw significant benefits in technologies such as the Hexagon Devex SmartMine underground mine management and automation platform, deployed at one site so far, and in the implementation of a group technology strategy being devised with Hexagon.

"The technology works," he said. "The change management issue is the biggest challenge for us." ▶

▶ MACHINE GUIDANCE

In Mongolia, where wet coal processing is considered 'new technology' at this stage, coking coal producer Mongolian Mining Corp (MMC) has spent about US$4 million on Hexagon fleet management, machine guidance and other systems that Australian chief operating officer Sam Bowles says is vital to unlocking productivity and cost gains.

Improvements in processing and transport costs are being targeted in the tough environment for coal producers, but Bowles said cost reductions represented the "big prize" at the company's Mongolian operations, given they represent half of the total unit cost per product tonne. He said that MMC's Ukhaa Hudaag operations, like a lot of other sites, had just scratched the surface of realising gains from the application of high-precision machine guidance and fleet management system technologies.

"Take high-precision machine guidance," Bowles said. "It is far more widely and effectively used in the civil construction area, where margins are consistently a lot tighter."

Bowles acknowledged that the potential upside for miners, given the value in the ground being moved, and the scale of leverage on offer via better utilisation of such hugely capital-intensive fleets, was far greater than in other industries.

"But in my experience we're only using 10-15% of the potential of the technology," he said. "Training and better people management is a real key to unlocking the rest. I think our company is at the start of a long journey in how to use this technology. Most mines are at the beginning of the curve in terms of utilising what's available. This is just fantastic technology. As an engineer I love having access to the data and being able to definitively measure, record, report and show people the path you want to take."

Hexagon Mining's Roberts said: "I think the poor use of machine guidance is due to the fact that the plans have not gone out into the field, and people in the office – the dispatchers – can't actually see the plans [against] what the machines in the field are doing.

"In the past, if you wanted to send out the switchback design for a ramp design it could go out on a piece of paper, and you'd look at in the foreman's office, and someone would go out with pegs and peg it out. What you want to do though is send it out to that machine – the dozer or the front-end loader – and see in a visually rich way the 3D nature of what the operator is doing and see how the work is

progressing in relation to the plan, in real-time, whether that's back in the office or in the foreman's vehicle. That's been missing from machine guidance, where you couldn't get really good designs to the machine and then also monitor it.

"That's why the embedding of GeoMedia [*Hexagon's open GIS database software*] into fleet management – this concept of putting terrain into the optimisation process along with time, tonnes and grade – is going to set machine guidance on fire. People are going to use it much more."

KNOWLEDGE RETENTION

In terms of helping the mining industry overcome intermittent training and knowledge retention deficits, and improving technology deployment and effective operational use, Roberts said Hexagon's focus on mobile fleet management technology integration and convergence, and new supervisory systems would introduce new levels of automation and simplify workflows.

"That's one step that we want to take," he said. "The other is around big data analytics, where you want to get, as we say, actionable information out of it in a succinct way. So smart dashboards that can actually indicate where you've got a problem in the mine, and identify, for instance, a shovel operator who is in the lower performance quartile. Help people identify continuous improvement opportunities, and utilise that in an application where you don't have to rely on your A-player foreman to do it, because I think that's a problem the industry has.

"If you get a good group of people together and they're really motivated in a mine, you'll sit down, work out how you're to do things and put a process in place. But it's ad-hoc and manual. When those guys leave or move on, it's gone – the process evaporates. If we can institutionalise that learning in the software we offer and allow people to identify weak spots and opportunities, we can assist the industry with its knowledge retention and training issues. And of course, we can also automate workflows."

Davies added: "There is a lot more to the convergence side of this too. Today we have operators sitting with lots of panels in front of them in a truck trying to figure out what's going on with each panel. Bringing together the technology into one platform and one display, you've solved a lot of training issues because now they're training on one platform rather than 10. And it's the same with software. We've seen [*here*] the great platforms being used in the construction areas; they're using standard platforms,

and we look at these and go wow, if we can standardise on some of these platforms in our software processes. Not right away, but in the future. Then we'll have a set of rich tools that everybody on the site – engineers, geologists, construction people – can all be using."

OPEN FOR BUSINESS

Bastos says technology convergence is central to the mobile-mining operations environment, harnessing the benefits of automation and data-driven proactive management seen in the mineral processing (and broader industrial process) arena over a considerable period.

"We see a great opportunity to offer a more open platform where miners can use our technology to integrate and converge other solutions, to simplify things. It's been happening in the processing plant for the last 30 years," he said.

"You have a supervisory system, a SCADA system, which is the backbone for automation. When you need to improve your productivity, for instance in flotation, you can have the best company in the world come in and plug their system into the SCADA system – no pain, no discussion, no big deal, or complex agreement between the first supplier that put in the backbone and the specialist in flotation. They use the supervisory system to get the data into the control room where they can optimise the process. There we see more standards – open standards, protocols to communicate, etc.

"The mobile environment in mining is a bit different. But… we have the capability to approach this differently but with this mindset where the things have to be simple and integrate more seamlessly. People need to reduce the costs, improve the productivity and we see that it's necessary to eliminate the gaps. Each [*mining*] company feels like it is special, with some specific problems that are difficult to solve if we don't do something in a certain way or produce a tailor-made solution. That's true, to a point, but we have to find a way to reduce the investments necessary to solve problems."

He adds: "We see the open platform as a very strong differentiation compared with other companies in the market. We're not closing our solution to others. Our database is open. We are happy to be open with our competitors, we don't care if they want to use a different mine planning, or different fleet-management system, because at the end of the day we believe that in the future if we fill the gaps and this is going to be our main advantage, not trying to keep the market by force [*supplying capital equipment and technology*]. ▾

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