



Maestro's Plexus PowerNet delivers a high-speed, low-latency digital communication network that provides PoE+ power to wireless access points (WAPs), cameras and any other IP-based device

In full flow

Ailbhe Goodbody speaks to Maestro Digital Mine's Michael Gribbons about the latest trends in mine ventilation and how the company is going from strength to strength

"We now have installations at over 130 mines globally, and are in six of the seven continents with systems in over 20 countries"

Maestro Digital Mine is a technology provider that serves the underground mine ventilation and automation sector. It has several large projects in the execution phase at mines belonging to various mining companies, including Vale, Glencore, Barrick Gold, Newmont and many other mid-tier mining companies.

The company has had several product launches in the past year. Its Ethernet/I/O, which made its debut at the SME conference and expo in Denver, US, in February 2019, is a digital solution that helps to reduce or eliminate the use of complex and expensive programmable logic controllers (PLCs) in the underground mine environment. At the CIM convention in Montreal, Canada, in May 2019, the company launched its Zephyr air quality station

(AQS), a compact, low-cost digital IIoT solution for underground mines.

"2019 was another stellar year for Maestro," says Michael Gribbons, co-founder and vice president of Maestro Digital Mine. "We now have installations at over 130 mines globally, and are in six of the seven continents with systems in over 20 countries."

For example, Maestro has recently worked on several of Vale's mining projects in Canada. Its work at Vale's Copper Cliff mine in Sudbury, Ontario, is nearing completion, with the company supplying the complete ventilation monitoring for the mine along with level-by-level traffic and air quality visual displays. Gribbons comments: "We continue to supply Vigilante AQS air quality stations, SuperBrite marquee displays and now Zephyr AQS at this location."

Vale's Thompson mine in Manitoba is in the process of installing Maestro's MaestroFlex regulators and Vigilante AQS air quality stations at the bottom of its new development, as well as testing a few SuperBrite marquee displays. In addition, the Voisey Bay mine in Labrador has awarded Maestro with the supply of the ventilation monitoring and control equipment for the mine along with all of the regulators to support advanced ventilation controls.

Glencore is another recent customer; the Raglan mine in northern Quebec has recently awarded Maestro its ventilation monitoring project, while the company's Onaping Depth project in Sudbury has selected Maestro for the underground monitoring and controls as well as automated dampers. Gribbons says: "This is an ►

► ongoing project for the next few years until completion.”

In the US, Maestro has worked with Barrick Gold’s Cortez and Turquoise Ridge mines in Nevada to continue to add air quality stations to their networks. Gribbons notes: “They use Vigilante AQS, GasMon and now the new Zephyr AQS air quality stations.”

VENTILATION TRENDS

A significant market trend that Gribbons says has clearly led the way in recent mine ventilation projects is blast gas clearance optimisation that dovetails into productivity improvements – Maestro calls this ‘more time at the face’.

“For example, a 10-20% increase in daily time at the face far outweighs a 10-20% decrease in energy consumption,” explains Gribbons. “Productivity trumps energy in almost all projects.”

Another theme in mine ventilation that Gribbons highlights as being extremely important is worker health and safety. “It has become abundantly clear that not all the mines understand how to or have the

resources to properly maintain ventilation monitoring and control equipment,” he says.

“If you are expecting to increase the time at the face by monitoring blast clearance through air quality monitors, they had better be in good condition and calibrated regularly otherwise you put the worker in harm’s way. This is the second re-occurring theme once the ventilation control project has been executed.”

Looking to the future, Gribbons states that Maestro sees two new emerging trends in the underground mine ventilation sector. “Firstly, many mines are monitoring and controlling their ventilation requirements based upon a ratio of diesel BHP [brake horsepower] to airflow rate,” he says. “Otherwise, a dilution rate is needed to provide fresh air for the people and equipment to safely operate in a confined space.

“With the addition of more and more electric vehicles without any exhaust emissions, the control set points will be based upon different measurements. In hard rock mining, the mines will still need to deal with the quick elimination of blast gases –

but during the mucking, bolting, screening and drilling cycles, far less ventilation will be required.

“The next two contributing factors will be on-line, low-maintenance and cost-effective dust monitoring along with worker heat stress for hotter mines.”

Gribbons notes that now that real-time environmental air quality data is available and working in the 130+ mines that Maestro has installations at, the next challenge to solve is real-time monitoring of the diagnostics to assure that each of the air quality stations is operating, reporting and being calibrated correctly. He tells *MM*: “This is our focus in 2020 with the release of MaestroLink Server, which is already successfully in beta testing in both Canada and Australia.”

According to Gribbons, MaestroLink Server will be released and fully available for sales in June 2020.

“MaestroLink Server is an affordable software package that will monitor the complete health of all of Maestro’s products,” he says. “Since all of Maestro’s products have been built using digital technologies,

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there are embedded diagnostics that can now be captured on surface. The server is pre-configured to allow plug-and-play and a very simple set-up."

MaestroLink Server will capture all the diagnostic functions on Maestro's devices and provide clear and straightforward actions to service the equipment. He explains: "Instead of making three trips underground to fix something, the maintenance department will know on the surface what is wrong, what needs to be done, what tools and spares to bring underground in advance. The devices act in real time, so this will be on a beautiful visual screen available to anyone on the network with a suitable password."

NEXT STEPS

According to Gribbons, Maestro's leadership team continues to evaluate technologies from sectors outside of mining to give the company an advanced view of the roadblocks that may exist in the mining sector in the near future. "Many of these technologies can be applied to mining, but still need significant effort to



make them maintainable underground with preferably a non-skilled labour force," he says. "Think of what Apple has done to allow grandmothers to use technology like they have used a toaster oven."

He notes that Maestro's leadership team will not go ahead with a new development project unless it can offer the mining company a 50% CAPEX reduction over the current methodology and/or reduce the integration time by 50%. He says: "This is a big hurdle to climb in our evaluation of new products but

assures us that we will have winners if executed properly."

Gribbons adds that Maestro already has excellent penetration into mining markets in both Canada and the US, so all upcoming new products in this region will be a bolt-on to the company's existing brands.

"Our 2020 growth plans are in Latin America, with three new distributors/agents located in the excellent mining markets of Argentina, Chile and Mexico," says Gribbons. "We already have an excellent grip in Peru with an existing high-performing distributor." ▼

Maestro's Vigilante AQS is a third-generation underground mine air quality monitoring station designed with an improved communication platform

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