

The first gigabit network providing both data and power using coaxial cable.

## GOLDCORP BORDEN GOLD

Goldcorp's Borden Gold Lake Mine is located in Northern Ontario, 11 kilometers northeast of Chapleau, Ontario. Goldcorp is one of the world's largest gold producers, and approximately half of its direct gold production comes from Northern Ontario, Canada. The battery powered all-electric mine proposed by Borden will be the first of its kind in Canada. This innovative, challenging, and collaborative undertaking aims to demonstrate near-commercial battery powered electric mining equipment throughout the underground mine.

Goldcorp is a proven leader in implementing innovative solutions into their operating mines. Partnering with like-minded technology suppliers such as Maestro Digital Mine to improve health and safety performance and reducing greenhouse gas (GHG) emissions. Borden Mine first started using Maestro's digital ventilation technology, the Vigilante AQS™ air quality stations, to measure environmental conditions for worker health and safety and to reduce installation infrastructure costs. With this initial success, Borden Mine soon became one of the first mines to integrate the Plexus PowerNet™ which addresses the challenges associated with extending fiber optic based communication backbone solutions for "last mile" data applications. The Plexus PowerNet system quickly extends communication and end-point power using copper coaxial cable to the face.

### The Challenge

Borden is set to be Canada's first all-electric underground gold mine, which will be safer for their employees and have a smaller environmental footprint. Goldcorp expects to begin commercial production at the mine in the second half of 2019. Borden depends on digital technology and

intelligent controls, including tele-remote technology to maximize equipment use for continuous mining. Part of getting an underground mine online for production means embedding and advancing critical communication infrastructure throughout the mine and towards the face. Borden uses fiber optic cabling as far as the level entry or electrical sub-station as do most modern mines. While fiber optic cable provides high data rates and is reliable, it also presents challenges to the underground mining industry. Extending delicate, fiber optic cable to the high traffic headings (the face) where the data is essential is challenging and the fiber optic cable can get damaged, causing production delays. Terminating fiber underground is difficult, time consuming and requires expensive specialized training, which is frequently, the biggest contributing factor limiting the advance of connectivity. At the entrance of each mine level, 144 strand fiber is terminated in a fiber patch panel along with adding a CISCO network switch. Borden was then limited with communications from the network switch out to the face. Bringing fiber to the face is problematic and costly to repair.



Borden required a durable solution that could bring both data and power to the face of each mine level that is easy to install, advance and repair on site. Once Goldcorp learned about the Plexus PowerNet advantage and understood its value immediately, they took steps to integrate the technology into operations.

## The Solution

The Maestro Team jumped at the opportunity to partner on this landmark mine and coordinated with Goldcorp's Team at Borden led by Patrick Gilbert, Electrical Manager and Paul Fortin, ITT Infrastructure Analyst, to bring their team up to speed on the technology and how to install and use the Plexus PowerNet nodes.

*Patrick Gilbert, Goldcorp remarked, "Plexus is easy to install, easy to advance and easy to navigate the webpages. All of this can be done by our technicians including any emergency repairs."*

Patrick goes on to say, "One of the advantages of the Plexus PowerNet nodes is that they arrive with the durable aluminum plates already pre-drilled and with all the required electrical connection fittings. So, we just bolt it to the wall and go! For example, when you are in a jam at the face, you just go the source of the damage, cut the coaxial cable and put a new section of the rugged coax on with a splice and you are back at it. Back in business! No time delays. For the IT department, the Plexus PowerNet delivers a high speed, low latency digital communication network. Everything is clear and straightforward with the Plexus."

Goldcorp has now connected the Plexus PowerNet to the existing fiber communication backbone with

Wi-Fi access points (WAPs) and is using it primarily for the most demanding application – Sandvik's – AutoMine® LHD tele-remote application. Once Goldcorp has their tracking system connected, they will be adding other telemetry devices and high definition PoE (Power-over-Ethernet) cameras to the Plexus.

## Outcomes

Goldcorp's Borden Mine continues to expand the Plexus on each new level to provide a solid communication network in time for full production. Patrick Gilbert reflects, "The Plexus is a proven technology at Borden, it works! We are at a critical time in our production schedule and the simplicity of the Plexus PowerNet is working well with the team and will play an important role for monitoring the activity and keeping our workers safe at the face."



**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. The system eliminates the need for costly outside fiber optic contractors and can be installed and maintained by any internal tradesperson.