

Goldcorp's Éléonore: Internet of Things Enables the Mine of Tomorrow Today



EXECUTIVE SUMMARY

Company: Goldcorp
Industry: Mining
Location: Vancouver, Canada
Employees: 19,000 employees

Challenge

- Maximize production efficiency by tracking all mining operations
- Keep employees safe with remote operations and monitoring of hazardous work areas
- Control production costs through better asset and site management

Solution

- Real-time visibility, monitoring, and ventilation control provides support for ventilation on-demand system
- Single multiservice IP network provides wireless connectivity in demanding environments
- Partner RFID solution enables live tracking of all people and assets anywhere in the mine

Results

- Ventilation on demand reduces energy costs between \$1.5 and \$2.5 million per year
- Improved tracking enables the mine to locate employees instantly in the event of an emergency 45 to 50 minutes faster than before
- Enhanced asset tracking provides near real-time insight into the status and location of equipment for safer and more efficient operations

Canadian Mining Firm Enhances Workplace Safety and Boosts Efficiency

Business Challenge: Safeguard Workers, Maximize Efficiency

In the remote and rugged landscape of northern Canada, the Éléonore mine stands out like a lonely city, comprised of more than 1,000 people. Far beneath the frigid soil, hundreds of Goldcorp employees are mining 3500 tons of rock a day in search of gold.

One of the world's fastest-growing gold producers, Goldcorp runs operations and development projects throughout the Americas. A Canadian company headquartered in Vancouver, British Columbia, Goldcorp employs more than 18,000 people worldwide.

Goldcorp is committed to responsible mining practices and maintaining maximum safety for its workers. At the same time, the firm is constantly exploring ways to improve the efficiency of its operations, extend the life of its assets, and control costs.

"We have always been obsessed by continuous improvement for our people in terms of health and safety, as well as efficiency," says Guy Belleau, Mine General Manager at Goldcorp. "We are constantly aiming to improve every area of our business."

To make this vision a reality, Goldcorp needed technology that can deliver improved visibility and management over its operations, regardless of where they are.

Solution: Build the Connected Mine

To get the insight and control it needed across the Éléonore mine, Goldcorp deployed a Cisco® Connected Mining solution. With Cisco, Goldcorp can manage its communications and mining operations on one multiservice, secure IP network. Built to withstand harsh conditions, the solution delivers unified, secure access from any device and any location.

“It’s important to use and maximize technology wherever we can so that we can improve safety, quality, efficiency, productivity, and cost. We do that because we want to raise the bar in every area of our business. Every day we wake up and we find ways of doing things better and smarter, and this is a living example of achieving that objective.”

Guy Belleau

Mine General Manager,
Goldcorp Éléonore

At the heart of the solution is a robust Cisco network underground, which enables the firm to track people and equipment at all times. This solution helps Goldcorp respond to emergencies immediately, locate equipment, and manage its energy usage and costs with ventilation on demand.

The firm added several components from Cisco partners, including an intelligent ventilation system to conserve energy and improve airflow. The automated fan systems respond to signals emitted from AeroScout Industrial’s RF tags, which are tracking devices worn by all underground employees and installed on all 80 pieces of underground machinery. With the combined solution, Goldcorp can track real-time locations of both employees and machinery, and measure air quality for optimum working conditions. As miners and vehicles pass into various areas of the mine, the system powers on the fans only as needed, even adjusting the fan speed based on the carbon emissions expected from the specific vehicle type. This solution allows the company to optimize ventilation and also reduce its energy costs.

“Having a proper tracking system gives us the ability to support ventilation on demand,” says Pascal Morin, Manager, Technology and Communications at Goldcorp. “At any time and in every area, it allows us to send the exact volume of air where we need it, when we need it.”

“To track a vehicle or a human, we have to install an RF tag,” explains Patrick Gilbert, Meglab Electrical General Foreman at Goldcorp. “We need to know for ventilation on demand if the diesel motor is running or if it is stopped. If I jump in the vehicle and start it up, the engine is producing carbon monoxide, so we need more ventilation to clear the gas produced by the machine.”

With a dependable network that delivers nonstop, dependable connectivity throughout its sites, Goldcorp can also improve communication and collaboration to make better, faster decisions.

“With our Cisco solution, we have the ability to support Voice over IP phones,” says Morin. “Employees can enter the mine with their iPads and their iPhones and communicate with their co-workers.”

Business Results: A Safer, More Profitable Operation

With its Cisco Connected Mining solution in place, Goldcorp is dramatically improving the efficiency of its operations.

“In a mechanized operation like ours, we’d normally require about 1.2 million cubic feet per minute (CFM) of air using conventional ventilation systems,” says Morin. “Today, with ventilation on demand, we are using only about 650,000 CFM.”

Cutting ventilation requirements by 50 percent translates into immediate cost reduction. And as Goldcorp continues to extend its network solution to more sites, the firm’s savings will only continue to grow.

“With this expansion, the annual savings could reach between \$1.5 and \$2.5 million over conventional ventilation systems per year, and would also represent a significant annual reduction in greenhouse gas emissions,” says Morin.

Goldcorp has also gained greater visibility throughout the Éléonore site, enabling managers, operators, and miners to make more informed decisions faster.

“Cisco technology allowed us to push the limit and raise the bar in terms of getting information out of the mine in a real-time manner so that we operate more efficiently.”

Pascal Morin

Manager of Technology and Communications,
Goldcorp

“We now have the ability to obtain information from pretty much every piece of equipment we have in the mine,” says Morin. “It’s much different than in the past, when we might have to wait 30 days to obtain a specific set of information. Now with technology, we have the ability to give the decision makers the information they need in real time or near real time.”

Improved visibility everywhere also means improved safety for the mine’s employees.

“In the event of an emergency, the first thing we want to know is where the people are,” says Belleau. “With this system, instead of waiting 45 or 50 minutes, making phone calls, and trying to locate people, we know that instantly. Having a tracking system in place allows us to decrease evacuation time or rescue time dramatically. The workers understand this, and they respect it.”

Goldcorp is proud of its technology investment at the Éléonore mine and considers its network to be a prime example of its commitment to continuous improvement. Already, with a completely connected underground environment, Goldcorp has experienced additional business outcomes such as improved uptime for equipment.

“Now we have the ability to equip every piece of equipment in the mine with the telemetry boxes that transmit the information from the vehicles into a control room,” says Morin. “This gives us the ability to catch anything that goes wrong with the machine sometimes even before the operator knows that something is wrong with the machine.”

Furthermore, this connected mining environment has enabled remote diagnostics, troubleshooting and preventive maintenance, leading to faster issue resolution.

“The Cisco technology allows us to push the limit and raise the bar in terms of getting information out of the mine in a real time manner, so that we can better control what’s happening with our operations,” says Morin. “Éléonore is our pilot project for this technology, and we are optimistic about applying the technology in other mines.”

With its Cisco Connected Mining solution in place, Goldcorp is truly leading the way in enabling the ‘Mine of the Tomorrow’ today.

For More Information

To learn more about how Cisco’s Connected Mining solutions help boost productivity, savings, and safety, visit www.cisco.com/go/mining.

To find out more about Cisco Wireless, visit www.cisco.com/go/wireless.

To find out more about the AeroScout and Cisco solution, visit www.cisco.com/web/strategy/docs/manufacturing/cisco-aeroscout-pov.pdf or www.aeroscoutindustrial.com.



PRODUCT LIST

Wireless

- Cisco Aironet 1500 and 3600 Series access points
- Cisco 5500 Series Wireless LAN controller

Routing & Switching

- Cisco Catalyst 3750-X Series Switches and 2960-X Series Switches
- Cisco UBR7225VXR Universal Broadband Router
- Cisco 2900 Series Integrated Services Routers

Security

- Cisco Identity Services Engine (ISE)

Video

- Cisco TelePresence System EX Series
- Cisco TelePresence SX Series

Collaboration and Unified Communications

- Cisco Unified Communications Manager (CallManager)
- Cisco Unity Connection
- Cisco Jabber for iPhone and iPad
- Cisco Unified IP Phone 8900 series
- Cisco WebEx Meetings

Partner Products

- AeroScout MobileView Software
- AeroScout Wi-Fi Active RFID Tags



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