

# Rajant Wireless Network

## Helps Kinross Strike (More) Gold in Brazil Mine



Kinross is a Canadian-based international gold mining company with mines and projects in the U.S., Brazil, Russia, Mauritania, Chile and Ghana. At its core, the company is committed to generating value through responsible mining.

Its Morro do Ouro mine is a large-scale, open-pit operation located near the city of Paracatu in the Minas Gerais region of Brazil. Mine operations include conventional shovel/truck open pit mining, and two process plants with extraction of gold using gravity, flotation and carbon-in-leach (CIL) recovery processes. Paracatu is expected to process an average of about 46 metric tons/annum over the course of a four-year period ending in 2019, and at 43 Mt/a thereafter.

### The Challenge

Kinross has invested more than \$300-million in its operations and equipment since 2013. With an extensive coverage area, Kinross has crucial networking needs to ensure clear communication among equipment, personnel and its network operations center for maximum performance and productivity.

To support its dispatch system, Kinross used a 900 MHz band network, which provided low bandwidth and speeds. Concurrently, Kinross employed a second network at 2.4GHz to support its Caterpillar (CAT) VIMS telematics application. That network didn't measure up as well, supporting minimal coverage areas and applications.

The mine's proximity to Paracatu and the dynamic nature of mines, in general, created an environment of intermittent communications interference. To improve its network infrastructure and to align with its business aspirations, Kinross decided to change its dispatch system and invest in a new network. The mining operation called upon SITECH/Grupo Sotreq to find solutions to run more of its applications, improve coverage areas, speeds, bandwidth, and mobility.

### Company Profile

- Kinross performs active mining and exploration of gold properties in North America and internationally. The operations at its Morro do Ouro mine in Brazil include conventional shovel/truck open pit mining and two process plants for extraction and recovery of gold.

### Solution Components

- Rajant Kinetic Mesh™ private wireless network enabled via (44) BreadCrumb® wireless network nodes (10 LX4, 18 ME4 and 16 JR2 models) and InstaMesh® technology.
- (31) third party 802.11 radios connected to auxiliary machines via the Rajant network.

### Kinetic Mesh Partner (KMP)

- SITECH/Grupo Sotreq: a worldwide distributor of technology products for harsh environments such as mining and construction.

### Outcome and Impact

- Enabled Kinross to implement CAT Terrain; a new dispatch system; CAT Minestar Fleet; CAT VIMS for health monitoring; and Fuel Manager System (FMS).
- Provided ability for Kinross to gather accurate real-time data on equipment health and operations for timely decision making.
- Reduced the need for technical staff to deploy repeaters in the network, while improving security and decreasing the number of personnel inside the mine.

## The Solution

SITECH/Grupo Sotreq recommended that Kinross deploy a Kinetic Mesh™ network from Rajant. Scalable and highly reliable, Rajant wireless mesh technology provides an always-on communications network so critical applications can be accessed in real time.

Rajant's private wireless networks are proven in military applications and in the mining, oil and gas, transportation and public transit industries. These sectors all have one factor in common: equipment in motion over rugged, unpredictable environments that can pose bandwidth challenges. Rajant developed its network specifically to handle these types of environments.

Over the course of two phases spanning several months, SITECH/Grupo Sotreq implemented the Rajant network infrastructure. In Phase 1, it designed a network to run CAT Terrain, a powerful application for drill planning, blasting, ore control and mine planning.

In Phase 2, the Rajant network was deployed to enable Kinross to use the new dispatch system; CAT MineStar Fleet/Health and Terrain for tracking and blending, less downtime for equipment due to real-time monitoring, productivity improvements and costs reduction by increasing availability of mine equipment; and FMS (Fuel Manager System).

## The Results

Kinross can now collect valuable data from shovels, trucks, dozers and other mining equipment connected to the Rajant network. With that data and software, Kinross has gained advanced features and accurate fleet optimization of heavy equipment to manage tasks and information.

"Rajant is helping us gather real-time data that helps us make better decisions," said Lucas Piau, Project Manager at Kinross Gold Corporation. "We can improve the performance of the production fleet, as well as ancillary processes in the mining area. In fact, we can automate internal process. Without the Rajant network enabling access to accurate and timely data, our jobs would be a lot more difficult."

Rajant's network nodes or radios, known as BreadCrumbs®, are installed outside the cabs of the Kinross fleet. Some 44 BreadCrumbs (10 LX4, 18 ME4 and 16 JR2 models)

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— Cleiton Arruda

Business Consultant, SITECH/Grupo Sotreq

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comprise the network, while 31 third party 802.11 radios are connected to the auxiliary machines via the Rajant network. BreadCrumb networks are highly robust – designed specifically to ensure no single point of failure and to perform strongly and reliably in rugged environments.

"Using Rajant mesh technology, Kinross has reduced the need for technical staff to deploy repeaters in the network, while improving security and decreasing the number of personnel," said Cleiton Arruda, Business Consultant for SITECH/Grupo Sotreq. "It also is delivering powerful network performance and coverage and Kinross has witnessed a tripling of throughput across its entire mine. The previous network covered just a fraction of the site."

With a solid networking foundation, Kinross said it will further explore additional improvements toward enhancing productivity, including adding cameras to its fleet and autonomous drilling vehicles.

"Rajant has raised our expectations of what can be accomplished," Piau said. "It has turned out to be the best solution for our requirements."

Added Eduardo Magalhães, IT Director at Kinross: "Data and analytics play a key role managing an operation like ours at Paracatu. Having a sound, flexible, high-performance network is crucial to have data flowing on time and accurately and it's exactly what we get with Rajant."

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