sensemetrics

CASE STUDY

PROJECT DETAILS

LOCATION

Arizona, United States

PROJECT TYPE

Integrated open-cast mine monitoring

INSTRUMENTATION

Automatic Motorized Total Stations
Vibrating Wire Piezometers
Evaporation Pans
Inclinometers
Extensometers
Tilt Meters
Weather Stations
Ultrasonic Flow Sensors
Inline Flowmeters

PRODUCTIVITY PLAYBOOK

Slope Stability
Environmental
Reports
Remote Sensing
Groundwater Management

AN INTEGRATED, MODERN SOLUTION FOR A LARGE, ACTIVE MINE

OBJECTIVE

Our client's open-cast copper mining projects have been in operation for over 140 years throughout the Sonoran Desert of Arizona. As their operations have expanded during this time, so, too, have their monitoring needs. Meanwhile, the monitoring landscape has become more fractured and complex, growing to include hundreds of sensor types, manufacturers and software systems. This wide range of options can be overwhelming to teams of miners trying to navigate how to deploy sensors to gain insights into their project.

Our client needed a modern, unified solution for its four primary monitoring needs: slope stability, dewatering, tailings and environmental. And it needed to be able to share those insights with a distributed team of departments, external consulting engineers, corporate head offices and government agencies.

PROBLEM

With a 24/7 mining operation that produces 250,000 tons a day and over 60 million pounds of copper a year, avoiding the extreme costs of a shutdown is imperative. The federal safety standard of monitoring requires no more than a 45-minute outage of sensors before pit operations are shut down. Meanwhile, outside of the pit, the site's far reaches, where the tailings facility and environmental monitoring are located, are dangerous to access, with little infrastructure such as power and communications. And aging site infrastructure, including a haul road bridge and underpass tunnel, adds to the challenges.

An intelligent solution that continuously provides real-time data from the multiple facets of the operation would allow the mine to operate at peak capacity by enabling engineering and mine management teams to collaborate on decisions around miner safety, environmental risk and operational efficiency.

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SOLUTION

We provided an integrated, cross-site cloud platform solution to wirelessly connect and monitor a range of sensor types. These included slope stability survey instruments at the open pit, 80-plus piezometers and flowmeters for dewatering, vibrating wire piezometers at the tailings storage facility and six remote weather stations.

Our cloud-based, real-time data solutions complement or replace our client's legacy monitoring at the pit. Now, parallel and redundant on-premise and cloud systems ensure uninterrupted data and reliable access to both on-site and remote stakeholders. Along with plug-and-play components, sensemetrics also collaborated with this client to develop workflow-specific productivity modules for slope stability and environmental reporting.

All data is available on one dashboard, providing a single source of truth to multiple departments, external consulting engineers, corporate head offices and government agencies. This knowledge-sharing across silos results in quicker, more collaborative and more informed decision-making to manage risk sustainably.