# Using wireless IoT monitoring to improve gold mine worker safety

**Country**

Indonesia

**Project type:**

Geophysical monitoring

**Sector:**

Mining

**Main product:**

**Monitoring Solution**

## Challenge

Gold can be found in the densely forested interior of North Sumatra. But extracting it is no easy affair. At the Agincourt Resources Martabe open pit gold mine, in South Tapanuli, mining operations can create slope and tailings dam instabilities that endanger miners, local villages and natural habitats in the nearby Batang Toru forest, home to a unique species of orangutan.

As a company committed to implementing good mining practices throughout the mine life cycle, Agincourt Resources was keen to monitor areas of concern and reduce the likelihood of accidents. But this too was a challenge, since the areas that required monitoring were often the hardest to get to. Agincourt Resources needed a monitoring system that could be installed easily and cost effectively—and would require minimum human intervention thereafter.

### Advantages

- LoRa communication allows wireless transmission of data over long distances.
- Low power consumption minimizes the need for battery maintenance.
- Wireless technology reduces installation and maintenance costs.

## Solution

The mining company's monitoring consultants, Solusi Monitoring Indonesia, had the answer. The company proposed using a wireless Internet of Things (IoT) monitoring system from Worldsensing, which could operate on battery power for years on end and transmit sensor data right across the 6 km2 site using low-power, long-range LoRa communications.

To track slope and tailings dam stability, Solusi Monitoring Indonesia installed 10 (ten) Worldsensing vibrating wire 5-channel data loggers and a similar number of 1-channel nodes, all connected to piezometers measuring soil water content. Meanwhile 10 (ten) analog nodes, connected to extensometers, and 6 (six) digital nodes linked to in-place inclinometers serve to monitor slope movements. The installation is managed using Worldsensing's CMT Edge software and data is sent to a Vista Data Vision system for analysis via Secure File Transfer Protocol.

> “Worldsensing's IoT technology allowed wireless, automated collection of sensor data in the mines for a safer and more work-efficient workplace.”

**Sudaryono Widodo**
Founder and Director, Solusi Monitoring Indonesia

# Benefits

Using wireless sensor technology to monitor conditions in remote areas means there is less chance of a critical slope failure developing undetected. And workers do not need to make regular trips into hard-to-reach locations to check on the stability of the land. Worldsensing’s wireless technology means there was no need to lay data cables, reducing the cost of installation and the system’s impact on local habitats. Using wireless also minimizes the potential for loss of sensor data owing to a cable failure.

Worldsensing IoT technology can last up to 10 years in the field with a single set of batteries, minimizing the need for maintenance trips and the risk they carry for monitoring technicians and the environment. Worldsensing's market-leading integration capabilities make it easy for the data collected on site to be viewed on industry-standard Vista Data Vision software, giving the mine operator an unparalleled view of ground conditions across the site.


## About Solusi Monitoring Indonesia

Solusi Monitoring Indonesia provides geotechnical, geospatial and structural monitoring for assets and infrastructure.


1 - 5-channel VW node deployed at the mining site.

2 - 5-channel VW node is used to read data periodically from the piezometers deployed in a borehole.