

FROM PIT SLOPES TO TAILINGS: GEOTECHNICAL MONITORING AT PT VALE INDONESIA

At PT Vale Indonesia (PTVI), understanding ground and water conditions is critical.

From pit slopes to tailings facilities, continuous monitoring helps track change and manage risk.



PROJECT AT A GLANCE

Client:	PT Vale Indonesia (PTVI)
Location:	Sorowako, Indonesia
Sector:	Mining
Applications:	Pit slope and tailings monitoring
Project duration:	2023–present
Monitoring:	Ground movement, pore pressure, water levels and strain

THE MONITORING CHALLENGE

Across PTVI’s Pit and Tailings areas, multiple monitoring points provide the real-time data its engineering team relies on to understand changing site conditions. The monitoring solutions were supplied through PT Telematika Aset Monitoring (TeAM), Geosense’s customer and project partner, supporting PTVI’s ongoing monitoring requirements.

In a demanding mining environment, however, maintaining reliable monitoring over the long term is just as important as the initial installation.

Equipment needs to continue performing in challenging conditions, ageing or degraded instruments need to be replaced, and field issues need to be identified and resolved quickly - without compromising data continuity or creating gaps in monitoring.

For PTVI and TeAM, the requirement was therefore about more than simply installing instrumentation. It was about having a reliable, connected monitoring programme that could provide consistent data today, while adapting to the changing needs of the operation over time.

THE GEOSENSE SOLUTION

Since 2023, dozens of Geosense instruments have been supplied and deployed across PTVI’s Sorowako operation, working alongside our local instrumentation partner, PT Telematika Aset Monitoring (TeAM).

Designed to support monitoring across Pit and Tailing areas, the Geosense solution brings together a range of instrumentation to measure the ground, water and structural conditions that matter.

INSTRUMENTATION INSTALLED

To support PTVI's monitoring requirements across its Pit and Tailings areas, a range of Geosense instrumentation was provided, covering the key parameters affecting site conditions.



Ground Movement

In-Place Inclinometers (IPIs) provide PTVI with continuous insight into subsurface ground movement, helping the engineering team monitor changes in pit slope behaviour and stability.



Groundwater

Vibrating Wire Piezometers monitor pore water pressure and groundwater conditions, helping PTVI track changes beneath the site.



Water Levels

VWM-2000 Weir Monitors provide precise measurement of water level changes in weirs and open channels, supporting PTVI's ongoing water management.



Pressure

Strain Gauge Piezometers provide pressure measurements for PTVI's geotechnical monitoring requirements across the operation.



Together, the instrumentation gives PTVI a broader, more connected view of changing conditions across its operation.



INTEGRATED TELEMETRY

Connecting instrumentation to the wider monitoring system is key to keeping data flowing.

At PTVI, the deployed geotechnical sensors are integrated into a unified telemetry ecosystem, using client-owned loggers and networks to enable secure, real-time data transmission.

This connected approach supports continuous monitoring and reliable access to monitoring data, helping PTVI's engineering team maintain visibility across critical areas of the operation.



INSTALLATION, MAINTENANCE & TECHNICAL SUPPORT

A successful monitoring programme goes beyond the initial installation. Throughout the ongoing PTVI programme, Geosense instrumentation has been supported by TeAM's hands-on expertise across installation, maintenance, troubleshooting and training, alongside Geosense's ongoing technical support.



Installation & Commissioning

Geosense instruments are installed and commissioned with a focus on precise positioning, reliable performance and immediate monitoring readiness.



Instrument Replacement & Upgrades

Legacy or degraded instrumentation is replaced and upgraded to maintain data integrity and prevent monitoring gaps.



Repair & Troubleshooting

Ongoing field support diagnoses and resolves instrumentation and data connectivity issues, restoring performance and keeping systems running effectively.



Training & Knowledge Transfer

Hands-on engineer training builds in-house expertise in troubleshooting, calibration and maintenance, supporting greater self-sufficiency.

THE RESULT

For PTVI, the result is greater visibility, reliable data and better control over critical geotechnical conditions.

Continuous monitoring of ground movement, groundwater, water levels and pressure provides the insight needed to understand changing conditions, mitigate risk and make faster, more informed decisions.

With Geosense sensors providing reliable, real-time data and TeAM delivering installation and ongoing support, the solution enables long-term monitoring to support safer, more resilient mining operations.



GET IN TOUCH

To learn more about how Geosense can support your next project, get in touch to arrange a meeting.



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ABOUT TEAM

PT Telematika Aset Monitoring provides geotechnical, environmental, asset monitoring and surveying services, using Geosense instrumentation to deliver reliable monitoring solutions for its clients.

Their focus on safety, efficiency and robust system implementation makes them a trusted partner for deploying effective monitoring technology.