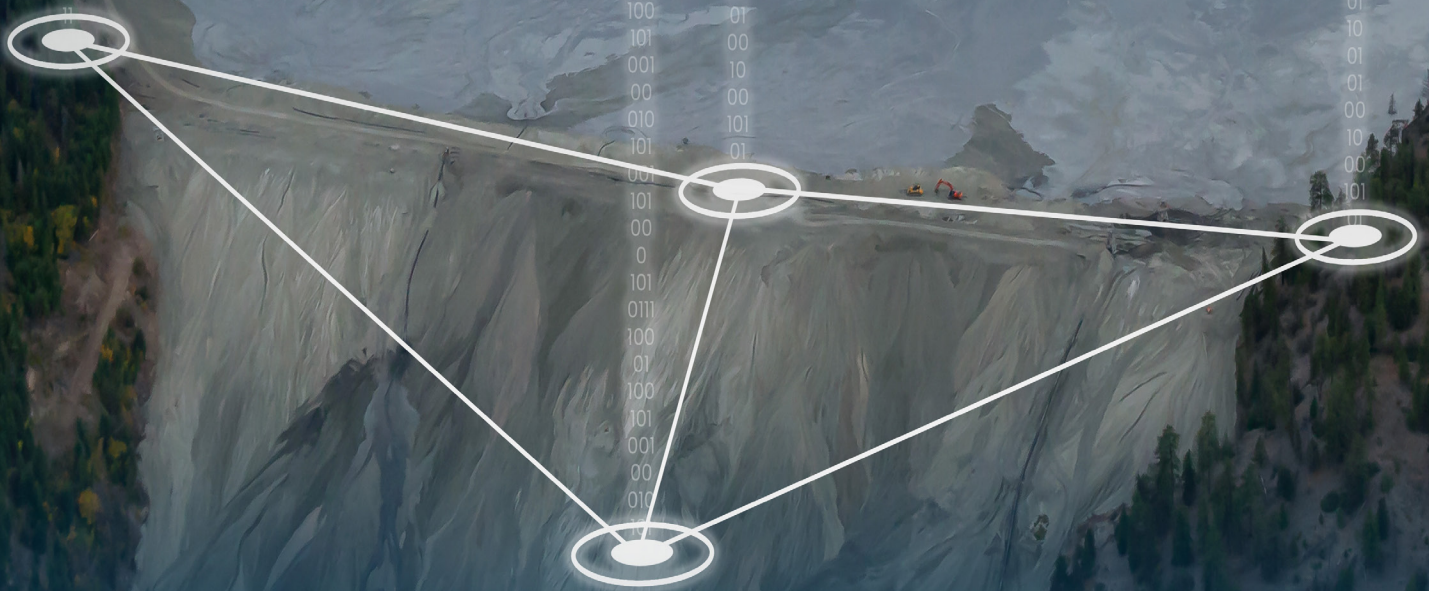


TAILINGS MONITORING

ELEVATING TAILINGS DAM MONITORING TO NEW HEIGHTS



DYNAMIC MONITORING & CONSULTING SOLUTIONS

- Seismicity & structural integrity monitoring
- Data-driven risk management
- 24/7 real-time alerting & visualization
- SiteAlert hosted platform
- Best-in-class instrumentation

Tailings dams are amongst the largest and most complex dynamic, engineered structures today. They stand as the pinnacle of dynamic, engineered structures, and as their numbers and sizes surge worldwide, so does the potential environmental, social, and economic toll of catastrophic failure. Nanometrics understands the critical importance of safeguarding people and the environment. We take a holistic approach to tailings management, ensuring a comprehensive strategy that spans the entire project lifecycle.

Key to our approach is the integration of a state-of-the-art monitoring system, a cornerstone in effective risk management.

Unlike conventional systems that rely on standard sensors with lower resolution, our solution establishes a benchmark in Structural Integrity Monitoring. Formulated by industry leaders with proficiency in passive seismic networks, our solution not only bridges gaps in traditional monitoring approaches but also introduces cutting-edge innovations. Specifically tailored for Structural Integrity Monitoring, our approach integrates ground motion monitoring and ambient noise interferometry processing. This innovative interferometry component augments traditional non-seismic monitoring techniques. It's worth noting that our solution is at the forefront of the industry, continuously proving its value, especially in the emerging field of ambient noise processing, while leveraging our established expertise in seismic monitoring.

With Nanometrics Structural Integrity monitoring, you gain a live view of changes in critical dam properties not only at sensor locations but also within the structure itself. This unique capability provides visibility into the current state of the dam and tracks variability in seismic wave velocity over time, encompassing both point and area measurements to ensure no warning signs are overlooked.

Our solution goes beyond the limitations of reactive measures. Nanometrics SiteAlert platform is your proactive tool, issuing warnings for changes induced by external events such as blasts or machinery, as well as temporal changes that may require further inspection—think velocity shifts due to saturation changes or channeling. It's not just a tool; it's your insurance against potential failures, empowering you to act before it's too late.

GROUND MOTION MONITORING

Ground motion monitoring provides complementary insights into the impacts of natural or anthropogenic activities on a dam's foundation and surrounding terrain. This technique involves the use of sensors to detect even subtle ground movements, such as those induced by seismic events, blasts, machinery or nearby vibrations from other sources. In the context of tailings dams, ground motion monitoring, often coupled with interferometric techniques, enables the early detection and alerting of notable impacts to the dam that may warrant further inspection or action. By precisely measuring ground vibrations and deformations, it offers a real-time input into the assessment of the dam's stability post impact. This proactive approach allows for timely intervention and implementation of corrective measures, reducing the risk of catastrophic failures and enhancing the overall safety and resilience of tailings dams. Ground motion monitoring thus serves as a vital tool in ensuring the ongoing integrity of these critical structures within the mining industry



INTERFEROMETRIC STRUCTURAL INTEGRITY MONITORING

Ambient noise interferometry is a powerful tool that goes beyond traditional seismic monitoring. By analyzing ambient noise signals traveling between sensors, it unveils variations in velocity within the structure itself. This method provides a unique view into the structural changes and velocity perturbations, allowing for early detection and proactive monitoring. It enables a more comprehensive understanding of the health and integrity of various earth structures, making it an invaluable asset for long-term, ongoing, and short-term monitoring projects.

TILT MONITORING

Tiltmeters are a valuable tool used in the monitoring of tailings dams. They can be strategically placed on key points of the dam or containment structure to continuously measure and record any changes in tilt. This real-time data can help in early detection of potential problems, allowing for timely intervention and preventive measures. As tailings are complex structures, effective monitoring often involves integration of a variety of sensors. Nanometrics SiteAlert platform provides a unified platform for data visualization and alerting such that monitoring can be done proactively ensuring the safety and stability of tailings storage facilities and minimizing the risk of environmental disasters.



Contact a product expert Toll Free: 1 855 792 6776 | smssales@nanometrics.ca