OSCILLOT

VIBRATION MONITORING SYSTEM

Enabling predictive maintenance and managing critical risk using vibration sensors and artificial intelligence

Singulariti's **OSCILLOT Vibration Monitoring System** provides accurate real-time detection of critical events in industrial machinery, delivered via a minimal hardware presence. Effective monitoring of machinery is vital within the industrial sector but is hindered by continuous operation, hazardous environments, undiagnosed faults, high cost and disrupted productivity. The *Oscillot* system has been designed with this in mind, and has a track record of successful deployment in the mining sector. With minimal downtime required for installation, Oscillot is delivering valuable insight into machine performance to on-site process control teams.

Our Solution: Oscillot Vibration Monitoring System

EASY INSTALLATION

Easy to install and maintain by on-site teams

REPLACEABLE PARTS

Military-grade, off the shelf sensors; Robust and scalable

EARLY DETECTION

Reliable, accurate, real-time monitoring with AI capabilities

COST EFFICIENT

Low-cost equipment, installation, and maintenance

INCREASED PRODUCTIVITY

User feedback continuously improves system performance

Use Case: Hydrocyclone Roping

A fundamental problem with operating hydrocyclones is that their operational efficiency is very sensitive to changes in the slurry properties. Changes in feed density can often result in roping events. Many hydrocyclones today are monitored by traditional technology or routine manual visual inspection of the output to determine issues with the device. Because of this visual inspection there is a delay in detecting problems, which reduces the effectiveness of the process.

► INDUSTRIAL EDGE

The Oscillot unit is deployed right at the source of data creation ("the edge") with a pair of off-the-shelf, military-grade accelerometers mounted in the cone in the nest, just above the underflow spigot.

► SERVER ROOM

Raw sensor data is relayed via the Oscillot edge node back to the AI cluster (Singulariti *Casmir*) for post processing and integration into the model training pipeline.
This provides a secure, real-time, centralised platform for collection and interpretation of data. All this is delivered with no operational components in the cloud and without need for a high-bandwith internet connection.

► SINGULARITI OFFICE

The entire system is maintained remotely by Singulariti support staff working closely with on-site technical teams to ensure uninterrupted operation.

Why Oscillot:

- Deploys directly to the edge, with minimal hardware presence and 100% non invasive installation.
- On board, real-time, AI-at-the-edge processing allows for fast detection of performance abnormalities in equipment.
- Direct integration with existing control system infrastructure.
- Delivers real-time condition monitoring through a unique combination of military-grade sensor hardware and AI models.
- Improves equipment performance and overall increased plant productivity.

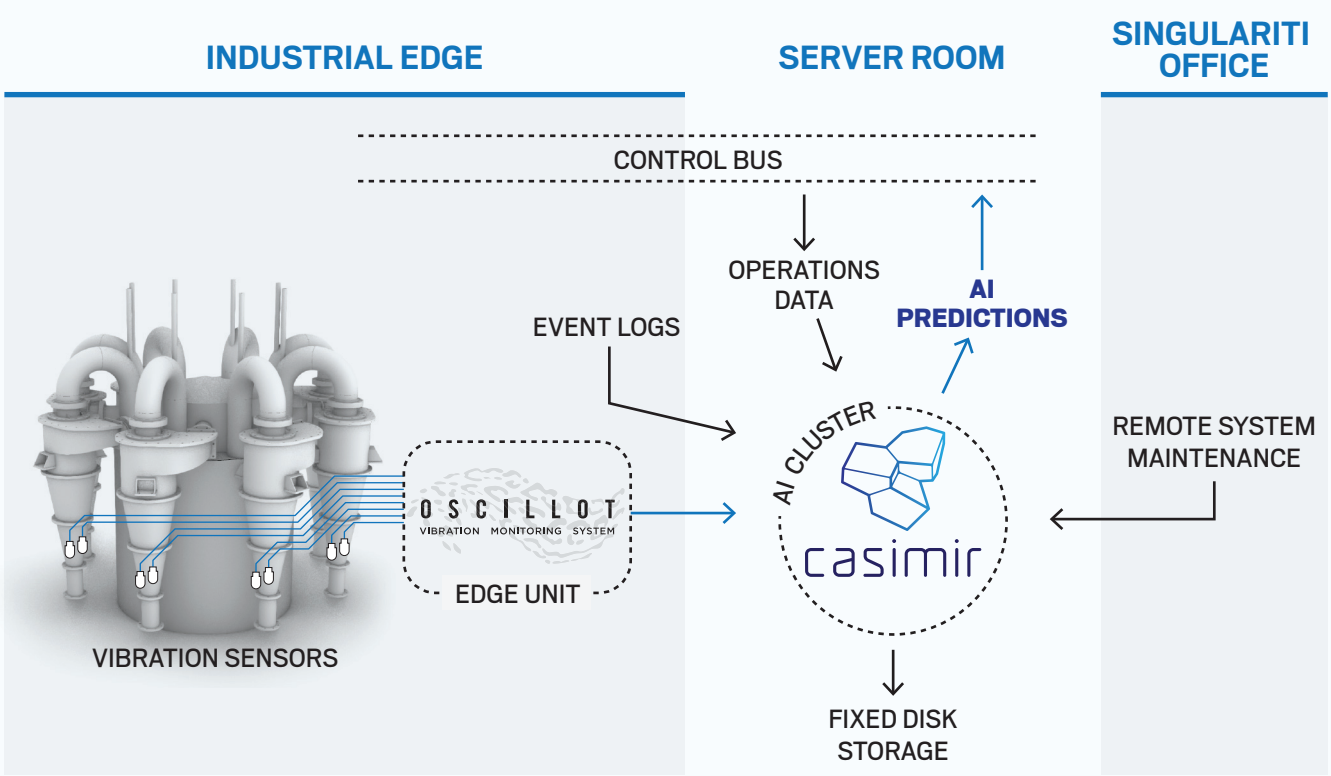
AI Revolution

Utilizing recent advances in Artificial Intelligence technology, Oscillot is able to learn the most subtle vibration patterns and send early alerts corresponding to any irregular machine behaviour.

Oscillot units share the intelligence learned between deployments, expanding the knowledge base as more devices are monitored globally across sites.

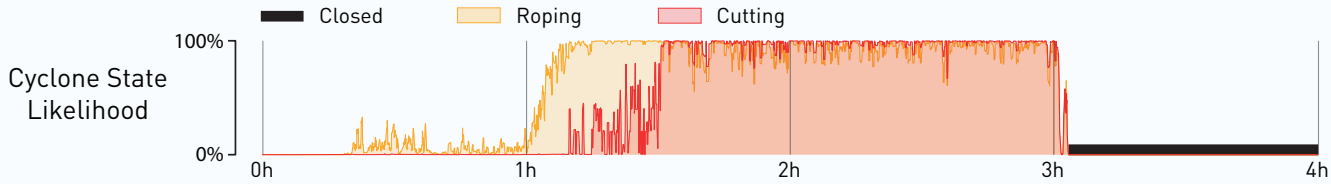
The system is regularly re-training as more user feedback is provided, leading to continual improvement of performance.

Powered by the Intel Movidius Neural Compute Engine, the Oscillot system is one of the most advanced systems on the market.



▸ AI PREDICTIONS

Cyclone states are predicted with one-second resolution, allowing operators to respond rapidly as events occur.



Harnessing the Power of Deep Learning

AI SERVER CLUSTER: CASIMIR

The entire Oscillot ecosystem is powered by Singulariti's proprietry deep-learning server cluster, *Casimir*. This system provides a full-stack service architecture:

- Remote administration and maintenance
- Management of full fleet Oscillot-24 edge units
- Deep-learning powered by NVidia GPUs
- Multi-terabyte scalable data storage
- Integration with on-site control systems
- Optimisation of AI across nests and sites
- Rapid prototyping of new AI products

casimir

Casimir utilises a distributed network of processing nodes that can be rapidly scaled and reconfigured as workload requirements change. This technology allows for flexible deployments that can monitor multiple devices using an array of different sensor technologies, while ensuring the highest-levels of data integrity and and security.

Device Agnostic Applications:

The Oscillot Vibration Monitoring System is completely device agnostic, allowing for it to be deployed onto any operational vibrating equipment. This allows for rapid prototyping of new predictive maintenance solutions across a range of mining infrastructure.

WE ARE CURRENTLY DEVELOPING THE FOLLOWING MONITORING APPLICATIONS:

Grinding Mills: Liner wear and charge levels.
Pumps: Cavitation and cycling.
Conveyors: Roller failures.

To learn more about the Oscillot Vibration Monitoring System and how it can support your operations today, please contact info@singulariti.co or visit www.singulariti.co/products/

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