

AXORA

METALS & MINING AX01178

IIoT sensor solution for monitoring wear rate and temperature of mine equipment

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IIOT SENSOR SOLUTION FOR MONITORING WEAR RATES OF MINE EQUIPMENT

How it works

This industrial IIOT-based detector significantly reduces unneeded replacement of wear plates by alerting operators in real time on the thickness and predicted life of each part. This allows maintenance teams to better predict the optimum time to replace parts, minimising downtime and maximising asset life and production throughput.

The detector uses sensor nodes that have up to four sensor probes attached remotely. These sensor probes are installed at known wear points in the process, for example, a transfer chute. The sensor nodes encrypt and transmit data from the sensor probes using a low-power wireless network that can be received by one or many base station units. A single base station, which decrypts and collates the sensor node data, can cover a radius of up to 8km. This data is then uploaded and displayed on a dashboard using a secure link via a dedicated internet connection. The dashboard can display up to 15 datasets.

Providing a 360° view of wear plate thickness, this predictive maintenance detector solution enables mine operators to better plan replacement wear plates or sections of pipes and chutes that are shown to have reduced wall thickness. In doing so, it avoids costly early replacement, asset downtime, and reduces workforce injuries and environmental risk.

Key facts

360°

real time visibility of plant assets

15+

datasets displayed

4X

interconnected components



TOP BUSINESS BENEFITS

There are seven main business benefits to this industrial IIOT-based detector:

- › Decreases asset downtime
- › Reduces risk of plant failure
- › Lengthens asset life
- › Improves operational efficiency
- › Improves sustainability
- › Improves health and safety
- › Reduces OPEX

The solution helps maximise asset uptime by detecting the thickness of sacrificial wear plates or pipewalls. By doing so, operators can determine the optimum time to replace parts, allowing them to maximise uptime and reducing the costly early replacement of wear plates.

The sacrificial sensor is installed directly into the wear plate or pipe and wears down at the same rate as the hardware. The data is transmitted in real time via an IoT system on site, allowing maintenance personnel to see the thickness and remaining life of every asset sensors are installed on. With this information, teams can determine the wear rate on individual assets and predict the optimum time to change parts. This not only increases uptime, but also significantly lowers replacement costs on sacrificial parts.



Business benefits

- › Decreases asset downtime
- › Reduces risk of plant failure
- › Lengthens asset life
- › Improves operational efficiency
- › Improves sustainability
- › Improves health and safety
- › Reduces OPEX

CUSTOMER SUCCESS STORIES

Coal mine

This coal mine needed a more reliable reject tailing pipeline, and they also had challenges with funding manual inspections. Unplanned shutdown risk and environmental issues were key business challenges, and this solution was deployed in late 2020 to activate remote monitoring and trend analysis on pipeline health. The pipe lifetime was extended from six months to two years, saving \$1.5m. More than \$1m was also saved on unplanned outage costs through more proactive monitoring and predictive maintenance ahead of any issues.

\$1.5M

saving by extending pipe
lifetime

\$1M

saving on unplanned outage
costs

Diamond mine in Lesotho

Installed in December 2020, this mid-sized diamond mine in Lesotho had issues with pipe transport lines. This solution is now actively and remotely monitoring critical pipes to ensure higher safety and reliability.



FAQ

What data does the solution capture and display on the dashboard?

The data displayed can include wear indication, temperatures, battery levels, signal strength, sensor loop indication, location, latitude, longitude, asset numbers, drawings, isolation points, and equipment accessibility.

How secure is the detector solution?

The solution is securely hosted on enterprise level cloud infrastructure.

What do the sensors record?

The sensors monitor pipe and metal wear in real time. Additionally, temperature is recorded and transmitted.

What are the key components of the solution?

The four key components are:

- › Sensor probes - installed in the predicted points of failure, measuring analog or digital signals.
- › Base station - the bridge between the wireless on-site network and the internet.
- › Sensor nodes - can have up to four probes attached remotely. Encrypt and transmit probe data to the base station.
- › Dashboard - cloud-based data visualisation platform to get insights from the data provided.

About Axora

Axora is the global technology **marketplace** for heavy industry. We source the best innovative solutions, to solve the biggest industrial problems.

Our service helps industrial companies to discover, evaluate, procure and deploy technology from all over the world.

Entrusted globally by 100s of industrial leaders and innovative solution providers, we help companies take action to hit their safety and sustainability goals.

Your next steps

→ [Email us](#)

About the solution provider

This Australian company produces monitoring and predictive maintenance solutions for remote industrial assets to improve efficiency and productivity. Its solutions monitor pipelines and wear plates used in, for example, chutes and bins for metal thickness. It tracks assets in real-time and produces alarm, trending, and data analytics that are used to maximise wear plate life, lower replacement costs, and maximise asset uptime.

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