

Monitoring Critical Mining Conveyors

- Detect developing problems before equipment fails.
- Minimize the financial impact of unplanned downtime.
- Reduce risk to technicians by reducing time spent near operating equipment.
- Avoid costly spares inventory.



Emerson's online condition monitoring system uses a unique fault detection approach that is perfectly matched to the operating parameters of conveyors. It was the logical choice to preserve the integrity of our critical assets. — **Spokesperson**
— **One of the largest producers of iron ore in the world.**

Introduction

Bulk conveyors are the lifeblood of your stockpile and process throughput in the mine. Downtime prevents you from meeting your mine plan and production goals.

Overland conveying or “truckless” mining systems are especially critical as they represent a single point of failure. Mines simply don’t have spare conveyors.

With daily wear and tear, equipment is going to break; so an effective condition monitoring program is an industry best practice.

Condition monitoring systems provide additional information to operations and maintenance personnel by examining input data in much greater detail, often using advanced analysis methods to make sense of the data.

See Conveyor Faults Before They Become A Problem

The AMS 6500 Machinery Health Monitor and AMS Asset Monitor offer the earliest detection of conveyor faults. They monitor critical components continuously, supplying real-time machinery health information back to the control room or maintenance shop.

In addition, Emerson’s unique PeakVue™ technology measures high frequency stress waves to detect rolling element bearing and gearbox issues earlier than traditional methodology.

Vibration data can be integrated with complementary technologies such as tribology and/or infrared thermography for a comprehensive view of equipment health.

When a critical conveyor goes down and there is no spare part available, a general rule of thumb indicates between \$250k and \$500k per hour in lost production (gold, copper, silver mines) and approximately 10% of production time is lost to unplanned maintenance.

Eliminate Needless Safety Risks

Implementing online monitoring systems reduces the risk to technicians in the field.

For periodic readings on less critical components, Emerson’s portfolio consists of AMS Asset Monitor, AMS Wireless Vibration Monitor and AMS 9420 Vibration transmitters. Each of these solutions are ideal for accomplishing the same safety goal - vibration monitoring without exposing staff to machinery hazards - as separate monitoring devices or as a part of a all-inclusive monitoring strategy.

Minimize Negative Financial Impact

The ability to plan rather than react to a crisis, saves money.

In order to minimize maintenance costs, you need to see faults early, understand their severity, and plan accordingly.

Implementing monitoring of the conveyor delivers early detection of developing faults so you can assess problem

severity and take appropriate action.

Product Description

Emerson's comprehensive approach to monitoring conveyors includes a combination of technologies, which utilize PeakVue impact monitoring. Emerson's combination of best-in-class technologies and services helps increase equipment effectiveness, reliability, and performance by allowing you to be proactive in your maintenance. Our scope for monitoring critical mining conveyors includes:

- AMS Asset Monitor and AMS 6500 units for monitoring key drives, motors, and pulleys.
- AMS Wireless Vibration Monitor for less critical components.
- AMS 9420 sensors for providing accurate monitoring in hard-to-reach locations like take up and tail pulleys.
- Rosemount 648 transmitters for wireless temperature measurements on bearings.
- Supporting analytical software platform.
- Engineering, installation, commissioning services.
- Project management and training.

Early Problem Prediction

AMS 6500 Machinery Health Monitor

The AMS 6500 delivers data to digital platforms that provide enterprise-wide information needed for real time decision making. Data from complementary technologies may be viewed together for a comprehensive view of equipment health.

AMS Asset Monitor

The AMS Asset Monitor is an edge analytics device designed to deliver prediction and basic protection in conjunction with process controls allowing the unit to provide limited controls capabilities to the balance of assets in the plant. CHARMS-based technology collects both vibration and process variables and applies embedded Edge analytics to alert personnel to the most common faults associated with a wide range of assets. Personnel from operations, process and reliability can all assist in the monitoring of plant assets without extensive experience in vibration or process diagnostics. Emerson's machinery health

software can connect with AMS Asset Monitor and collect vibration data for detailed analysis.

AMS Wireless Vibration

As part of Emerson's Smart Wireless solutions, the rugged AMS Wireless Vibration Monitor and AMS 9420 Wireless Vibration Transmitter connects quickly, easily, and economically to any machine. It delivers vibration information over a highly-reliable, self-organizing wireless network for use by operations and maintenance personnel.

Configuration, diagnostics, and alerts are imported into AMS Device Manager. The AMS Wireless Vibration Monitor and AMS 9420 are ideal for vibration monitoring applications, especially in hard-to-reach or cost prohibitive locations. For bulk conveyors, vibration monitoring is an effective means for detecting developing problems.

Rosemount 648 Wireless Temperature Transmitter

The Rosemount 648 Wireless Temperature Transmitter delivers industry-leading temperature field reliability as a wireless process measurement with Best-in-Class specifications and capabilities. This is ideally suited for measuring temperatures on critical rollers and bearings.

System Architecture

System architecture will vary based on the monitoring strategy and devices used in the field. Each system is customized based on the end user requirements. Typically, a monitoring system that is automated will require the field hardware devices and a server for storing of data is recommended.

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