



CASE SUMMARY

INDUSTRY

Grain Storage and Handling

APPLICATION

Real-time condition monitoring and predictive maintenance of rotating equipment in unmanned operational areas.

PRODUCT SUPPLIED BY

Pacific Automation

PRODUCTS

- WISE-2410X
- WISE-6610

Case Study: Empowering Safer Operations and Predictive Maintenance in Grain Handling with Advantech Wireless Monitoring

THE CHALLENGE

In high-throughput grain handling facilities, machinery such as motors, conveyors, and compressors often operate in unmanned spaces with limited visibility into equipment condition. Traditionally, these assets are inspected only during scheduled maintenance visits, often several months apart, by third-party service providers.

This reactive maintenance model left significant risk unaddressed. One top grain handling facility experienced a major incident when a catastrophic bearing failure led to overheating and a fire. The result was 36 hours of unplanned downtime and widespread equipment damage.

This event highlighted the urgent need for a proactive approach that could detect mechanical degradation before failure.

The facility required a system capable of continuously monitoring critical equipment, identifying elevated vibration and heat levels at an early stage, and alerting operators in real time so they could take corrective action. Additionally, the system needed to integrate seamlessly with the existing control infrastructure to ensure efficient and reliable operations.





THE SOLUTION

A predictive maintenance system was implemented using Advantech's wireless vibration and temperature monitoring technology, supported by LoRaWAN communication protocols. This provided a long-range, low-power, and highly scalable infrastructure for industrial monitoring.

Technology Deployed:

WISE-2410X: A compact wireless sensor that autonomously tracks vibration patterns and surface temperatures. It is IECEx Zone 21 certified, making it ideal for hazardous environments such as grain terminals.

WISE-6610: An industrial LoRaWAN gateway that receives data from sensors and transmits it to the site's central control system. Housed in an IECEx-rated enclosure, it enables secure and reliable data flow.

The sensors continuously monitor machine health and trigger alarms when thresholds for heat or vibration are exceeded. Alerts are directed to the control system, which is monitored around the clock, allowing operators and maintenance teams to act before a failure occurs.

IMPLEMENTATION

The solution was initially trialed on a motor within a compressor room. A WISE-2410X sensor was installed on the equipment, while the WISE-6610 gateway was placed approximately 200 metres away in a portable office environment.

Despite the distance and operational demands, the system performed reliably:

- Sensor data was successfully transmitted via LoRaWAN
- The gateway was integrated into the site's SCADA/control system
- Alerts triggered within the control room enabled proactive maintenance responses

Following a successful pilot, the facility proceeded with full implementation.

Rollout Details:

- Deployment of over 600 WISE-2410X sensors across multiple critical machinery points
- Integration of multiple WISE-6610 gateways in IECEx-certified housings
- Centralised data visibility via the facility's existing control and monitoring systems



RESULTS

24/7 Real-Time Monitoring

The new system eliminated blind spots between quarterly inspections, enabling continuous insight into machine health.

Reduced Fire and Safety Risks

Early detection of overheating and excessive vibration dramatically lowered the risk of fire incidents from bearing or motor failures.

Faster Response Times

Real-time alerts allowed operators to address issues before they escalated, reducing the need for emergency maintenance callouts.

More Predictable Maintenance Planning

Historical data trends provided actionable insights, enabling proactive servicing and more efficient resource allocation.

Minimised Downtime

By catching issues early, the facility significantly reduced unplanned outages and extended the lifecycle of key assets.



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TO BROWSE OUR WEBSITE

<https://pacauto.link/advantech-monitoring>

To discuss how this solution can be applied to your project, simply call us on **+61 1300 881 876** or send us an email at sales@pacificautomation.com.au

ADVANTECH

Advantech delivers reliable wireless monitoring solutions that **enhance safety, reduce downtime, and enable smarter maintenance** planning in grain handling operations.



"This case study is based on a real project delivered by Pacific Automation. To respect client confidentiality, specific names, locations, and identifying details have been omitted. The information is provided to illustrate the type of applications and outcomes that can be achieved using our solutions. Results may vary depending on site conditions and system requirements."

**GET IN
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