



Case Study

State of the Art Hazard Monitoring for State of the Art Flour Mill

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A large, state of the art flour mill was built in the Midwest to increase the company's milling capacity and meet the growing needs of their customers. The new facility set the goal to have fully automated material handling equipment utilizing high tech Industrial Ethernet infrastructure throughout their mill.

Challenge



In order to bring this goal to life, they needed to meet OSHA and NFPA requirements for monitoring belt speed, belt alignment, and bearing

temperatures on their 13 bucket elevators, some which have Variable Frequency Drive (VFD) controls, along with 8 enclosed belt conveyors. They also wanted to fully integrate the sensors into the PLC in the most efficient way possible.

Downtime is very costly, so they needed to have a system that would provide them with instant updates while being extremely reliable at the same time. The grain handling part of the facility already had 10 years of known reliability with 4B hazard monitoring products. They were extremely satisfied by 4B's level of customer service and ability to ship product the same day. Now they needed the latest technology, Industrial Ethernet, for the system at the new mill and 4B delivered.

Solution



Panel of IE-Nodes

4B's newest hazard monitoring system, the Industrial Ethernet Node (IE-Node) was the perfect fit. It features EtherNet/IP communications that work directly with the customer's Allen Bradley PLC without any gateways while being approved for Class II, Division 1 Group E, F & G hazardous dust environments. It provides inputs for continuous bearing temperature sensors, belt alignment sensors, and speed sensors.

The customer selected the IE-Nodes because they are technologically superior to other options on the market and improve the flexibility of installation all at an attractive price. The IE-Nodes each have 10 inputs and can be expanded to 16 to provide even more flexibility in applications where the site needed additional sensors. All of the sensors can be fully tested with 4B's Speedmaster and ADB Tester and the system has the unique ability to have multiple speed inputs for the PLC to monitor the speed ratio on equipment operating with VFDs.



Brass Rub Blocks installed

The customer selected NTC Adjustable Depth Bearing (ADB) temperature sensors, 2" x 4" rectangular brass rub blocks with stainless steel hinged inspection doors for belt misalignment, and whirligigs with 4-20 mA Milli-Speed sensors for monitoring belt slippage. 4B provided training for both the end user and installer to highlight the best practices for wiring and maintaining the system.

Results

- Installation completed on schedule thanks to 4B's excellent installation support and ability to provide custom solutions for difficult problems
- IE-Nodes seamlessly integrated into the PLC with the help of 4B's add-on instruction
- Operators and maintenance staff can easily view all shaft speeds and bearing and rub block temperatures on their HMI (human machine interface)
- All sensors were commissioned by the installer with the use of 4B's testing tools and PLC programming issues were identified and quickly resolved
- IE-Nodes eliminated any requirements for proprietary communications protocols and cables
- Utilized the industrial ethernet infrastructure that was installed throughout the facility