

Spindle Vibration Monitoring

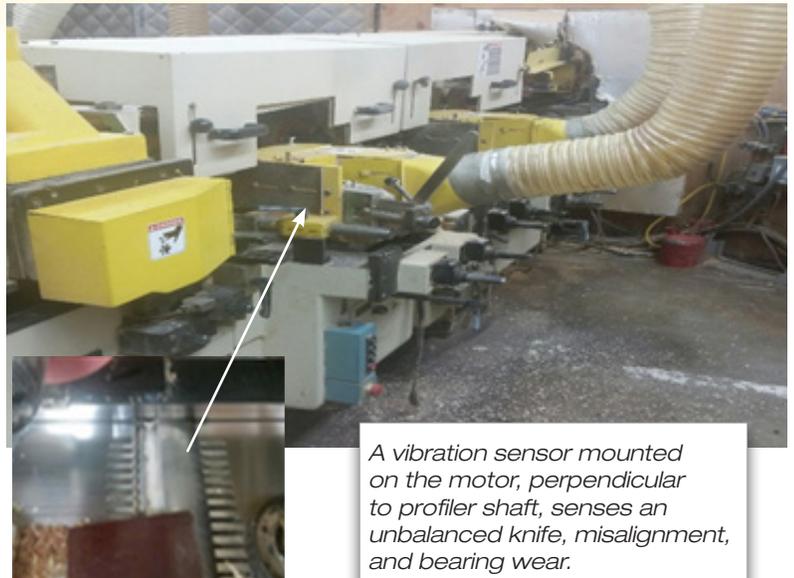
Customer

Industry – Major window manufacturer in USA

Goal – Reduce the cost of scrap and unplanned production downtime because of unbalanced cutting heads and spindle bearing wear on high-speed profiling machines

Background – Company has nine facilities in USA, each using many automated woodworking machines in the fabrication and assembly of residential windows

Challenges – Wood trim profiling machines have high speed spindles. Chipped, worn, or misadjusted profiling knives leads to bearing damage, down-time, and excess product waste. Previously, sample vibration profiling was performed periodically but this required running the machines with safety guards removed and the failure rate was not eliminated.



A vibration sensor mounted on the motor, perpendicular to profiler shaft, senses an unbalanced knife, misalignment, and bearing wear.

Solution

A QM30VT vibration sensor connected to a DX80 Node monitors a spindle and collects vibration values. Data is transmitted wirelessly to a DXM100 Controller that uses action rules to define thresholds.

If thresholds are exceeded, local indication via an EZ-LIGHT mounted on the machine notifies the operator and an email is sent to maintenance/tech services group for corrective action. Additionally, vibration profile data is sent via Ethernet to the Sensorix web hosting service where historical trending and monitoring functions are accessed via the Cloud.

Why Banner?

Value – Predictive maintenance verses reactive maintenance. Within the first months of installation, the system:

- Identified issues, preventing downtime and a \$2000 bearing replacement expense
- Eliminated spindle damage resulting from premature bearing failure
- Reduced scrap material cost
- Increased machine up-time

Safety – The Wireless solution allowed machine guarding to be left in place, reducing the probability of OSHA reportables

Expansion – With the Wireless backbone already in place, customer further captured value by adding:

- Vibration monitoring of the dust collection system fan motors
- Temperature Node monitoring the ambient heat emitting from the oven exterior for worker productivity
- Temp/Humidity Node monitoring the wood in the storage facility

Customer Benefits

ROI – The cost avoidance of one bearing failure paid for the entire system

Eliminated safety concerns by leaving the guards in place

Continuous monitoring reduced scrap from unbalanced knives

Eliminated cost and time of manual sampling set up

Reduced downtime allowed for more maintenance scheduling



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