

Lumber



Applications Guide

Machine Vision Helps Ensure Throughput and Quality in Rugged Lumber Processing Environment



The lumber industry faces the challenge of keeping machinery continuously running and avoiding defects despite a harsh environment and high levels of variability including different colors, sizes and shapes of lumber. The traditional approach has been to use an assortment of photoelectric sensors, limit switches, proximity switches and other types of sensors at various points in the process to ensure proper alignment, maintain spacing, and measure backlog, etc. Each sensor typically monitors only a single point so large numbers of sensors are needed to monitor the entire process. These sensors are expensive to purchase and maintain and errors occur because it's not practical to install enough sensors to detect every possible defect.

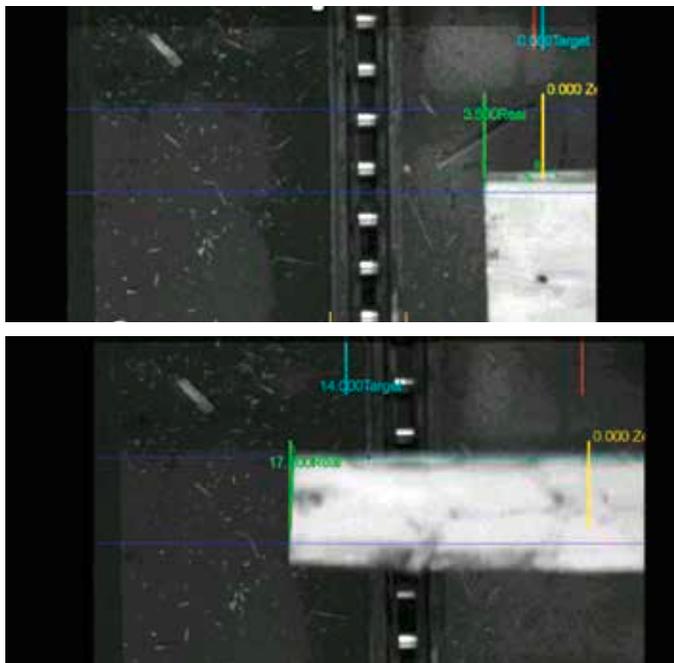
Cognex vision systems overcome these problems by capturing a broad area of the process in a single image and then using algorithms to process the image in order to inspect various aspects of the production process. One machine vision system can replace all of the sensors in an area, potentially providing very large savings both in initial cost and in overall maintenance and repair. Easy-to-configure vision tools perform multiple inspections such as lumber fence verification, saw-cut detection, log tracking and gap control, without writing a line of code. Cognex vision systems are completely self-contained in rugged IP-67 rate enclosures that can easily withstand the mill environment. The end result is higher throughput and fewer production errors, in which means lower manufacturing costs and higher customer satisfaction.

Global Leader in Machine Vision & Industrial ID

Cognex is the world's most trusted vision company. With over one million systems installed in facilities around the world, and over thirty years of experience, Cognex is solely focused on machine vision and image-based industrial ID technology. Deployed by many of the world's top manufacturers, suppliers, and machine builders, Cognex products ensure that manufactured items meet the stringent quality requirements of each industry.

Cognex vision technology helps companies improve their manufacturing quality and performance by eliminating defects, verifying assembly, and tracking and capturing information at every stage of the production process. Smarter automation using Cognex vision and ID systems means fewer production errors, which equates to lower manufacturing costs and higher customer satisfaction. Cognex offers the widest range of solutions to meet most application requirements.

LUMBER FENCE VERIFICATION

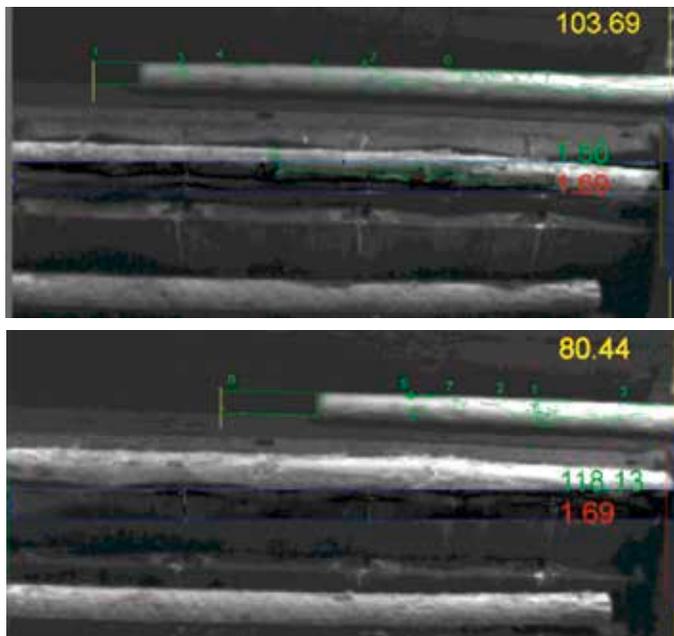


APPLICATION



A fence verification camera system detects and measures the actual lumber edge and compares it to the target fence location for each individual board. This allows operators to monitor the error of the machine and ensure the proper alignment of the lumber for downstream sawing or other operations. In this application, a Cognex In-Sight Vision System improves throughput by preventing defects traceable to improper alignment of the wood prior to cutting and planing operations.

LOG TRACKING AND GAP CONTROL

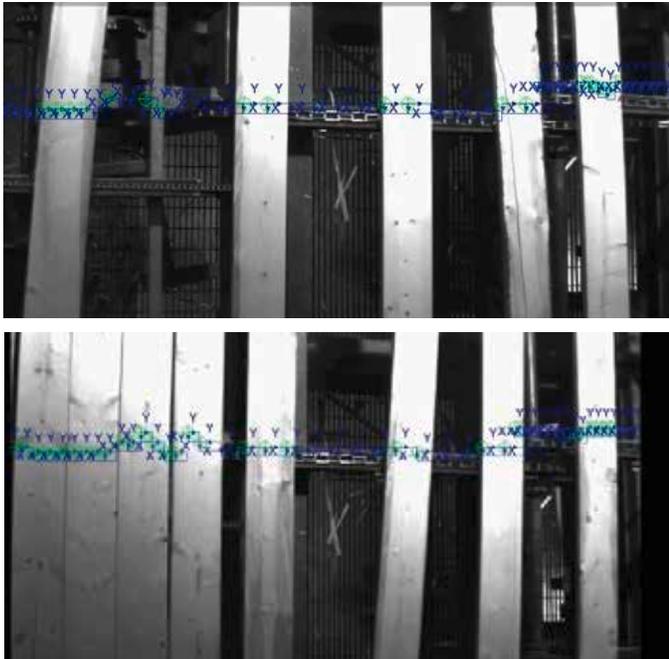


APPLICATION



The In-Sight Vision System measures the position of each log on the belt and sends the information to the control system so that the next log can be loaded at just the right moment to maintain a minimal gap. Machine vision has proven to be much more robust and provides higher levels of accuracy than laser measurement systems in both indoor and outdoor installations. Cognex In-Sight Vision Systems can increase throughput by an average of 33% in this application by optimizing feeding to reduce the gap between logs.

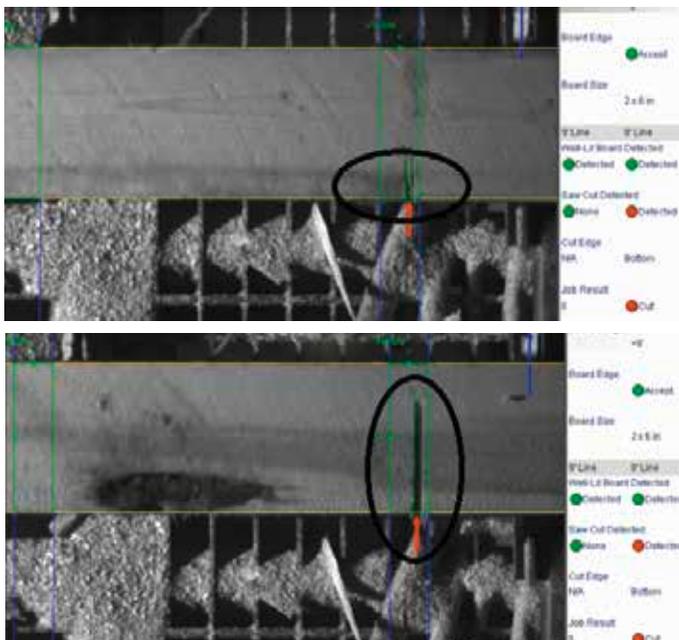
LUMBER DETECTION AND BACKLOG CONTROL



APPLICATION

Backlog control of a lug loader using discrete photoeyes or large analog light arrays can quickly become expensive as the size of the detection window increases. Regardless of the number of sensors, the potential exists for jam-ups to occur in a position or orientation that isn't covered by the current sensor configuration. On the other hand, a single Cognex vision system can achieve high resolution over a very large area of coverage to detect jams with near 100% certainty. Increasing the accuracy of backlog measurement makes it possible to vary infeed and lug chain speeds to achieve optimal backlog pressure and substantially increase lug loader throughput.

SAW-CUT DETECTION IN MONITOR-TRIMMER



APPLICATION

Slow trim saws can cause degradation in lumber quality and, with high line speeds, many boards may be affected before an operator notices that there is a problem. The Cognex vision system is configured in this application to warn the operator via the human machine interface (HMI) whenever a trimmer error occurs. The control system can easily be configured to shut down the line based on a specified number or proportion of rejects. Machine vision also makes it easy to archive inspection images so that issues that are causing repetitive errors can be diagnosed and corrected. The end result is higher levels of quality and customer satisfaction.

GRADE STAMP VERIFICATION AND BARCODE READING

APPLICATION



When operators are responsible for verifying the printing of grade stamps and barcodes on lumber, they might typically check a sample only once per hour. If they discover a process error or printing defect, they have to stop the line and sort an hour's worth of production, then rerun those pieces through the printer. Cognex vision systems and image-based ID readers read and verify grade stamps, 1-D and 2-D barcodes regardless of the size, position and orientation of the marking and lumber. They can be mounted directly on the printer for verification and at various locations throughout the mill to track and sort lumber. This approach reduces downtime, increases throughput and ensures the quality of markings.



COGNEX Companies around the world rely on Cognex vision and ID to optimize quality, drive down costs and control traceability.

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