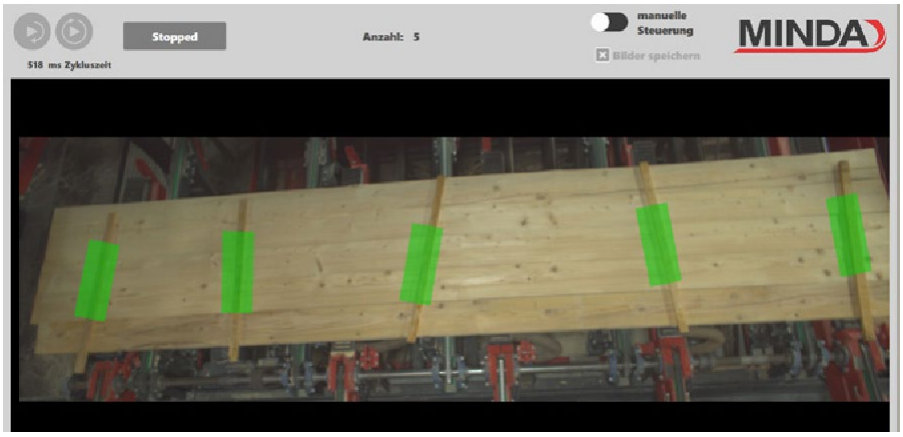
AI recognizes *every* bar

With camera-based detection of stacking bars and AI-supported image evaluation, MINDA, Minden/DE, is expanding its portfolio with a new approach to process monitoring. The solution relies on visual data to make processes more transparent and reliably collect relevant conditions. This opens up a further field of application for intelligent monitoring in industrial processes.

Since the early days of automation in wood processing, the removal of stacking and drying bars from packages of raw materials has been one of the industry's constant challenges. Not every package contains bars, and sometimes they are only located between individual layers. In practice, this usually means that either none or every layer of a package is swept off or tilted. The operator makes this decision every time the package is changed. However, many customers want automatic detection and decision-making.



Bildquelle:

Detection of the bars using AI-based image recognition and decision that the bars need to be tilted down

The bars are tilted during vacuum destacking

AI-based image recognition

However, the different bar shapes, their varying positions and the uneven surfaces of the board layers undermine the use of classic sensor technology. MINDA is, therefore, using a specially developed AI image analysis system for the first time to solve this task.

Technical implementation

The surface of the board layer is measured with a commercially available and robust industrial camera. Within fractions of a second, the AI analyzes the image, recognizes the bars and decides whether or not to tilt or sweep them off. If there are still bars left, a new process is carried out. If bars are still detected after this, a fault message is issued and an operator can intervene.

Reliable solution

The biggest challenge lies in the enormous variety of boards and bars in terms of color, dimensions, shape, and arrangement. A simple regulation was not possible. The AI learns from numerous variants, thus ensuring reliable recognition. Thanks to the cooperation with an experienced partner company for image processing, MINDA was able to achieve success quickly and develop a functional product within a short time.

Added value for the customer

The solution ensures that no bar is left lying around and thus reliably prevents faults. At the same time, the performance and efficiency of the system increase, while wear decreases, because sweeping or tilting only if it is really necessary.

Nils Connemann, Product Manager at MINDA, confirms the success based on customer behavior: "Of course, we have integrated the option of switching off the automatic detection and working manually. Since commissioning, however, the system has been running without any problems and the operators no longer have to worry about removing any bars."

Automated process monitoring

Bar detection is just the beginning. MINDA is developing further applications for automatic process monitoring and control of conveyors. Wood is an inhomogeneous product, and malfunctions occur even in modern plants. If they are detected at an early stage, this minimizes downtimes and can identify and eliminate the causes of malfunctions more quickly. In view of the shortage of skilled workers, automatic process monitoring is indispensable, the machine argues.

With AI image analysis, MINDA is opening up a new field and laying the foundations for intelligent, self-monitoring systems. The goal: maximum availability, minimum downtimes and high efficiency. //