

Expertise: Vision

Industries: Manufacturing

Robotic processing of wooden floorboards

Overview of the partnership

Partners:	A leading flooring manufacturer and Consat Engineering
Objective:	To enable robotic processing of wooden floorboards through a vision system capable of interpreting each board and generating robot tool paths, making it possible to achieve a rustic finish at industrial production speed.

When a leading flooring manufacturer wanted to automate a processing step previously performed by hand, vision technology became a decisive enabler. Together with Consat, a learning vision system was developed to interpret each individual board and generate robot tool paths – a solution that made the new product possible at scale.

Challenge

Manual processing delivered the desired appearance but was too slow and labour-intensive for high-volume production. Robotisation required a vision system capable of interpreting each board and generating safe, accurate robot paths.

Solution

A learning vision system based on an example database, generating robot tool paths and supported by an HMI for operator adjustments.

The project began as part of a new production line for a new product concept. At the time, parts of the processing were carried out manually to create a more rustic appearance. While the result met aesthetic expectations, the process was time-consuming, labour-intensive and difficult to scale. To industrialise the product, the customer's ambition was to robotise this processing step, which required a vision system capable of "understanding" each individual board.

A pragmatic partner

The project was characterised by close collaboration around requirements and training data. The customer produced a large set of example images, marking how each board should be processed by the robot. Based on this material, Consat developed a learning system that could match new boards against the example database and generate appropriate processing paths.

Consat was responsible for the vision system, robot control logic and an operator interface (HMI) that allowed fine-tuning of the suggested processing.

The challenge

Robotising the process introduced new demands on precision and operational safety. Robot paths had to be generated in a way that avoided damage to both the boards and the equipment itself. At the same time, the system needed to handle natural variation in material and surface structure while still delivering a consistent visual result comparable to manual processing.

The project was also carried out at an early stage in the development of machine learning. It predated the broader AI boom and modern deep learning techniques, placing high demands on methodology, data quality and practical implementation.

Key outcomes

- Robotic processing replacing a labour-intensive manual step
- Enabled industrial-scale production of a new product
- Operator interface allowing fine-tuning of processing paths
- Long service life with continued support and plans for upgrades

Summary

- The customer wanted to automate a previously manual processing step for a new product
- Consat developed a learning vision system that generates robot tool paths
- The solution was integrated into a new production line together with a robot supplier
- The result was a key enabler for scaling the product to industrial production

The solution

Consat implemented a vision system based on the Optonova platform using an example-driven, learning approach. By matching incoming boards against the training database, the system generated robot tool paths tailored to each individual board.

In addition to vision and robot control, Consat delivered an HMI that allowed operators to adjust the proposed processing when needed. The solution was integrated into the customer's new production line and enabled robotic processing at a pace suitable for industrial-scale manufacturing.

The result

The new product proved successful, and the vision system was a key enabler for making the product possible. By replacing a manual process with a robotic one, the customer achieved higher throughput, a more stable production flow and reduced dependence on manual labour.

The system remains in operation and has received ongoing support over the years. There are also plans to modernise parts of the solution and carry out further development.

Value-driven innovations

The project represents an early example of machine learning applied in industrial production, as an integrated part of a robotic manufacturing line. Aesthetic, "hand-crafted" characteristics were translated into a repeatable, data-driven industrial process.

That the system remains in operation more than a decade after installation demonstrates the value of robust engineering and solutions designed for real-world production, with the ability to evolve over time.

Contact us

Would you like to learn more about how we can support your operations with vision, automation and value-driven manufacturing? Contact us, we'd be happy to tell you more or arrange a meeting.