

Expertise: Vision

Industries: Manufacturing

Automated surface inspection in large-scale production



Overview of the partnership

Partners:	A global steel company and Consat Engineering
Objective:	To replace limited manual inspection with an automated vision system for inline inspection of large steel plates – improving quality, reducing claims and meeting increasingly stringent customer requirements.

When manual inspection was no longer sufficient in a high-capacity heavy plate production line, a global steel company turned to Consat to implement an automated vision system. Together, they created a scalable solution that is now production-critical for several product categories – and a key part of the company's quality strategy.

The collaboration began in 2018, when the customer identified the need for more reliable and comprehensive surface inspection in its production. The steel plates – up to three metres wide and fifteen metres long – move through the line at high speed, making manual inspection both difficult and insufficient.

To evaluate the technology under real operating conditions, the project started with a pilot system installed directly in the customer's production environment. During an extended test period, image data was collected and analysed, forming the basis for the decision to invest in a full-scale vision system.

A pragmatic partner

A decisive factor was the opportunity to test the solution in the customer's own production line. Through a rental setup, the vision system could be evaluated under real conditions – with actual production speeds, material variations and existing line constraints.

Consat delivered more than the vision system itself, taking responsibility for mechanical design, installation, commissioning, as well as ongoing service and support. The work was carried out in close collaboration with the customer, with a clear focus on reliable performance in production.



Challenge

Manual inspection was unable to reliably detect small defects at high speed, increasing the risk of claims and limiting the ability to meet higher quality requirements.

Solution

A scalable vision system for automated inline inspection of large steel plates, offering full surface coverage, high availability and image data storage for follow-up and analysis.

The challenge

Manual inspection was based on visual checks from an operator cabin combined with camera monitoring on screens. Small defects – such as pits only a few square millimetres in size and fractions of a millimetre deep – were extremely difficult to detect at a distance.

At the same time, customer requirements were becoming more demanding. Industry standards had tightened, and some end customers required full-surface inspection using automated technology. This could not be achieved through sampling or manual inspection without creating bottlenecks in production.

The solution

Consat implemented an automated vision system based on the Optonova platform for surface inspection, initially on the underside of the plates and later extended to the top side. The system was integrated inline in the production line and is capable of inspecting the entire surface at full production speed.

The vision system detects defects in real time and classifies each plate according to defined quality criteria. Results are used directly in the process, while image data is stored for traceability, analysis and further development.

During commissioning, unexpected factors were also identified – such as reflections from painted surfaces where coating had been worn away. These were handled through adjustments in lighting and image processing, an important step in adapting the system to real production conditions.

Key outcomes

- Fewer customer claims
- Ability to meet stricter customer and industry requirements
- Full inline inspection without production bottlenecks
- Reduced reliance on manual inspection
- Image data supporting traceability and continuous improvement

Summary

- The customer needed to replace limited manual inspection in large-scale production
- Consat implemented a vision system based on the Optonova platform for full surface inspection
- The solution is now production-critical for several product categories
- The partnership continues with a focus on stable operation and further development

The result

Following implementation, the customer has reduced the number of claims while meeting significantly higher customer requirements. For certain products, the vision system is now essential for production to be possible at all.

Operators have been relieved from monotonous and demanding inspection tasks and can instead focus on other responsibilities. At the same time, the stored image data enables improved quality follow-up – both for internal analysis and when handling customer claims.

Value-driven innovations

Beyond the immediate quality improvements, the solution has created a new data foundation for the customer. Surface and image data can be used to identify patterns, refine process parameters and, over time, enable more predictive quality models.

The collaboration remains ongoing, with service, support and continuous development. The solution is not a one-off project, but an integrated part of the customer's long-term approach to quality and efficient production.

Contact us

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