
Release: No. 770, 09/2019

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Joint development project by ISRA VISION PARSYTEC and Tata Steel now successfully in operation

Tata Steel is now predicting periodic surface defects with ISRA's Low Contrast Detection

Periodic surface defects caused by defective rolls have a significant impact on the quality of strip steel. It is a crucial advantage for every steel manufacturer to be able to detect such faults before they become visible to the human eye. By detecting faults in time, rolls can be changed before periodic damages appear. ISRA VISION PARSYTEC and Tata Steel have developed a special method for detecting such defects. The algorithm-based technology enables the finest roll imprints on the strip surface to be detected and the roll causing them to be identified with 100% reliability. As a result, predictive maintenance is possible and the flawed roll can be replaced before quality decreases. Manufacturers are guaranteed consistently high quality and stable yields.

A first fully operational system has been successfully implemented in a temper mill at Tata Steel's plant in IJmuiden, Netherlands, where among others steel for packaging and containers is produced. For ISRA and the company it is a decisive breakthrough and the beginning of a far larger program. Further applications are now in preparation, at the IJmuiden plant as well as for other steel manufacturers. Their interest has been stirred by the reference installation that already helps Tata in avoiding defects, completely reliably and effectively, and generating a better than anticipated return on investment.

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High plant production speeds and difficult ambient conditions make automated quality control in the cold rolling process essential, but extremely difficult. Customers from various industries have very stringent requirements for their products. The innovative new development from ISRA VISION PARSYTEC and Tata Steel now means manufacturers have a powerful tool for quality assurance. It combines advanced image processing technology with powerful calculation units to identify all kinds of periodic surface defects– even those with extremely low contrast to the background, which could not be detected previously.

The high quality assurance is made possible thanks to an innovative inspection channel designed specifically to reliably detect repeating defects. The system is based on the sophisticated use of the periodicity of recurring faults. Through a specially developed algorithm, the normally extreme low contrast defects are optically strengthened and thereby detectable. Adding the original images lets them appear much stronger and suppresses random background noise. As a result, the tiniest defects, such as previously imperceptible roll imprints, become visible. The operator can reliably monitor all rolls on the clearly structured graphical user interface. Plus, the Roll Guardian feature highlights the rolls causing problems. The compact dimensions mean the hardware can be integrated into the smallest of spaces.

This state-of-the-art method means that there is no longer any need to inspect the strips manually, thus preventing more than 75% of all dips in quality. Defective materials is prevented from reaching downstream processes in the value chain, such as coating. Being able to realize

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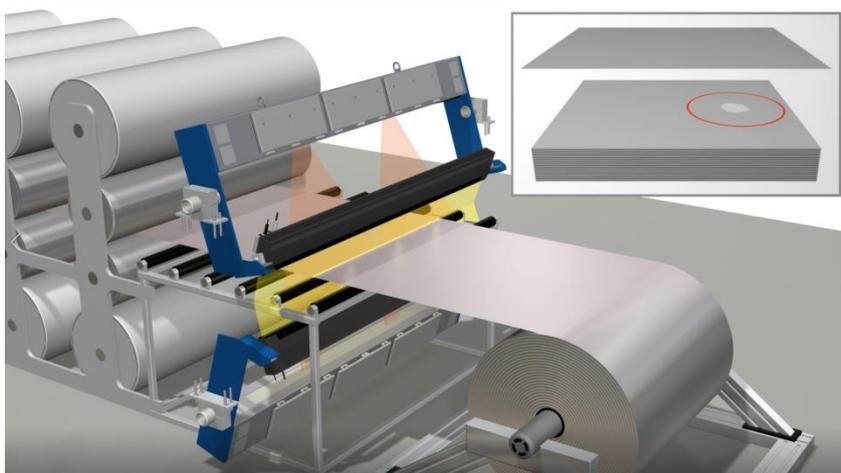
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these potential savings immediately, the system amortizes in just a couple of months.

TATA STEEL



Picture 1: The automatic surface inspection system is able to detect periodic roll mark defects, via overlaying several pictures.

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