

### ENSURING PAPER QUALITY

## Web monitoring and inspection on a high-speed paper coating line



Early defect detection and classification is essential to productivity and efficiency on paper coating lines. Challenged to provide a state-of-the-art solution for a major paper manufacturer's premium coating line, AMETEK Surface Vision delivered a reliable, comprehensive system that fully met customer expectations, while increasing productivity and winder throughput.

Mitsubishi HiTec Paper Europe GmbH is a paper manufacturer based in Bielefeld, Germany. Known for high-quality products, it is part of the Japanese company Mitsubishi Paper Mills Ltd, and produces coated inkjet, thermal, carbonless, label and barrier papers.



The Bielefeld site operates two paper machines, three coating machines, and seven winders.

The premium coating machine, designated SM3, is the most productive coating line at the plant, and runs at 1850 m/min. It is used for the coating of thermal paper for different applications, so defects, including streaks in coating, need to be detected as early as possible.

### WEB INSPECTION AND MONITORING REQUIREMENTS

The coated paper produced by the SM3 line has to meet the quality standards demanded by customers. The existing web inspection system was aging and no longer able to meet Mitsubishi's increased requirements, and so had to be replaced.

Because of the importance of the SM3 coating line, Mitsubishi HiTec Paper Europe GmbH was looking for a state-of-the-art web inspection solution that delivered the best available results. It had to be solid, reliable, and able to detect every critical defect.

The company uses inspection systems from a number of suppliers in its plant, so has had the opportunity to observe the systems side-by-side over an extended period of time. The robust, solid performance of all the previous SmartView® systems installed in Bielefeld was a key factor.

Marco Saitta, Sales Account Manager at AMETEK Surface Vision, said: "Over the years, Mitsubishi assessed the best service and support to be delivered by AMETEK Surface Vision directly. They also found our inspection systems were the easiest to use and provided

the most accurate results in terms of defect detection and classification."

The key areas of concern that had to be monitored on SM3 were coating voids and contaminations introduced during the coating process.

The capabilities of AMETEK Surface Vision's products to provide successful detection of these issues was proven by sample studies, using tailored optical configurations, performed prior to installation of the solution. In particular, UV lighting was applied to detect defects invisible to the naked eye.

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### THE AMETEK SURFACE VISION SOLUTION

To provide the highest-quality solution for SM3, AMETEK Surface Vision supplied the company's SmartView and SmartAdvisor® inspection systems, which offers a complete and integrated set of web inspection and web monitoring tools on the same machine.

SmartView is AMETEK Surface Vision's versatile, modular system for the detection, monitoring and reporting of surface defects on a range of products. It combines powerful software, linescan camera technology, high-intensity lighting and industry-leading engineering to deliver a trusted, automatic solution.

SmartAdvisor is an easy-to-use, reliable video monitoring and process analysis solution for continuous production lines. Using high-speed video and camera synchronization technology, it boosts machine efficiency, finds defects and detects process upsets from startup.

While these products can deliver significant benefits as standalone systems, they can also be coupled together in a comprehensive Smart System configuration. This allows synchronization of the final quality camera images with the over-the-line, distributed process monitoring cameras, so final defects can be traced through the line: determining how it develops, where it appears first, and ultimately identifying the root cause of the defect.

The Smart System is supported by the Advanced Winder Advisor (AWA), a precision marking solution developed specifically for SmartView systems operating in the paper industry.

It provides precise downweb position information for every defect, so that when the roll is transferred to a winder, enhanced

stopping accuracy ensures the defects can be quickly located and either cut out or repaired.

Mitsubishi's main focus in terms of quality is to deliver 100% defect-free paper to the customer. This requires any defects to be identified, properly classified, and then removed. The AWA supports easy, accurate removal on the winder with minimal waste product, increasing production speed and overall product yield.

**Axel Kümper, Mitsubishi's Production Manager for SM3, said:** *"We have found the AWA to be a very impressive tool, because it stops within a maximum of 10 centimeters from the defect. While there are other solutions available, this has proven to be the most effective one for identifying defect locations for easy removal or patching."*

### MEETING CUSTOMER REQUIREMENTS

Mitsubishi HiTec Paper Europe GmbH reported excellent results from using the new system on SM3.

The detection capabilities were found to satisfy the highest quality levels, while the synchronization between web inspection and web break monitoring enabled effective defect root cause analysis and a time-efficient remedy for web break causes.

The AWA enabled reliable and effective defect removal on the converting side. Prior to the installation of AWA, several hundred meters of paper were removed around defects – now, the exact position localization of the defect minimizes the loss of material.

**Axel Kümper said:** *"The integrated web inspection and web monitoring system from AMETEK Surface Vision was clearly the right choice for us."*

*"With this new system, we are able to meet the highly demanding quality requirements of the thermal paper market, delivering defect-free material to our customers."*

*"The SmartView system has provided excellent defect detection to minimize our customer quality claims, while SmartAdvisor has improved our production process and maintenance interventions. Web breaks are reduced by 5-10% compared with the previous system."*

*"The commissioning services supplied by AMETEK Surface Vision have been very good, and we've*

*received excellent on-going support from senior engineers. They've provided a fast, highly competent response, and all the questions that arose were easily solved by phone or remote connection."*

With the AMETEK Surface Vision systems fully satisfying the current demands of Mitsubishi, further upgrades are planned to other lines, including newer light technology and adding the AWA to more winders.

In addition, there are discussions to increase the number of cameras on the SM3 line, further increasing the productivity and cost-savings on that machine.

### PROCESS LOCATIONS

Premium coating

### ABOUT AMETEK SURFACE VISION

AMETEK Surface Vision is a world leader in automated online surface inspection solutions with a broad product portfolio optimized for web and surface inspection and monitoring and process surveillance applications.

Surface Vision's product portfolio includes two distinct product lines: SmartView® systems and SmartAdvisor® systems. Each product line uniquely enables customers to inspect the surfaces of materials processed in a continuous fashion across the metals, paper, plastics, nonwovens and glass industries.

Surface Vision is a unit of AMETEK Process and Analytical Instruments, a division of AMETEK, Inc., a global manufacturer of electronic instruments and electromechanical devices with annual sales of approximately \$5 billion.



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