SURFACEVISION



PAPER SOLUTIONS

DELIVERED THROUGH

SMART VIEW® Detection and identification

SMART ADVISOR® Process video monitoring

AMETEK®

SURFACE VISION

GIVING YOU THE WHOLE PICTURE

The leading automated surface inspection partner for fast and accurate web inspection and monitoring.



SURFACEVISION

AMETEK Surface Vision helps paper, packaging and tissue manufacturers meet their production challenges with fully integrated web inspection and monitoring solutions that boost efficiency and improve quality.

Setting the highest standard for web inspection and monitoring in the paper industry, we have been successfully inspecting various grades of paper for more than 20 years. We are pioneers in the surface inspection market, launching our first digital camera-based system in the 1990s. In addition, our SmartAdvisor® web monitoring solution was the first synchronized camera system installed on a paper machine.

This experience ensures we understand that each paper production process has unique properties and defects, requiring an equally unique solution. Our expertise drives the selection of the best combination of lighting, cameras and other hardware, as well as the right monitoring, detection and classification solution.

Our approach is to provide the latest, best-fit technology for each application, delivered with the highest consistency and without compromise by the most experienced service personnel.

This means AMETEK Surface Vision systems ensure real-time detection of all paper defects, with highly-configurable inspection software that automatically identifies and visualizes product imperfections, synchronizing to the root cause of the imperfection with our web monitoring solution.

The benefits are immediately visible: improved product quality, better productivity, maximized yields, defect detection prior to value-added processes or shipping, and a reduced need for manual inspections.

That's why AMETEK Surface Vision's solutions are relied upon by virtually every major paper producer around the world.

APPLICATIONS

SmartView® and SmartAdvisor® systems can be applied to the full spectrum of paper, packaging and tissue applications, including:

- Fine paper
- Newsprint
- Supercalender Paper
- On-line coated paper
- On-line coated board
- Off-line coated paper
- Off-line coated board
- Liner
- Corrugated medium
- Liquid packaging
- Tissue
- Décor paper
- Label
- Release paper
- Pulp lines
- Specialty
- Food grades

and more...

SMARTVIEW® SMART ADVISOR®

PAPER INSPECTION AND MONITORING SYSTEM

AMETEK Surface Vision's integrated paper inspection and monitoring systems combine cutting-edge software and rugged, proven hardware to deliver the most precise, real-time detection and classification possible, across the paper process.

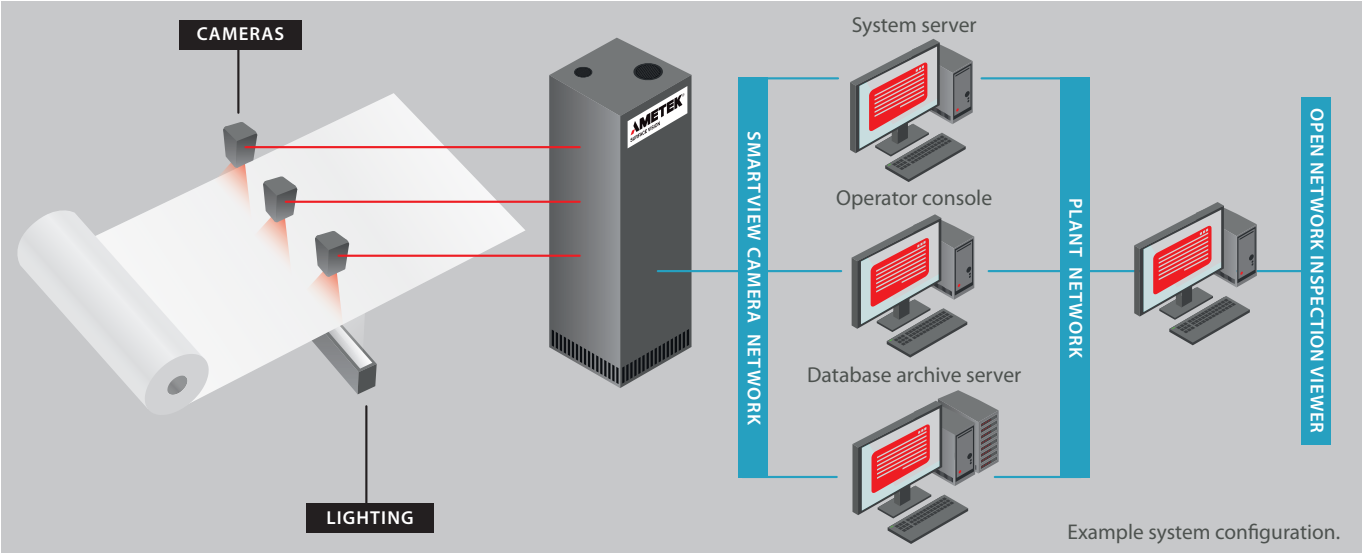
This provides a flexible, customizable solution that provides comprehensive insights about the entire manufacturing process.

Uniting AMETEK Surface Vision's powerful web inspection and monitoring capabilities, synchronized camera technology is supported by powerful LED lighting arrays for high-quality image capture of defects using multiple inspection angles.

This inspection data is processed through high-performance computer systems, integrating sophisticated software control tools and detailed real-time analysis into an easy-to-operate package.

Our modular inspection and monitoring systems can be expanded or upgraded whenever needed to meet changing customer requirements.

Designed with ease of operation and future-proofing in mind, all our inspection and monitoring systems are supported by AMETEK Surface Vision's unmatched applications experience and technical expertise, for solutions that are trusted by the paper industry worldwide.



Example system configuration.

SOFTWARE

Our dedicated Windows-based software integrates seamlessly with "off the shelf" system hardware to provide continuous detection, classification, visualization and reporting, accessible across the network.

CAMERAS

Non-proprietary, high-precision, continuous-operation cameras are located across the process, using resolutions and optical technologies best suited to each specific application.

LIGHTING

Powerful, long-life LED lights brightly illuminate the web for inspection and monitoring, delivering uniform lighting levels.

DATA CAPTURE & ANALYSIS

Our Windows-based, non-proprietary computer systems store and analyze data from the cameras, supporting video streaming and defect classification capabilities.

APPLICATION SUPPORT

Our expert applications knowledge helps you to run your system more easily, providing the optimal solution for your process.

SEAMLESS INTEGRATION OF WEB INSPECTION AND



SmartSync is a fully integrated unified vision platform that harnesses the combined power of our flagship SmartView web inspection system and SmartAdvisor web monitoring system.

It is built upon proven technologies including advanced classification software and patented synchronized camera technology.

Customers gain the multi-camera video monitoring power of SmartAdvisor's synchronized system along with the flexibility and proven performance of SmartView web inspection.

SmartSync maximizes return on investment by providing accurate root cause analysis capabilities of web break events AND paper defects.

SmartView's advanced classification can be configured to trigger an event capture across multiple SmartAdvisor data points on the production line. As a result, the operator can rely on multiple views and data points to rapidly analyze and determine the root cause of a defect or process upset and take corrective action.

This visual synthesis between upstream and downstream cameras provides the foundation for increased production performance through the reduction of web breaks and paper defects.

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KEY FEATURES

Defect libraries

We use our application experience to create your custom defect library when we commission your system, providing a reference structure that is quickly filled with data relevant to your process. This forms a library of detection thresholds and inspection parameters that is easily configurable, delivering unparalleled detection classification and visualization of surface defects, allowing quick start-up and immediate return on investment.

Classification tools

SmartLearn is AMETEK Surface Vision's patented multi-step classification tool that provides the flexibility to implement classification schemes tailored to your particular process and requirements. The advanced SmartLearn architecture allows the use of various learning classifiers. Combining automatic learning classification with expert knowledge, SmartLearn maximizes the potential of your inspection system for improved product quality, higher production yield, and decreased customer returns. This performance is delivered in an easy-to-use environment designed to be used by paper producers, not software engineers.

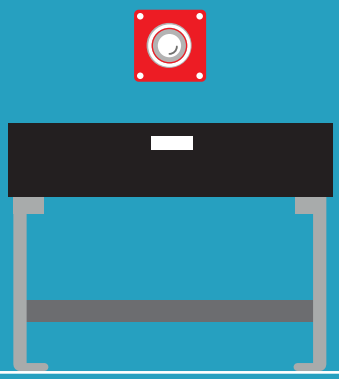
Multiple line synchronization

The effectiveness of our post-processing tools is founded on patented high-precision marking technology. During the inspection process, exact position codes are applied to the paper that enable downstream cameras to accurately synchronize defect positions within millimeters. The accuracy of the position code provides the necessary environment for multiple downstream process inspections (paper machine, winder, coater, supercalender, etc.) to be combined into a single actionable product defect map.

Advanced Winder Advisor

Based on the high-precision marking allowing immediate resynchronization after a web break, sheet splicing, or similar, the Advanced Winder Advisor enables automatic stops of winders, re-reeler, etc., at the exact defect location. The superior defect identification and visualization capabilities of the SmartView system, combined with the efficiency of the Advanced Winder Advisor, provides you with results that cannot be achieved with conventional web inspection and winder control systems.

END USER BENEFITS



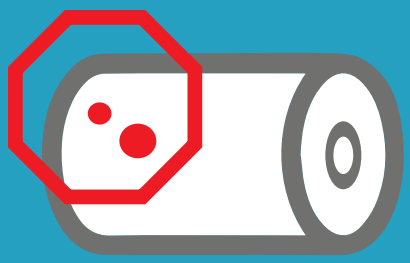
Fast detection

The AMETEK Surface Vision paper system is highly modular, allowing the use of the most appropriate light and camera configurations for your application, using standard system components. AMETEK Surface Vision offers the most comprehensive selection of lighting solutions in the industry, applying collimated, diffuse, transmitted, reflected, side lighting, UV, etc., depending on your application needs. In addition, our collection of thresholding algorithms can be quickly optimized for your particular material and requirements, all performing on-line in real time. You never have to wait for results.



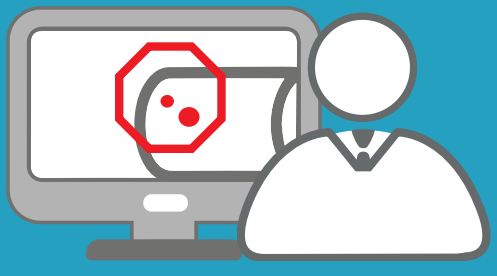
Through-process visibility

The Windows®-based AMETEK Surface Vision paper system, connected to your mill network, provides information for mill-wide users, from the manufacturing floor to the front office. Our solutions use industry standards like OPC, ODBC etc. to ensure easy integration with other plant business, production, and quality systems. A real-time operator interface shows current inspection results on-line all the time. The Open Network Inspection Viewer, distributed across the plant network, enables any user to view current or historical inspection results remotely.



Continuous vision

The AMETEK Surface Vision SmartView and SmartAdvisor systems continuously analyze and record images and report any defects or web breaks, providing the information needed for the management of material quality. SmartAdvisor enables the review of hours and hours of synchronized images, allowing unmatched root-cause analysis and material troubleshooting to be performed. SmartView facilitates the performance of formation analysis, defect identification and advanced defect classification.



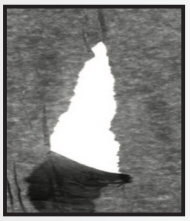
Integrated vision

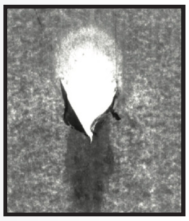
The integration of both video and defect classification information into an integrated operator display allows fast and easy root cause identification and problem-solving. This visual synthesis between upstream and downstream cameras provides the tools to clearly identify root cause of the production upset, such as web breaks and defects. We can also integrate the current SmartView or SmartAdvisor systems of existing customers to deliver the quality benefits of a fully-integrated vision platform.

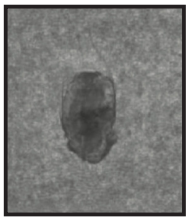
SEE THE RESULTS

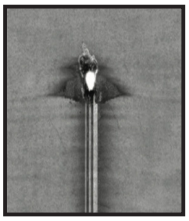
Swift defect identification

Advanced inspection technology ensures real-time detection of defects on paper or tissue surfaces. Our parallel processing algorithms can analyze every camera view using multiple detection scenarios, allowing users to define their own areas of interest and set specific threshold levels to suit individual processes. Powerful self-learning classifiers are used to categorize defects correctly, while data from similar applications can be used from start-up to deliver immediate results.


Tear hole


Slime hole


Starch spot


Blade tear

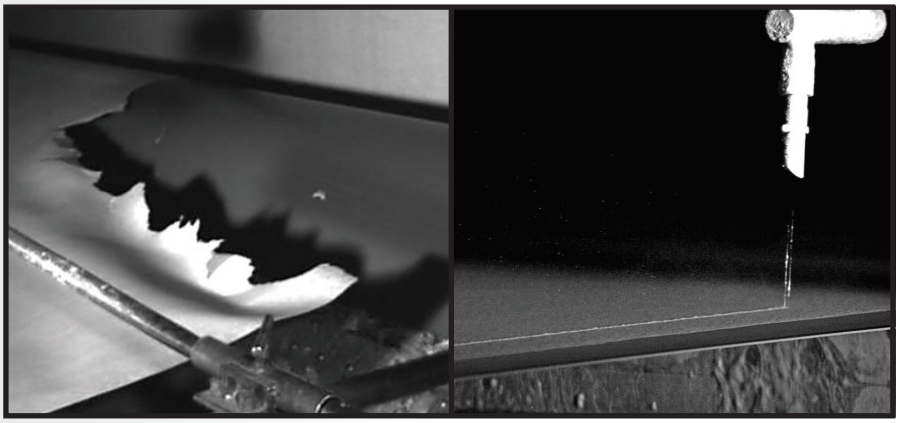

Edge tear


Bubble mark


Hole contamination

Root cause identification

Our unified vision platform unites the best-in-class technologies of SmartView and SmartAdvisor to provide comprehensive insights across the entire manufacturing process. Best-fit camera technology, flexible front-end design and our advanced suite of post-processing controls combine to ensure complete evaluation of the paper-making process. By layering the entire process with intelligent cameras, operators and engineers can quickly determine the root cause of defects, and clearly identify process upsets.



Post-processing tools

Our range of effective post-processing tools are built upon the foundation of patented high-precision linear encoding technology. This enables downstream cameras to accurately determine machine position within millimeters. Control advisors can then be used to optimize downstream processes – such as winders and slitters, coating, super calendaring and cutters – by controlling line speeds and triggering events such as knives and reject gates. The Advanced Winder Advisor provides immediate resynchronization after sheet splicing, for unparalleled post-processing control.



APPLICATION SUPPORT

AMETEK Surface Vision is the global leader and preferred choice for web inspection and monitoring systems in the paper industry. We've been delivering inspection and monitoring products to the global paper and tissue market since the 1990s, with more companies relying on our vision technologies than any other image-based web inspection and monitoring system.

Our expert engineers can help you select the perfect solution to meet your goals, customized to your unique process requirements.

When you purchase a Surface Vision solution, you're not just buying our patented software and advanced hardware – you also get our deep applications knowledge and support.

Product requirements, technology and customer demands are constantly changing. That's why we developed modular solutions, based on off-the-shelf technologies, that can grow and build over time according to your needs. Our expert support teams will advise you on initial set-up for your system, and we'll help you improve it over time, as process conditions change, and budgetary considerations allow.

We also give you full access to essential information, troubleshooting assistance, spare parts order fulfillment, and application consulting services.

A global team, supporting you

We offer worldwide technical support via phone, email and direct remote access, along with options for on-site engineering visits and training courses, ensuring you always have access to our extensive technical expertise and applications knowledge.

Let us provide the support you need to meet your goals, with a solution that grows alongside your process and continues to deliver the maximum return on investment for many years post-installation.



SURFACEVISION



ABOUT AMETEK SURFACE VISION

AMETEK Surface Vision is the world leader in automated online surface/ web inspection and monitoring solutions. Our broad product range is optimized for the monitoring and inspection of webs and surfaces, and for process surveillance applications.

The SmartView and SmartAdvisor product lines deliver robust, flexible solutions to continuous production processes across a number of industries, with hundreds of customers and more than 3,000 installations worldwide.

Our systems have become vital to increasing efficiency, streamlining operations, improving product quality and reducing costs and waste in industrial processes. Manufacturers in the metals, paper, plastics and non-woven industries rely on our solutions to detect surface flaws or defects, and optimize process efficiency, at their production facilities across the globe.

We continue to innovate, providing cutting-edge technologies and world-class technical support that delivers highly accurate defect data, high-definition video, intelligent grading, archiving and detailed reporting. Customers who use AMETEK Surface Vision's services get the benefits of:

- **Reduced operational costs**
- **Process optimization**
- **Reduced process upsets (breaks, wash-ups, etc)**
- **Improved product quality**
- **Maximized yield**
- **More thorough and objective grading of material**
- **Detection, classification and visualization of defects**
- **Minimized need for manual inspections**
- **Inspection reports you need, in a form you can use**

Based in Hayward, California, AMETEK Surface Vision has offices and sales representatives around the world.
We are part of the Process and Analytical Instruments Division of AMETEK Inc., a leading global manufacturer of electronic instruments and electromechanical devices.

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