Making Light Work

Automated Defect Detection for the Highest Quality Control
Achieve Zero Defects with Our Advanced Surface Inspection, Classification System

No two surface inspection systems are alike. NDC’s web inspection systems go far beyond conventional defect detection and classification, delivering unparalleled speed, precision and performance for customers in industries like converting, nonwovens, paper, plastic film and high-value metals, to name a few. Our integrated and stand-alone solutions deliver significant benefits enabling you to increase yield, boost productivity, improve product quality and lower production costs.

Engineered by R.A.M. – A New Era in Vision-Based Quality Control

NDC’s web inspection systems are based on innovative R.A.M. technology and include advanced high-resolution cameras, optics and lighting, combined with high-speed software and real-time image processing, providing manufacturers with powerful capabilities to instantly detect, classify, document and record all optical defects across a broad scope of web-based materials.

Universal analysis tools enable you to quickly and reliably identify and resolve product flaws early in the process before they become costly production problems. Our “CAMEN” (Computer Aided Manufacturing Environment) software allows for customized integration into existing machine structures. And, our modular web inspection systems can be easily expanded to meet your growing demands.

NDC’s web inspection systems are installed at key manufacturing locations across the globe. And every system is backed by NDC’s world-class customer service and support organization.

Get the quality, productivity and process advantage with NDC’s web inspection systems.

System Advantages

► 100% web surface inspection across a range of substrates and material properties
► Eliminate product defects and deliver higher quality products
► Benefit from sophisticated defect classification engine
► Drive customer satisfaction through quality-assured inspection methods
► Accurately inspect incoming materials for cost-efficient grading of products
► Increase productivity with easy-to-use operator interface (HMI), real-time process feedback and powerful analytical and reporting tools
► Realize a fast ROI and lowest total cost of ownership
R.A.M. Technology
All NDC’s web surface inspection systems are engineered by R.A.M., an industry innovator of real-time vision measurement and control solutions. For over a quarter of a century, R.A.M. technology has become synonymous with comprehensive inspection, reliable defect detection, accurate identification and visualization.
1. **FIS 1000 Film**
Effectively detects, classifies and reports process defects on or in plastic films.

2. **FIS 1000 Biax**
Optimized for defect recognition on Biaxial lines in MDO (Machine Direction) and TDO (Transverse Direction) applications.

3. **FIS 1000 Nonwoven**
Accurately detects, classifies and reports process defects in nonwoven materials. Handles a range of slits and web widths.

4. **ITG 600 Unwinder/Rewinder**
Precisely detects, classifies and reports process defects on transparent and opaque foils.

5. **ITG 700 Slitter Rewinder**
Reliably detects, classifies and reports process defects on upper and lower surfaces of opaque films.

6. **OPS 400/401 Opacity**
The OPS 400 integrated system measures opacity in transparent to coated black products. The OPS 401 offers the same measurement capabilities but as a stand-alone solution.

**A Complete Portfolio of Best-in-Class Web Inspection Systems**

[www.ndc.com](http://www.ndc.com)
Smart Line Cameras for High-Speed, High-Resolution Imaging

NDC’s web inspection systems are designed for precision inspection on high-speed lines. They are equipped with the latest CMOS-based cameras that capture exceptionally accurate images at ultra-fast sampling rates with high signal-to-noise ratio. These smart cameras include built-in processing to capture web problems in real-time for rapid, precise display and analysis of defects.

Camera modules are available with up to 16K pixel resolution that offer sampling rates up to 200K lines/second. This provides high-resolution imaging in machine direction (MD) at high production speeds.

The modular, compact camera design offers installation flexibility on the production line. Camera heads and processing unit are passively cooled via a side-mounted heat sink. The stainless-steel enclosure offers environmental protection at ambient temperatures up to 50°C (122°F). Air and water cooling is available for higher temperature environments.

Our Lighting Technology Illuminates Problems

For high-quality image acquisition, NDC’s web inspection systems use high-intensity lighting techniques such as LED, phosphorous and near-infrared illumination. This provides the bright, flicker-free illumination necessary for effectively detecting blemishes and other imperfections.
Unmatched Performance in a Wide Range of Applications

NDC’s web inspection systems are proven performers across a broad scope demanding industrial applications:

► Coating, Laminating and Decorative: battery coating, composites, decorative laminates, flexible packaging, liquid packaging, flooring, labels and tapes

► Nonwovens, Textiles and Fabrics: air-laid, dry-laid, needle-punch, spunbond, spunlaid

► Metal: aluminum and copper foils, coating, laminates

► Paper: coated, paperboard, synthetic

► Plastic Film and Sheet: automotive, biax, blown, barrier, cast, extruded, Li-Ion battery separators, optical, speciality

► Rubber and Vinyl Calendering: adhesive, coating

Powerful Tools for Improving Your Processes and Product Quality

CAMEN
Computer Aided Manufacturing Environment
Your window into our surface inspection systems

► Easily setup and configure line cameras

► Create an unlimited number of recipes with quality settings according to product, job, order or substrate

► View product quality, critical trend and defect data in real time

► Quickly identify number and density of defects, and classify by size and location in the machine- or cross-machine direction

► Simply specify benefits outcomes and generate protocol reports to drive quality improvements

► Use defects MAP with icons and gray-scale images to intuitively visualize flaws
**Defects We Precisely Detect and Classify**

<table>
<thead>
<tr>
<th>- Bubbles</th>
<th>- Cuts</th>
<th>- Holes</th>
<th>- Stains</th>
<th>- And other imperfections</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Bumps</td>
<td>- Dents</td>
<td>- Impurities</td>
<td>- Streaks</td>
<td></td>
</tr>
<tr>
<td>- Burns</td>
<td>- Dirt</td>
<td>- Insects</td>
<td>- Voids</td>
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<tr>
<td>- Carbons</td>
<td>- Fisheye</td>
<td>- Scratches</td>
<td>- Water/Oil Droplets</td>
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<tr>
<td>- Clumps</td>
<td>- Gels</td>
<td>- Specks</td>
<td>- Wrinkles</td>
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**vSTAT**

Visualization and Statistical Analysis Tool

- Perform historical analysis of products, production trends and specific production parameters
- Use robust reporting engine to produce mapped defect reports with failure icons, statistical reports, various cut reports (CD and MD cuts) and multiple roll reports to track defect trends
- Overlay results from multiple systems such as biax film lines
- And more...

**RED**

Off-Line Recipe Editor

- Easily copy recipes from system to system
- View actual and print recipe settings
- Available for Linux, Windows®, and Mac
Optimizing Your Investment with World-Class Service and Support

NDC’s technical expertise comes from deep experience supporting thousands of products at the world’s leading manufacturers. Our portfolio of support offerings leverages this expertise to assist you through the service lifecycle. We offer a complete range of cost-effective support solutions including commissioning, training, technical support and service agreements. Customers rely on our 24-7 availability via myNDC – the industry’s most progressive service cloud portal. Whether it’s configuring new equipment, training your technical staff or solving a technical problem, you can count on our experienced team to help maintain the health and performance of your NDC product.

Visit myNDC service cloud at ndc.custhelp.com.