

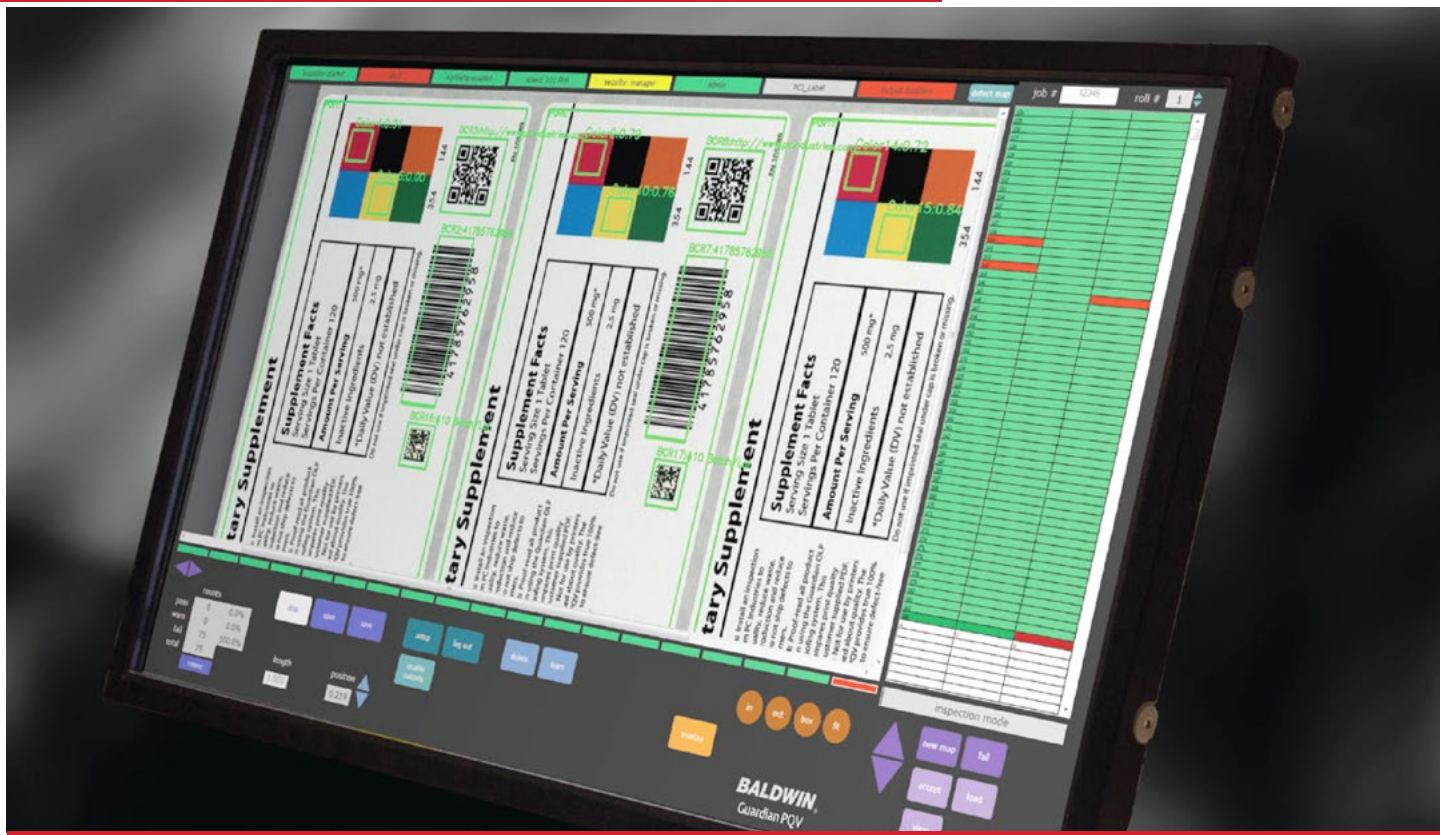
# Guardian PQV

## 100% Print Inspection Systems



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**Eliminate every defect with a more efficient, accurate, data-connected inspection workflow**

**Guardian PQV 100% Print Inspection provides complete print quality verification from prepress through production, reporting, and archiving**

Find and remove defects quickly... and monitor your processes to prevent defects from occurring in the first place. Guardian PQV delivers advanced, automated, inline defect detection for your entire production process—on any machine, on any material, in any production environment.

This robust, feature-rich system is designed to perform without fail to the most rigorous inspection requirements, with almost any substrate, and for all printing applications including converting, label, packaging, sheet and web. Guardian PQV is the ideal solution for printers working within the most exacting of regulated industries including currency, banknote, security, and pharmaceutical.

### Features and Benefits

- Inspect 100% of the web or sheet width 100% of the time.
- Developed for inspecting challenging applications including **currency, banknote, security and pharmaceutical**.
- Designed to be flexible, features can be added as your business grows, providing a future-proof investment.
- Unique **Object-Based Inspection** throughout the entire printing process ensures tighter tolerances and fewer false defects. Areas of interest can be defined for enhanced, or reduced levels of inspection.
- Systems available for narrow to wide applications on all types of presses and rewinders, including high-speed bi-directional, sheet transports, and other machine types.

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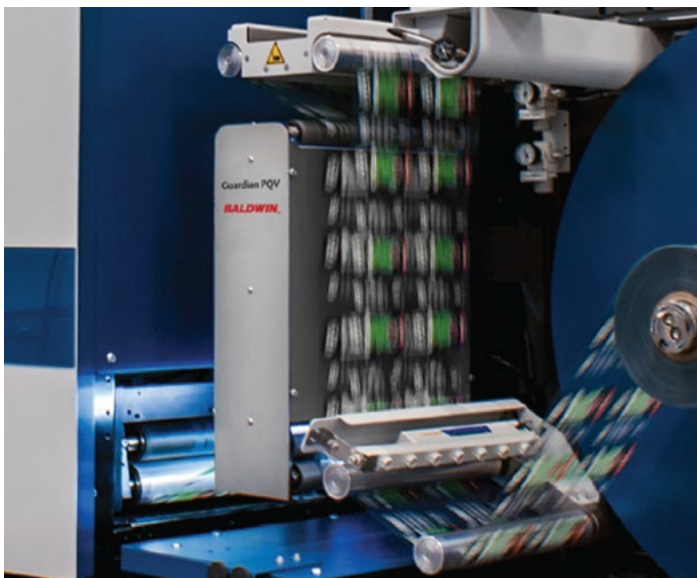
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## Features and Benefits (continued)

- LED variable intensity lighting options are available in many wavelengths, including UV and IR. Guardian PQV can inspect all types of materials and substrates—and special applications including holograms, coatings and varnishes, adhesives, cold seals, covert serialization, covert security features, and more.
- **Advanced Defect Mapping** process allows operators to easily spot errors and make adjustments in real time, as well as track and manage defects throughout your entire process. Defect positions and images are recorded and can be accessed at multiple post-press processes.
- **Automated Job Setup** via PDF provides the ability to set up your inspection jobs remotely and automatically using a PDF master file. This feature eliminates the need to manually set up your inspection jobs—providing further time savings—while retaining the ability to do so if required.
- The **Automatic Job Changeover** feature provides the ability to change from one inspection job to the next automatically “on the fly” without operator interaction or stopping the press. This is ideal for digitally-printed short runs where quick and frequent job changeovers are required.



- **PDF Verification** provides the ability to import a PDF file of customer-approved artwork and compare it to the intended Master Image. This alerts the operator to defects such as missing or incurred content to ensure there is consistency between the original artwork and Master Image.
- Job setup files—including the verified Master Image and all inspection sensitivity and lighting levels settings—are retained, and can be reused at any time in the future. This eliminates the need to re-setup recurring job runs.
- With the ability to map and track barcode or human readable code

data and defects, as well as errors in variable data, this platform is one of the most flexible and comprehensive on the market.

- **Barcode Decoding** software can recognize and decode 1D linear barcodes and 2D type codes to check readability. Matching verification will automatically check for missing or duplicate codes in a sequence, and variable code data can be confirmed to an external file.
- **Barcode Grading** software performs real-time ANSI/ISO grading of 1D linear barcodes and 2D type codes against a set minimum quality letter grade or score.
- The **Optical Character Recognition/Optical Character Verification** (OCR/OCV) tool is for applications that require recognition or verification of human-readable numbers or characters. This tool can read numbers and strings, verify sequences, or be configured to match other tools such as the barcode tool, another OCR/OCV tool, or confirm variable data to an external file.
- **Relative Color Measurement** software measures L\*a\*b\* color values relative to the Master Image. The operator can define areas in the image to measure and can set a minimum  $\Delta E$  to detect color variations.
- **Dimensional Gauging** software provides the ability to precisely measure the distance between features of the inspected material, such as a die-cut edge or a printed detail. This capability goes far beyond standard position and registration checking. Measurement data can be output via CSV file.
- **Repeat Length Monitoring** is available when the system is properly quipped, providing precise repeat length measurements, and notification of a “warn” or “fail” condition.
- **Nozzle Check** software for inkjet-based digital print automatically detects if the nozzle test pattern is present, and performs an inspection to identify missing or shifted lines and contaminated jet location. The software also indicates which color is having the issue to make it easier for the operator to correct.
- **Dynamic Learning** features allow real-time acceptance of non-critical differences located anywhere, without reducing the inspection sensitivity for the entire inspection area.
- The system precisely controls defect placement on single and bi-directional high-speed rewinders and other machines, and can be uniquely equipped to inspect from zero speed, and without upsets through machine stops and starts.
- The **21CFR Part 11** feature provides reporting and documentation to allow pharmaceutical printers to fully comply with this FDA regulation. The system also meets EU Annex 11 requirements.
- **Secure Audit Trail** includes detailed error reports, providing documentary evidence of system activities and inspection results.
- Three levels of secure system access with password protection—including operator, manager, and administrator levels—makes the system completely secure.
- Special algorithms are available to inspect for defects or imperfections in some unprinted materials.
- The system can be equipped for bi-directional inspection capability. Webs or sheets can be passed through in either direction.

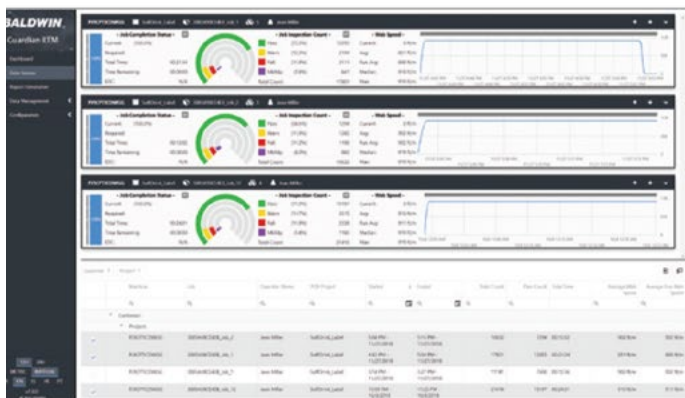
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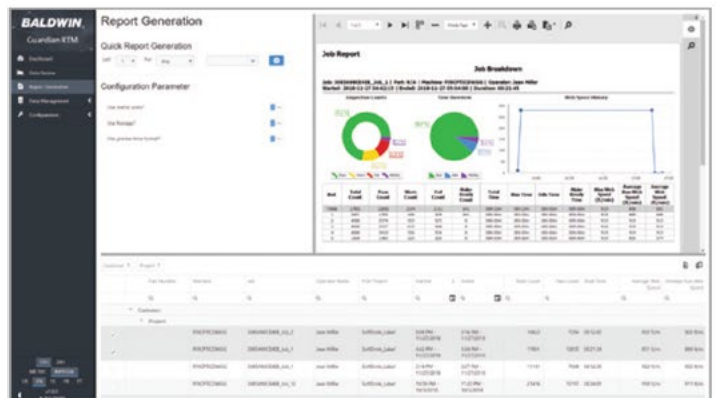
## Real-Time Monitoring

With the optional Guardian RTM **Real-Time Monitoring** data-connecting technology, printers can track and compare many different production metrics. Press managers can monitor changes as they happen, and make highly-informed decisions about print quality, defect management, and even operator-to-operator performance.

Guardian RTM uses a central server to monitor, collect, and display real-time inspection data on a simple, uncluttered dashboard. RTM can simultaneously collect data for multiple presses, jobs, and even across multiple plants. The combination of technologies ties together how you manage your processes, your print customers, and even your people. You're empowered to quickly identify any mechanical issues, process inefficiencies, or even tailor your operator training to eliminate defects.



The Data Review screen allows users to review, compare, and analyze completed jobs, using the same familiar format as the already-familiar Dashboard screen.



Quickly create reports from all connected PQV systems with the Report Generation tool. Customize reports manually, or use the Quick Report function. Export to multiple file formats: PDF, XLS, XLXS, RTF, DOCX, MHT, HTML, Text, CSV, Image.



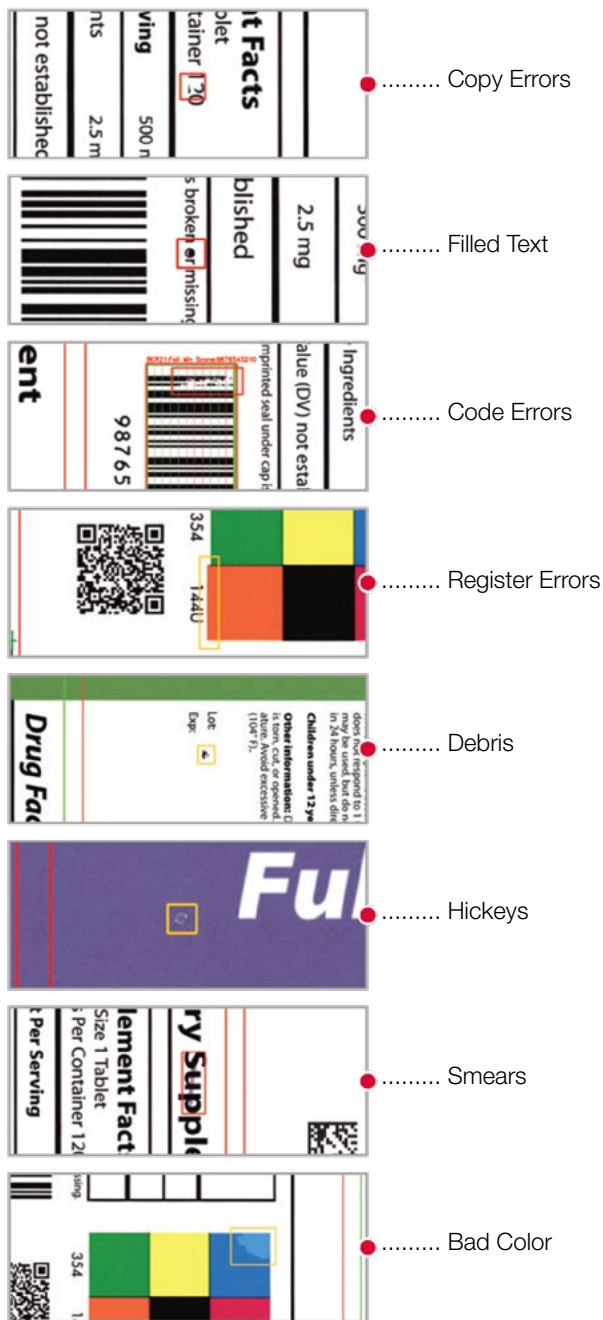
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## Specifications

### Components

High performance industrial computer, Windows 64-bit operating system, 23" LED 1920x1080 HD touchscreen monitor, line scan camera, integrated idler roller assembly for web control, variable intensity air cooled LED lighting, aluminum camera hood assembly, fixed lens assembly.

### Camera Options

Color or grayscale, in resolutions of up to 16K each. Low profile, compact camera option without using mirrors.

### Common Inspection Configurations

Single side, dual sided top and bottom inline, dual-sided top and bottom offset, multiple lighting wavelengths inline, and more.

### Materials/Substrates

Paper, film, foil, holographic, clear on clear, semi-transparent, corrugated, flexible, RFID, and more.

### Machine Controls

System inputs and outputs provided for interfacing with external equipment including presses, rewinders, sheet transports, printing and marking systems, flagging units, and other machines or devices.

### Lighting Options

Solid-state LED (white, UV, IR, other) variable intensity lighting. Lighting options for all materials and substrates, and for special applications including holograms, coatings and varnishes, adhesives, cold seals, covert serialization, covert security features, and more.



Visible Light



IR Light  
IR Absorbent Ink



UV Light  
UV Fluorescent Ink

## Inspect All Types Of Materials & Substrates

Operators can easily spot errors and make adjustments in real time, as well as track and manage defects throughout your entire process. Defect positions and images are recorded and can be accessed at multiple post-press processes.



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