



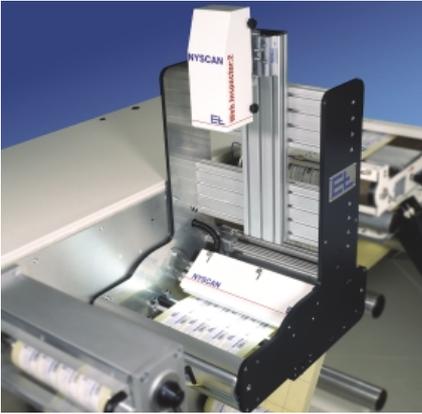
NYSCAN

Print Inspection

workflow with vision



Satisfied Customers through Security



Camera housing and light source of a fully integrated Web:Inspector:2.

New demands on the printing industry

New technical achievements are raising your customer's quality expectations towards your printed product. These can only be matched by modern integrated high-resolution inspection system.

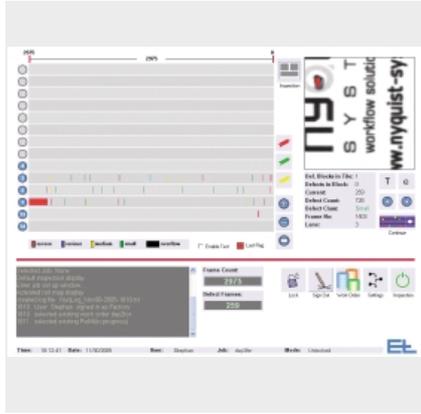
Technology defines the standard

Security conscious industry segments like the pharmaceutical industry and security printers demand integrated workflow solutions and validatable control concepts. Other segments like food, cosmetics and chemical packaging follow the trend and expect "zero error tolerance" at maximum productivity.

The NYSCAN inspection products from E+L

To meet the diverse requirements of the printing industry, E+L offers a wide range of inspection systems that suit the demands of different applications. From prepress to post-press – all our products are based on the latest technologies. Web:Inspector:2, for example, comes with a line scan camera that can scan over 6000 pixels across the web. That is 9-times the resolution and accuracy compared to a standard 100%-inspection-system featuring a 4-Megapixel camera.

160 Million pixels per second are being processed by the Web:Inspector:2, an unimaginable data stream.



User interface of Web:Inspector:2. The display shows the Roll Map on the left and a current error on the right.

Displaying of information

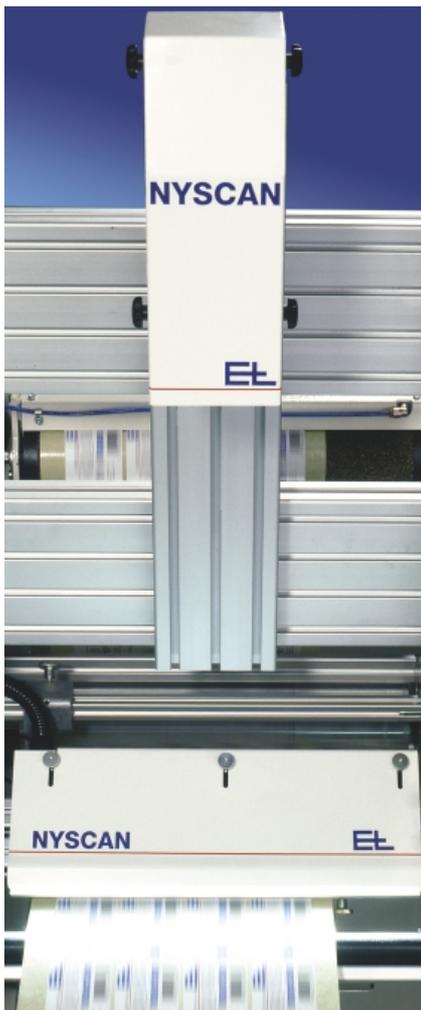
The screen contents have been ergonomically arranged and designed. Only the most important information such as immediate errors and the error history are actively displayed on one or optionally two screens.

Simple operation

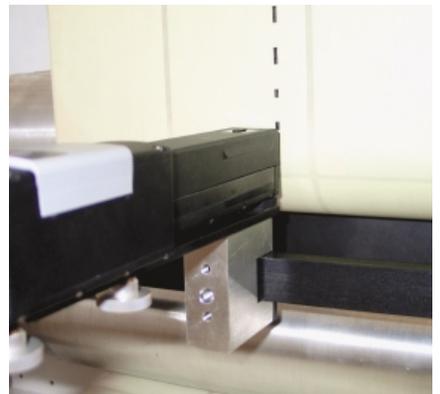
The operation of E+L Print Inspection systems is easy because of our icon based interface. Inspection job setup is flexible allowing you to define multiple inspection zones. Once a job is generated, it can be loaded or altered any time in the future.

Grow with your demands

Our inspection products are based on flexible software and standard hardware. This lets us easily maintain and configure them through the internet. Your system can grow with the possibilities of new PC-technologies to make sure you stay up-to-date.



Print head of the Code Mark Printer inkjet printer for marking the absolute web position for Roll:Scheduler:1's automatic fault-placement.



Maximum Productivity and Highest Security through Workflow-Management

Our three NYSCAN products:

Image:Inspector:2, Web:Inspector:2 and Roll:Scheduler:1 are workflow components that interconnect your production stages for comprehensive quality management. Through complete quality control from pre-press to post-press you will maximize your productivity by improving quality and lowering production cost while reaping the benefits of satisfied, long-term customers.

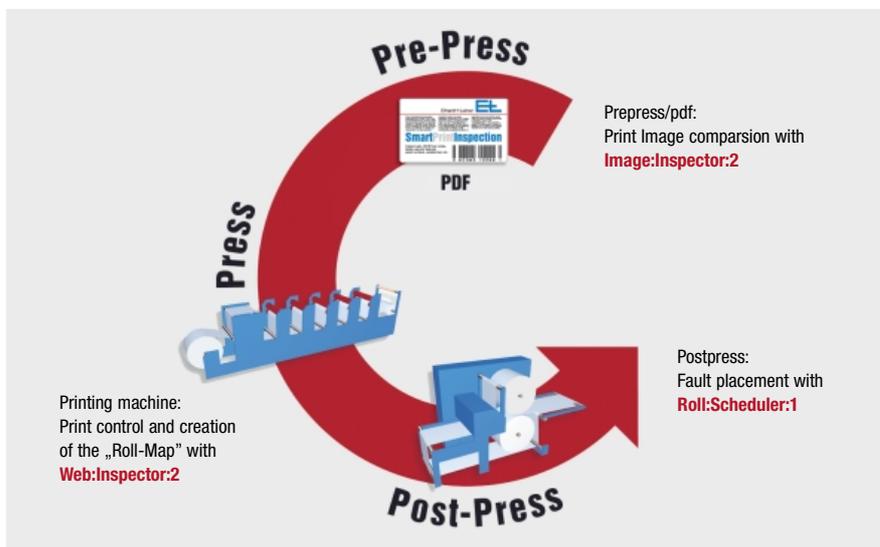
What does this workflow management look like?

At the end of make-ready, the Web:Inspector:2 camera on the press retrieves a reference image, which can be immediately compared to your customer approved artwork (PDF) by Image:Inspector:2. This ensures the integrity of the print and avoids the use of defective or wrong plates. Using the validated reference Web:Inspector:2 will detect and record all deviations. Severe errors will cause the system to notify the operator, who can immediately react as required. This has a direct impact on the amount of waste created. In the meantime, Web:Inspector:2 saves all of the defects in the roll's "Roll Map" database. This innovative protocol enables the operator to make sure there

is enough good product for the order eliminating the need for reprinting. In the post-press stage the Roll Map is used by Roll:Scheduler:1 for fault placement on the rewinder – without the need for a camera.

Roll:Scheduler:1 enables you to view and process all detected defects beforehand on the computer. This lets you decide which defects

will cause the rewinder to stop. Unnecessary stops are avoided as Roll:Scheduler:1 already knows where the upcoming defects are. Because of this, the rewinder can be run at the maximum web speed. With this innovative workflow, you make sure that you ship perfect material to your customer, while maximizing your productivity.



The following chart shows the different application fields of greyscale and color camera systems:

As **color cameras** process more information but fewer pixels, they are better suited for the detection of larger errors in connection with color deviations.

Greyscale cameras on the other hand, can process 9 times as many pixels and show their strength in detecting defects of small detail.

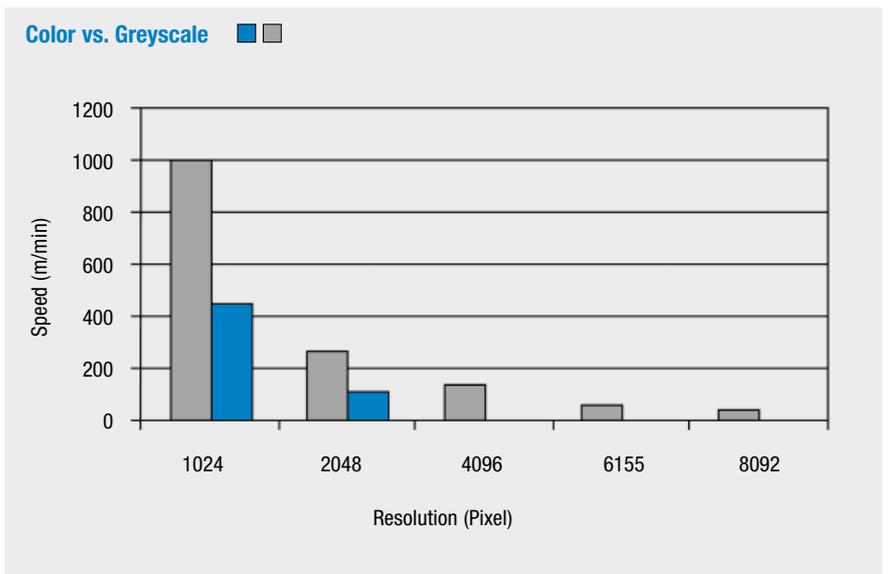
	Web width		10–14"/250–300 mm		14–18"/300–400 mm		18–22"/400–550 mm	
	under 10"/250 mm		color	grey	color	grey	color	grey
Specification of Roll:Scheduler:1								
Large streaks and ink spots	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Medium streaks and ink spots	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Small streaks and ink spots	■■■	■■■	■■■	■■■	■■■	■■■	■■■	■■■
Color density change, large area	■■■■	■■	■■■■	■■	■■■■	■■	■■■■	■■
Color density change, small area	■■■■	■■	■■■	■■	■■■	■■	■■	■■
Image mis-registration, large	■■■■	■■	■■■■	■■	■■■■	■■	■■■■	■■
Image mis-registration, small	■■■■	■■	■■■	■■	■■■	■■	■■	■■
Damaged copy over 10 pt	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Damaged copy 8 – 10 pt	■■■■	■■■■	■■■	■■■■	■■■	■■■■	■■■	■■■■
Damaged copy 5 – 7 pt	■■■	■■■■	■	■■■■	■■■	■■■	■■■	■■■
Wrong imprints	■■■	■■■■	■	■■■■	■■■	■■■	■■■	■■■

NYSCAN for Printed Products in Food, Cosmetics, Consumer Products etc.

For applications in the food, cosmetic and consumer sectors, Web:Inspector:2 is mostly used on a slitter/rewinder. More and more printers, however, decide to inspect on-press in order to avoid waste production at the point where it is created.

Depending on the application, the focus is on color deviations or small printed defects for which either, color or greyscale cameras are suitable. When using Web:Inspector:2 on-press, the created "Roll Map" database can be used to control the rewinder for fault-placement via Roll:Scheduler:1. This innovative solution delivers the highest productivity.

With its ergonomically designed menus, Web:Inspector:2's set-up times are short, even for small jobs.



Comparison of the maximum speed of greyscale and color cameras referring to a web width of 10"/250 mm.

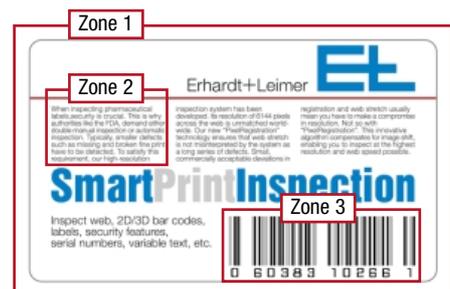
NYSCAN for Printed Products in Pharmaceutical Applications

When inspecting pharmaceutical labels, security is crucial. This is why authorities like the FDA, demand either double manual inspection or automatic inspection.

Typically, smaller defects such as missing and broken fine print have to be detected. To satisfy this requirement, our high-resolution inspection system has been developed. Its resolution of 6144 pixels across the web is unmatched worldwide. Our new "PixelRegistration" technology, ensures that web stretch is not misinterpreted by the system as a long series of defects. Small, commercially acceptable deviations in registration and web stretch usually mean you have to make a compromise in resolution. Not so with PixelRegistration. This innovative algorithm compensates for image shift, enabling you to inspect at the highest resolution and web speed possible.

Although inspection can be done on the rewinder, better results will be achieved by on-press inspection. Here Web:Inspector:2 creates the Roll Map defect database which is used by Roll:Scheduler:1 for post-press fault-placement and to generate a detailed production report.

Web:Inspector:2 allows the setup of different inspection zones with individual resolutions. You can, for example, define a medium sensitivity across the whole label and add zones to be inspected at a higher resolution for superior accuracy, such as critical text or barcodes.



Rewinder with high-resolution Web:Inspector:2 and accumulator for re-inspection of pharmaceutical labels.

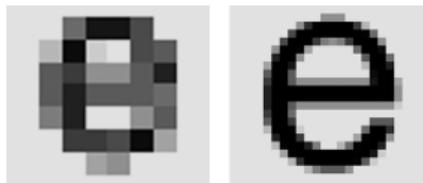
NYSCAN for Security Printing such as Currency, ID, Credit Cards, Tickets etc.

The highest demands are placed on the camera system and the light source when inspecting holograms, metalized security features and RFID circuits. For the most part, their printed features are so fine that the human eye can hardly see them.

Print inspection systems from E+L have already been installed with multiple line scan cameras (6144 pixels per camera) delivering an optical resolution up to 800 dpi. The light source with a focused, fibre optic light line can be adapted to the reflective conditions of your particular application.

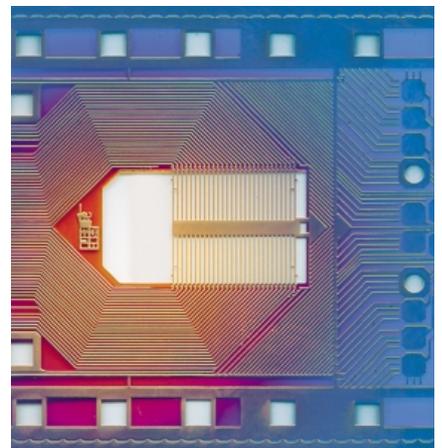
Ideally, print inspection should be done on-press, to keep the waste cost of usually expensive materials down. All defects detected by Web:Inspector:2 are saved in the roll's Roll Map database which can be used to generate a detailed production report. The highest quality and productivity is achieved by using the Roll Map in Roll:Scheduler:1 to control fault placement on the rewinder.

Our application engineers will be happy to help you find the perfect solution for your application. If you have critical materials we can test the practicality of inspection on our lab machines.



100% is not always 100%:

The letter "e" in 8 pt-Helvetica type:
At left, how a typical 100% inspection camera with 2000 pixels sees it, at right how it is seen by the Web:Inspector:2 featuring 6000 pixels across a web of 500 mm.



Technical Data



Specification Image:Inspector:2

Smallest defect detection area	Depending on resolution of artwork according to the following calculation examples: 300 dpi: 0.007 mm ² · 600 dpi: 0.002 mm ²
Materials	Paper and plastic labels, films, foil, paper, carton board, security features (optional)
Printing Process	Independent
File Type	PDF, TIFF
Inspection Features	Comparison of grey level or color images
Work Order Setup	Zones of interest with independent tolerance settings
Workflow Integration	When integrated with Web:Inspector:2 allows for validation of the printed image with PDF artwork

Specification Web:Inspector:2

Application	Inline-application on printing press or post-press application on rewinder
Smallest defect detection area	Depending on camera resolution and web width. Example of calculation as follows: 2048 pixels, 330 mm web width: 0.026 mm ² 6144 pixels, 500 mm web width: 0.007 mm ²
Materials	Paper and plastic labels, films, foil, paper, carton board, security features (optional)
Printing Process	All web printing processes
Inspection Features	Print, fine print, barcodes, streaks, spots, mis-registration and other defects including: optional variable data checking
Work Order Setup	Zones of interest with independent tolerance settings
Workflow Integration	XML based job tickets, user-definable roll reports, total quality control via roll map database
Camera Type	High-resolution, high-sensitivity line scan camera 2048 Pixel (color) or 6144 pixels (greyscale)
Web width	Depends on requirements, typically 250 – 660 mm (10 – 22")
Maximum inspection speed	Depends on camera type, web width and complexity of inspection, typically 80 m/min – 330 m/min (250 – 1000 ft/min.)
Binary control signals	Control of sorters, sheeters, removers via signal with programmable delay (with respect to camera location)

Specification of Roll:Scheduler:1

Integration	Access to Roll Map Database from Web:Inspector:2 via LAN. Defects can be displayed and selected for later fault-placement.
Binary Control Signals	Simple control of rewinder through Stop/Jog signals
Marking	The code that has been printed on the back of the web will be read and related to the Roll Map.

General Specifications

Computer	Multi Pentium® System, running Windows® XP Professional
Monitor	19" LCD (TFT) flat screen, optional second monitor for Dual View operation
Environmental conditions	0 – 35°C
Communication	LAN (TCP/IP), high-speed modem for remote support
Security	Multiple password levels (Operator, Supervisor, Administrator)



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