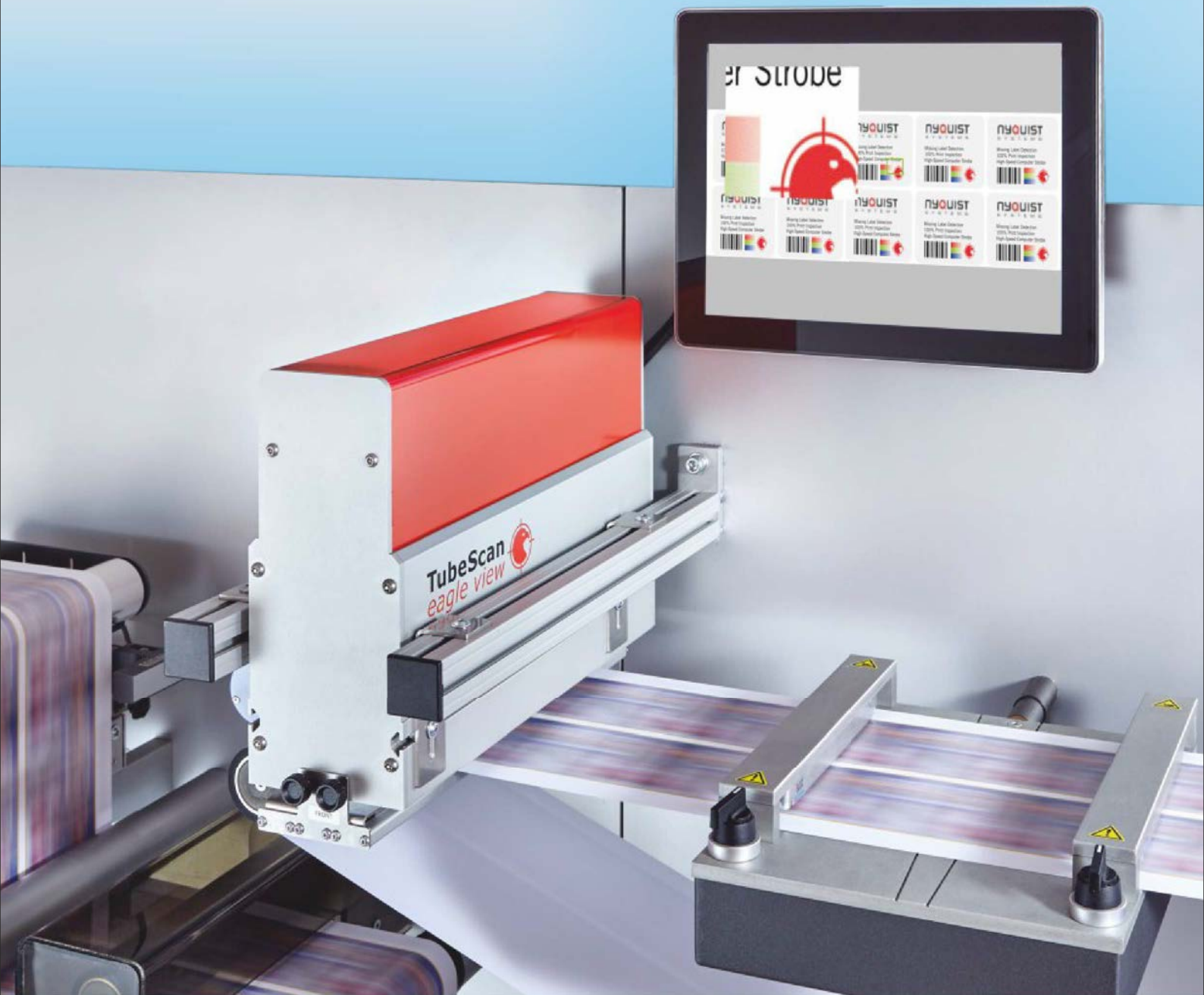


The TubeScan



Print inspection reinvented
modular • intelligent • cost-efficient

TubeScan *digital strobe*

// Intelligent print inspection

Introducing 100% print inspection that has never been as simple and cost-efficient as offered by the TubeScan. From simple 100% web monitoring, detection of missing labels and matrix residues to high resolution 100% print inspection within a workflow – now you are able to realize all your needs with one modular system.

Performance characteristics:

- Can take & display up to 30 images per second in live mode– seamless monitoring of every repeat in real time
- Maximum speed range: 150 m / min – 500 m / min (450 ft / min – 1500 ft / min) – depending on the model
- Maximum web width: 180 mm – 1100 mm (7 " – 44 ") – depending on the model

Digital Strobe for print inspection

TubeScan *digital strobe+*

Counting and Completeness

100% print inspection to detect missing labels, matrix residues and coarse defects larger than approx. 5 mm

Your benefits:

- No time-consuming sensor adjustments
- Detection of missing labels, coarse print defects and matrix residues (defect size Ø approx. 5 mm)
- Accurate counting of repeats, labels and missing labels for up to 20 lanes
- Generation of a 24 volt defect signal to trigger an alarm or marking system
- Optional placement control module with defect queue for automatic control of a rewinder



Real time display
of the full repeat
on HD Monitor

TubeScan *digital strobe++*

100% high-resolution print inspection

To detect fine print defects, splashes, register and color deviations, etc.

Your benefits – in addition to **digital strobe+**:

- Detection of fine print defects, register defects and large color variations
- Secondary inspection zones allow defining specific areas at higher or lower inspection tolerances
- Automatic label contour detection
- Masking function to ignore defined areas
- Surface inspection
- Job save function for repeat orders
- Real-time display of detected defects on HD monitor



Display on
Touch-screen HMI

TubeScan *digital strobe*

// Salient Features

Standard features of all models:

- 100% web viewing during make-ready and production
- Superb image quality due to high camera resolution
- Automatic repeat synchronization across the entire speed range of the machine
- No health risk, less tiring compared to conventional monitoring using strobe lights
- Fast and easy job setup
- Very reliable and stable operation
- Cost-efficient

Further options:

- 100% print inspection
- Secondary inspection zones for individual tolerances
- Automatic label contour detection
- Masking function to ignore defensible areas
- Surface inspection
- Distance monitoring with up to 8 reference points
- Placement control for rewinders
- Generation of PDF roll reports
- Switchable UV-illumination (wavelength 365 nm)
- Inspection workflow Qlink
- Dynamic roll map for the visualization of all defects in the current production roll
- Snapshot recording at defined intervals



Transparent labels on transparent or opaque liners:

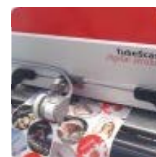
- Use the special contour light to create an image contrast when producing transparent labels on clear or even white paper liners
- Detect almost invisible missing labels and matrix residues, especially on blank labels
- Switch between standard white light inspection and contour light inspection

- ✓ Clear-on-clear
- ✓ Clear-on-paper
- ✓ Sleeves / tubes



UV inspection for luminescent applications:

- Switch between standard white-light inspection and UV inspection
 - Inspect luminescent areas such as coatings, adhesives, silicones
 - Inspect features printed with UV & fluorescent inks
- ✓ Security Prints



Pinhole detection

- Detect tiniest pinholes in aluminum foil and other opaque webs
- Switch between direct white light illumination for standard print inspection and back light illumination for pinhole detection

- ✓ Aluminum lids
- ✓ Blister packs



Distance / position monitoring

- Monitor the distance between die-line and print
- Monitor the position of printed objects

- ✓ Die-cutting
- ✓ Slitting
- ✓ Embossing



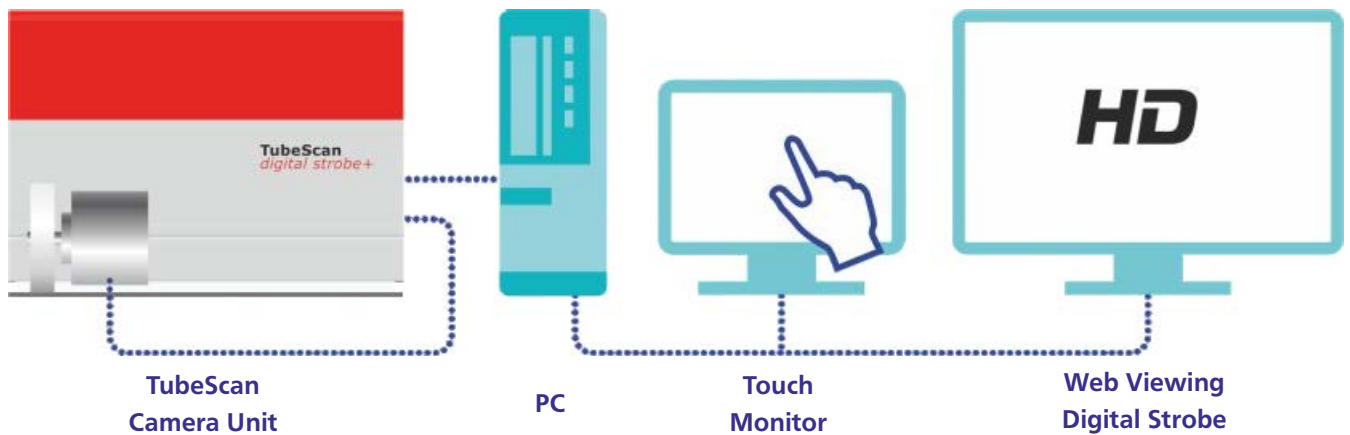
Inspection of highly reflective materials:

- Use the adjustable backing bar (with optional idler rolls) for bright-field or dark-field inspection

- ✓ Cold foil / hot foil applications
- ✓ Holograms
- ✓ Coatings

TubeScan *digital strobe*

// System Overview



Backing Bar

Adjustable backing bar for liner-based materials



Adjustable roller backing bar for sensitive materials without liners



Back light illumination

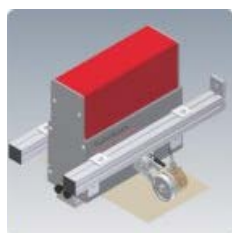
The backing bar can be equipped with integrated back light illumination

- **Option A:** using a light line with high intensity
- ✓ Pinhole detection
- ✓ Buried antennae structures in RFIDs
- ✓ Equalization of textured surfaces such as Tyvek®

- **Option B:** using an area light for the detail camera of the TubeScan *eagle view*
- ✓ Monitoring of the back print register
- ✓ Equalization of textured surfaces such as Tyvek®

Mounting

Cantilever mount, for housings up to 510 mm of length



Front mounting brackets



Customized double-sided mounting



// The economic solution for the printing press

Web viewing systems are a standard in the converting and label industry. They are used on almost every printing press for monitoring registration, overall print quality and accuracy, and color. The down side of in-line 100 % inspection systems so far has been the heavy investment, which many printers have avoided, thereby compromising quality assurance.

The new patented **TubeScan eagle view** is now bringing both worlds together: Multiple cameras are combined in the same housing to offer detailed viewing and 100 % inspection at the same time. The intuitive touch screen interface makes setup extremely simple and fast.

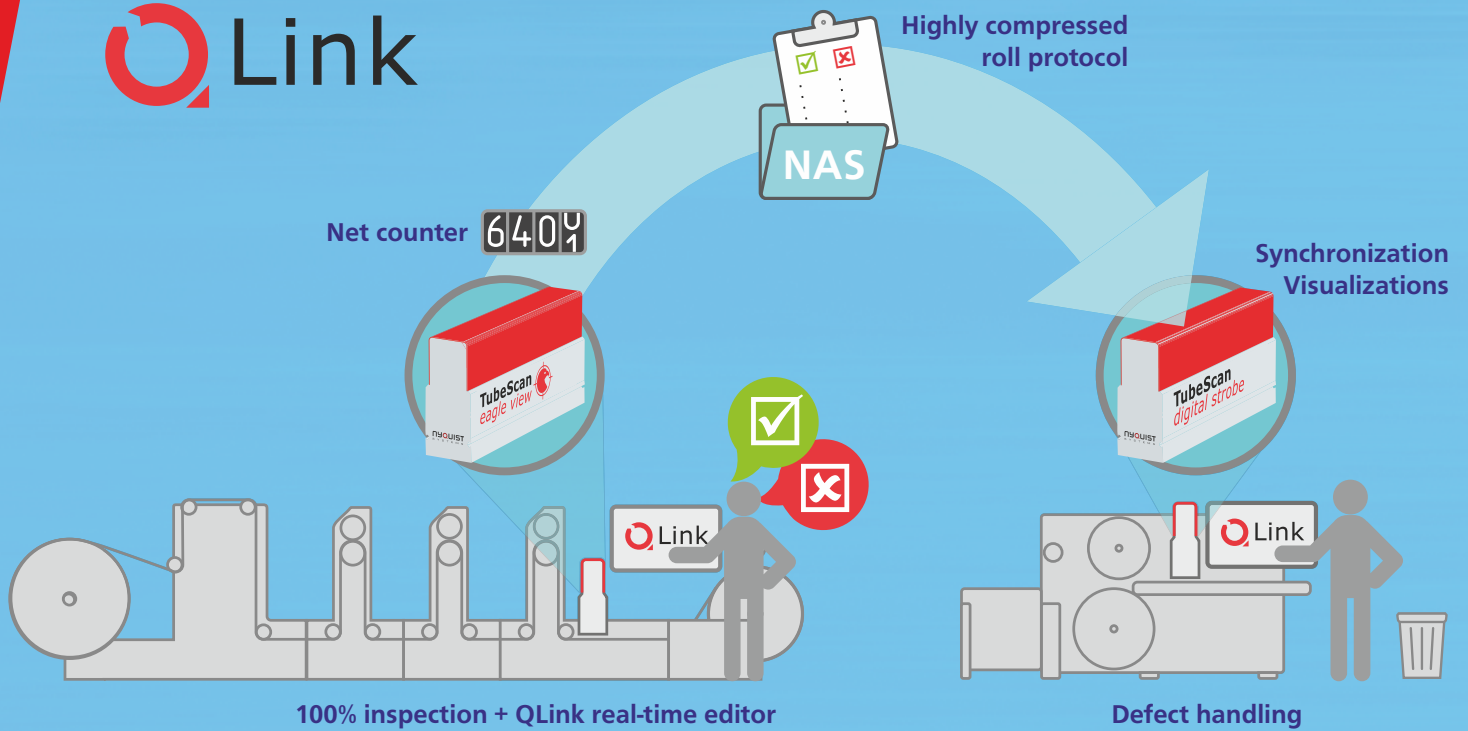


**Full web view and detail viewing
down to dot matrix level**

Your benefits:

- Cost-efficient combination of 100 % print inspection and detail viewing
- Detail viewing of critical areas like registration marks, 2D barcodes, picture areas, etc. down to dot level
- Camera for detail viewing is motorized and can be easily navigated with respect to the displayed print repeat
- Switchable UV illumination (365 nm)
- No print mark sensor or gear sensor required for synchronization
- The optional back light enables monitoring of the back print register
- Small foot print, only requires 125 mm (5") in web direction
- Can be combined with all options available for **TubeScan digital strobe** such as fine print inspection, PDF reporting, dynamic roll map, etc.





// Inspection workflow – smart and economic

QLink *Press*

on the printing press

✓ A Software module with local mass storage (NAS), based on **TubeScan digital strobe** or **TubeScan eagle view**

Real-time editor

- Editing of the roll protocol database during printing
- Display of the net count in real-time, taking into account the edited roll protocol of the entire job

Roll management

- Selection, editing and transfer of the roll protocols within the network

Local mass storage (NAS)

- Temporary, local data storage of the roll protocols

QLink *Rewinder*

on the rewinder

✓ A Software module, based on **TubeScan digital strobe** or **TubeScan eagle view**

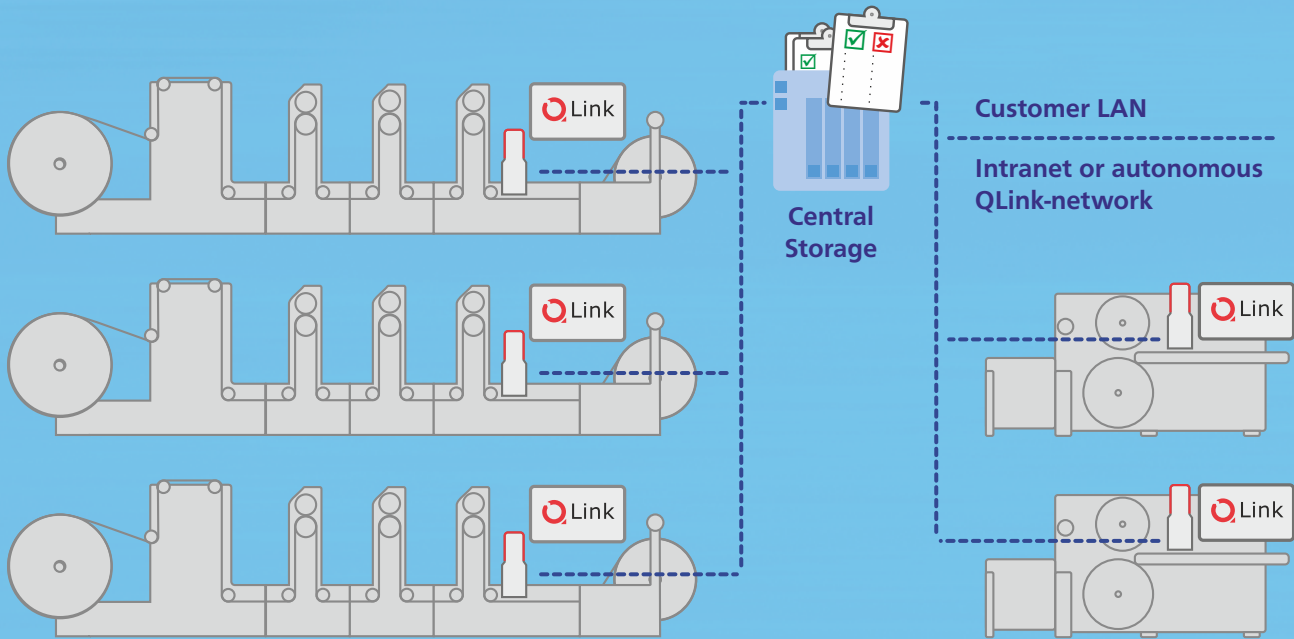
- Processing of all roll protocols in the network
- Camera-based synchronization and visualization ensures best workflow stability
- Control of the rewinder
- Skipping of future defects shown in the roll protocol

If there is no roll protocol from the printing press, you can use the TubeScan on the rewinder for missing label detection or even 100% print inspection—depending on your license package.

The TubeScan on the rewinder substitutes tiring strobe lights, commonly used for web monitoring.

Network

Connection of the modules QLink Press, QLink Rewinder, QLink Editor via LAN.



QLink *Editor*

on the PC

✓ The software module QLink-Editor is installed on a separate PC (Windows 10). It can either be included in the order or supplied by the customer.

- Processing of all roll protocols in the network
- Roll protocols can be visualized and edited for further converting

Your Benefits:

- In comparison to previous inspection workflow systems, the cost for QLink workflow is significantly lower.

... on the printing press

- The QLink real-time editor enables you to evaluate defects already during the printing process. The printer can classify the defects as "not relevant" or "to be fixed" in the converting process.
- Larger defect areas, such as missing ink, can be defined as waste zones. These can afterwards be removed on the rewinder in one single step.
- The net count is automatically updated after each editing. No more costly over-production just to make sure there is enough good material.
- Through innovative compression, the file size of the protocols is as low as 10% of the usual roll protocols (JPEG / BMP). This saves disk space and expenses and it will speed up your data transfer.

... on the rewinder

- The camera-based synchronization is easy to set-up and very reliable – in contrast to the sensor-based systems that are commonly used.

Technical data for TubeScan *digital strobe*

Web width in mm	180	250	330	430	550	660	760	850	1100
Web width in inch	7	10	13	17	22	26	30	34	44
Digital strobe for web viewing	Yes								
Minimum Resolution	0.111 mm								
Max. web speed	400 m / min.								
Min. defect size	0.2 mm								
Touch monitor	minimum 15"								
Image rate	up to 30 images per second								
HD monitor	minimum 22" (other sizes upon request)								
Image rate	up to 30 images per second								
Maximum lateral web movement	± 10 mm								
Automatic image synchronization	Yes								
Operating temperature	0° – +35° C (+32° – +95° F)								
Supply voltage	100 V - 240 V, 50 - 60 Hz								
Shaft encoder with layon wheel	RS 422 channel A+B								
Binary outputs 24 V, 150 mA max.	Defect Found, Inspection Active, Slow Down, Final Stop								
Material / Substrate	Transparent, opaque and reflective								
Optional Features	UV Illumination for monitoring security features & job report, fine print inspection, PDF reporting, dynamic roll map								

Technical data for TubeScan *eagle view*

(in addition to the features mentioned above)

Resolution of detail viewing (motorized camera)	< 30 µm
View area of detail camera	35 mm X 25 mm 1.4" X 1" 1600 px X 1200 px
Image rate of detail camera	< 10 images / second
Maximum speed	250 m / min (820 ft / min)
Minimum resolution	0.167 mm
Picture-in-picture navigation via touch monitor	Yes



• Tel.: +91-22-66860900 • info@bsteltromat-india.com • www.bsteltromat-india.com

- Web Guide • Tension Control • Web Video Inspection • 100% Inspection • Surface Inspection • Color Measurement
- Register Control • Viscosity Control • Density & Thickness Measurement • Process Automation