

LUSTER

en.lusterinc.com



LABEL & NARROW WEB PRINT INSPECTION

PRINTING QUALITY INSPECTION AND MANAGEMENT SOLUTIONS



Flexible
packaging



Label
& Narrow
web



Carton
packaging

“

Towards the starry sky of industrial artificial intelligence!

”



CHAIRMAN AND FOUNDER OF LUSTER

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WHO IS LUSTER?

LUSTER LightTech Co., Ltd. (hereinafter referred to as "LUSTER") takes innovation in optical technology as its foundation to develop businesses of vision imaging and

fiber optics, with the aim of becoming a global leader in the fields of vision AI and opto-electronic information.

Focusing on vision imaging technology, LUSTER insists on "Implant Eyes and Brains in Machines", and provides customers with leading products and solutions such as configurable vision system, intelligent vision equipment and vision components.

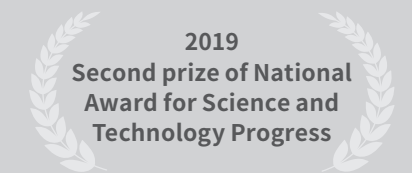
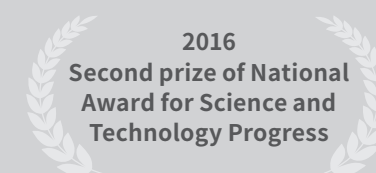
LUSTER has always adhered to the business philosophy of customer-orientation to promote

intelligent "manufacturing" in different industries such as Electronic Manufacturing, Display, Printing, Packaging, New Energy, Plastic Web, Television, Animation, Scientific Imaging, Rail Transportation. With over 20 years' experiences of optical imaging, vision software and algorithms, innovative vision components etc., LUSTER continues to innovate its products

and strives to be the optimal, strategic, trusted and honorable choice for its customers. In the field of fiber optics, LUSTER is a solution provider of high-end optical devices and instruments, and it also provides independent broadband optical access and smart home networking solutions for the radio and television industry.

LUSTER currently has over 500 patents and property rights, and won one first prize of National Technological Invention Award and two second prize of National Awards for Science and Technology Progress which are the highest awards for technology innovation.

LUSTER has undertaken numerous major national science and technology projects to help promote the national science and technology level and industrial development.



MISSION

To implant eyes and brains in machines, to empower optical inter-connection, to create and realize customer's dream.

VISION

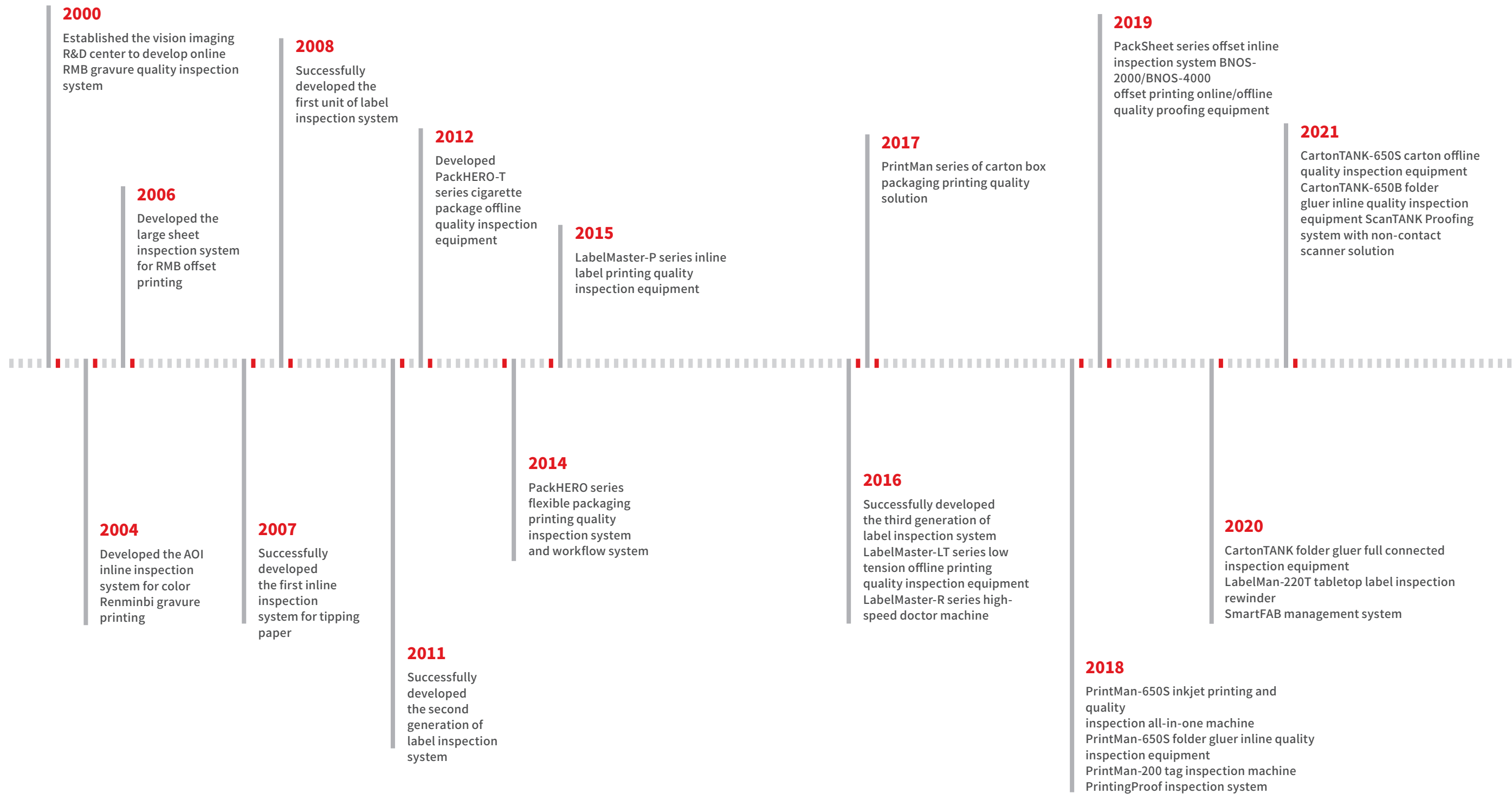
To become the world leader in vision artificial intelligence and optoelectronic information fields!

VALUE

To take the responsibility of promoting industry development and strive together.

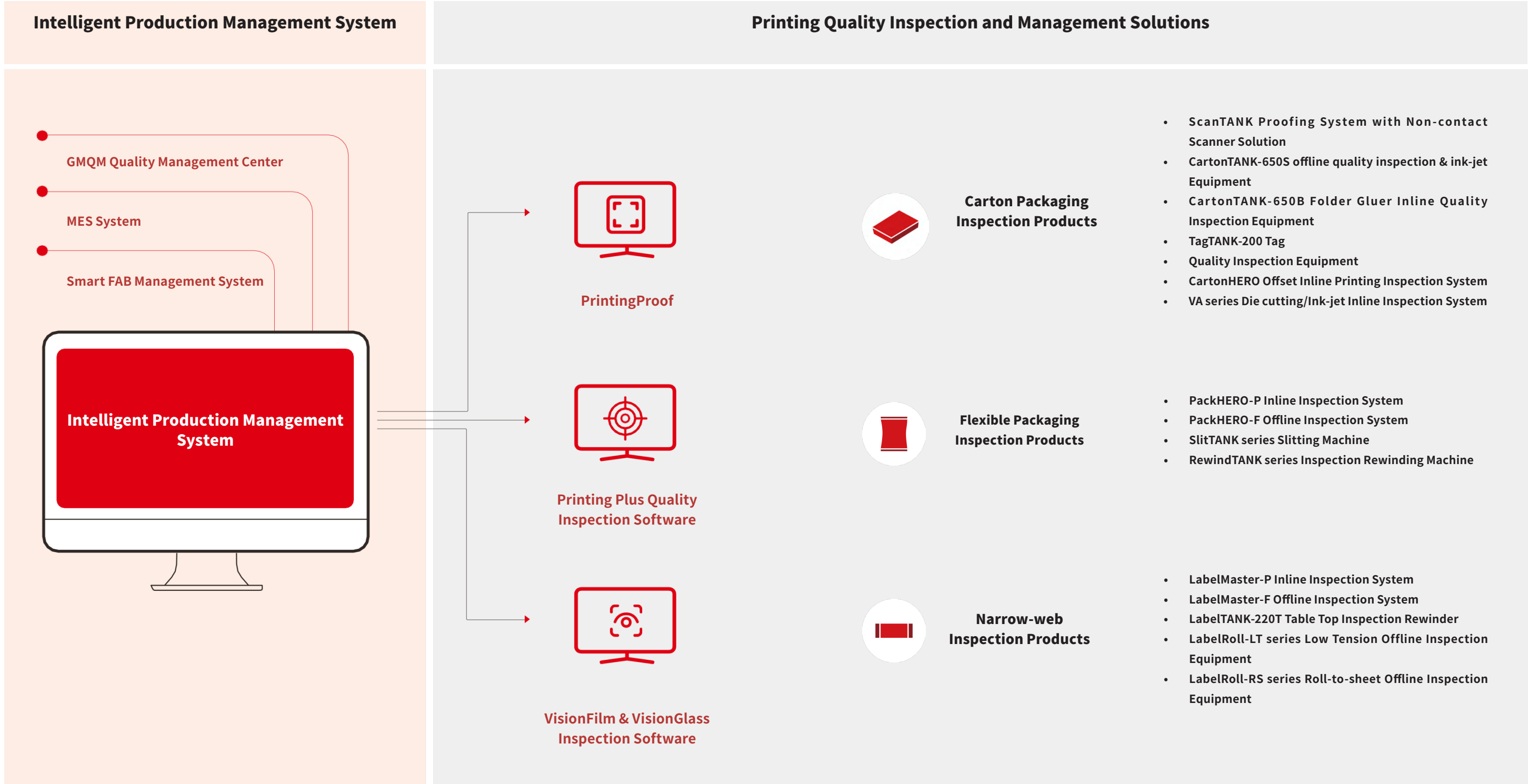
To transform knowledge into fortune, and to let the fortune belongs to its own creators!

MILESTONES



PRINTING QUALITY INSPECTION AND MANAGEMENT SOLUTIONS

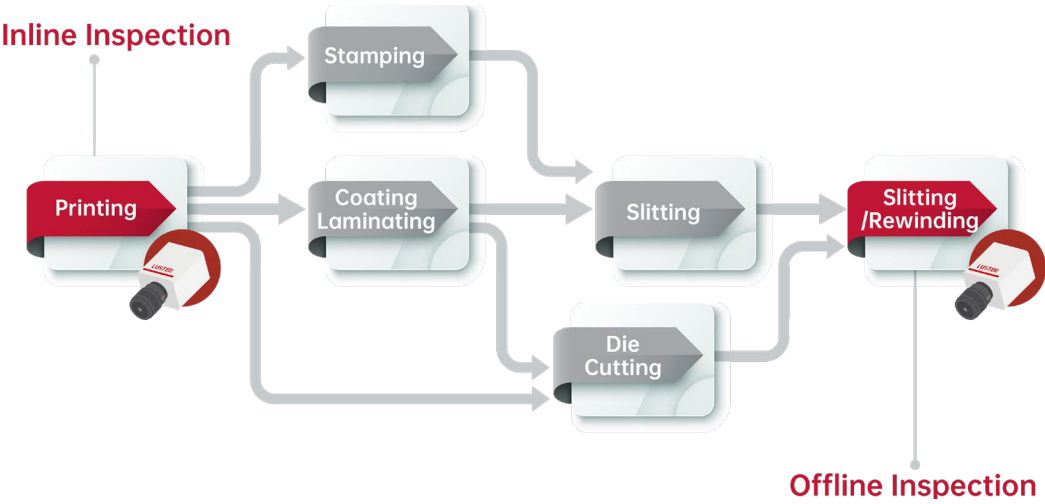
1 COMPLETE PRINTING QUALITY INSPECTION SOLUTIONS



2 NARROW-WEB & LABEL INSPECTION

The LabelHERO series are specifically developed for quality inspection of narrow web applications and labels such as beauty & personal care label, food label, healthcare label, beverage, wine and premium drink label, pharmaceutical label and other narrow web applications. Being able to be applied on the whole label printing workflow, the LabelHERO products not only can help users to reduce production cost, but also optimize production efficiency and quality management level, which means more profit and competitiveness for business.

2.1 Inspection Overview

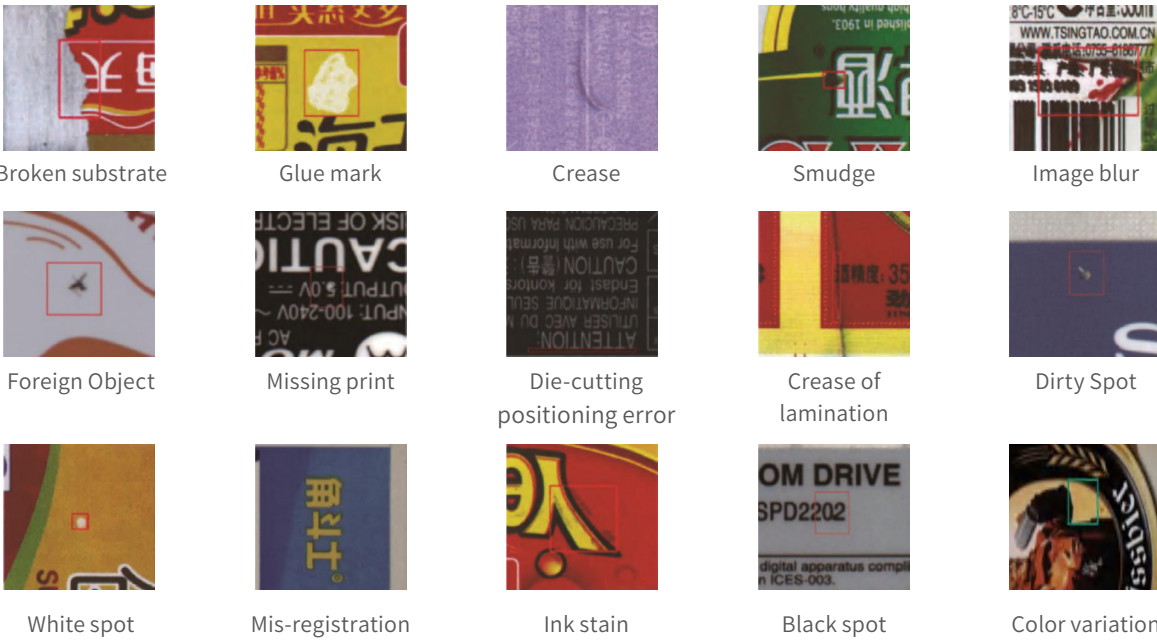


2.2 Sample Products

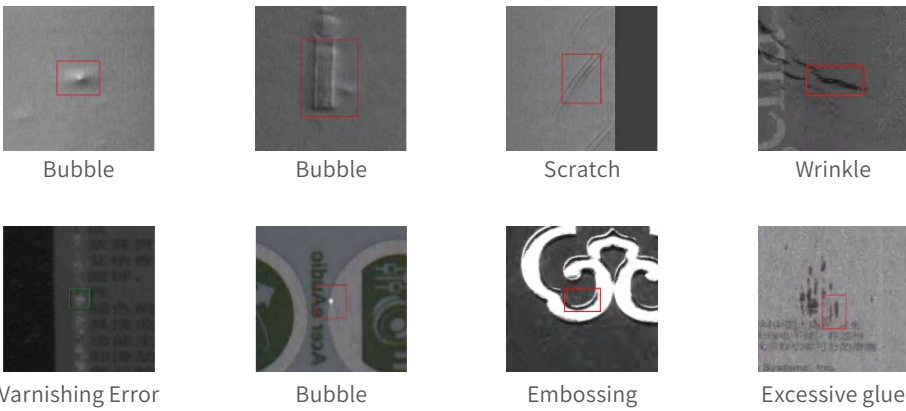


2.3 Sample Defects

• Printing Defects



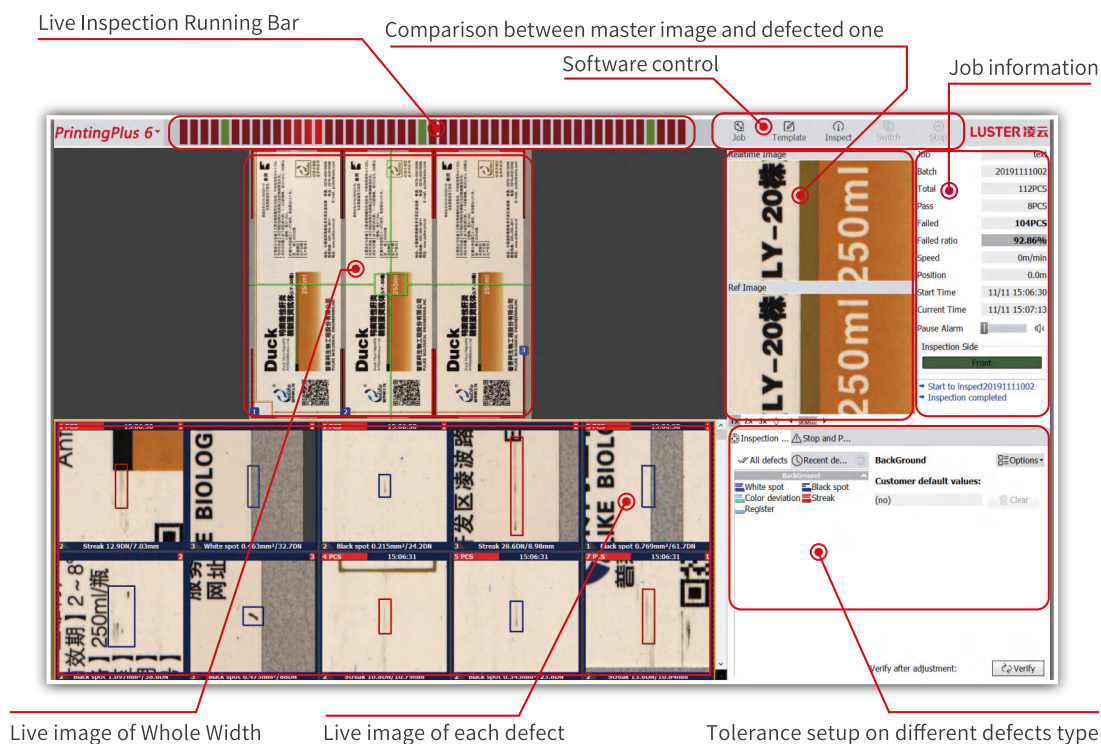
• 3D special defects



• Variable Code Defects



3 PRINTING INSPECTION SOFTWARE FEATURES AND FUNCTIONS



Main Features

01. Strong Inspection Capability

Luster inspection software not only can 100% detect common print defects like register, color, spots, texts, but also 3D defects like improper laminating, coating, bubble, scratch, excessive glue.



02. Quick Setup

Comprehensive quality report to improve production quality: as standard function, after each inspection job is finished, users can generate two reports in PDF and excel to clearly demonstrate the statistic results and defect images for further analysis. User can choose to generate reports in different dimensions such as certain batch, time, machine etc.

03. Special features only for printers and converters

Clear defect classification for accurate tolerance setting; Tolerance setting on different region of interest; One click to replace reference image without stopping inspection.

04. Comprehensive quality report to improve production quality

As standard function, after each inspection job is finished, users can generate two reports in PDF and excel to clearly demonstrate the statistic results and defect images for further analysis. User can choose to generate reports in different dimensions such as certain batch, time, machine etc.

Optional Modules

CodeHERO

Variable Code Reading and Inspection

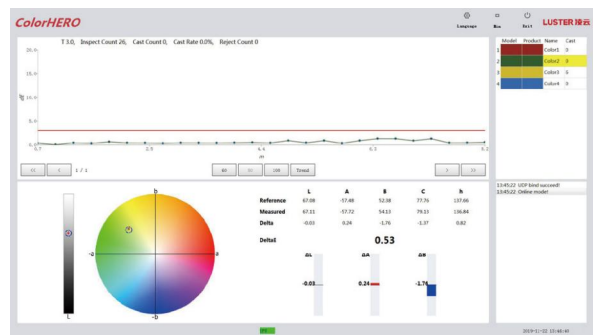
- Barcode, 2D code, Sequence number, OCR and other variable data type accurate reading and inspection.
- Achieves decoding speed of 400 codes per second.
- Automatically recognition of variable data when setup.



ColorHERO

Color Monitoring and Inspection

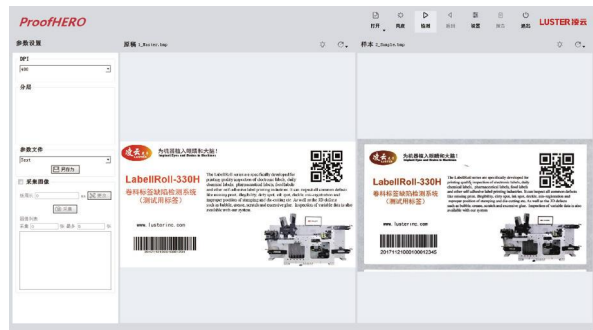
- Live monitor of max. 20 color zones for color control
- Color fluctuation curve monitoring and real-time visual, light and sound alarm
- Color variation detection accuracy of $\Delta E \geq 2$
- Real time demonstration of Delta E value, and L.a.b. value



ProofHERO

PDF Proof and Job Verification

- Support printing jobs proofing against PDF, - JPEG, TIFF, BMP etc.
- Supported different PDF layer setup.
- Avoid loading errors before job start.
- All master templates can be saved in the system, for repeated jobs.



GradingHERO

- Special alarm and handling process of severe or continuous quality issues to prevent any human-caused errors.
- Intelligent and precise defects classification.
- Traceable of every quality issue.

The screenshot displays the GradingHERO software interface, which shows a table of inspection results. The table includes columns for date, time, machine, and inspection results.

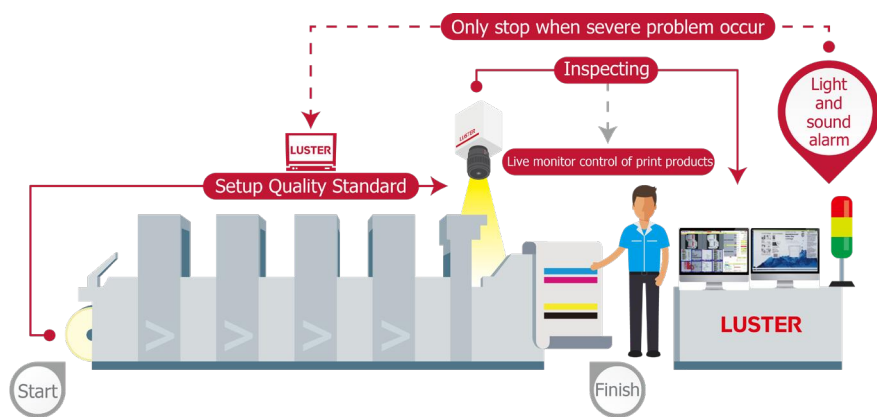
日期	时间	机器	生产数量	合格数量	合格率	备注
2019-03-12 20:59	10:00:00	1	10000	9900	99%	
2019-03-12 20:59	10:00:00	2	10000	9900	99%	
2019-03-12 20:59	10:00:00	3	10000	9900	99%	
2019-03-12 20:59	10:00:00	4	10000	9900	99%	
2019-03-12 20:59	10:00:00	5	10000	9900	99%	
2019-03-12 20:59	10:00:00	6	10000	9900	99%	
2019-03-12 20:59	10:00:00	7	10000	9900	99%	
2019-03-12 20:59	10:00:00	8	10000	9900	99%	
2019-03-12 20:59	10:00:00	9	10000	9900	99%	
2019-03-12 20:59	10:00:00	10	10000	9900	99%	
2019-03-12 20:59	10:00:00	11	10000	9900	99%	
2019-03-12 20:59	10:00:00	12	10000	9900	99%	
2019-03-12 20:59	10:00:00	13	10000	9900	99%	
2019-03-12 20:59	10:00:00	14	10000	9900	99%	

4 NARROW-WEB & LABEL INSPECTION SOLUTIONS

4.1 Product Application

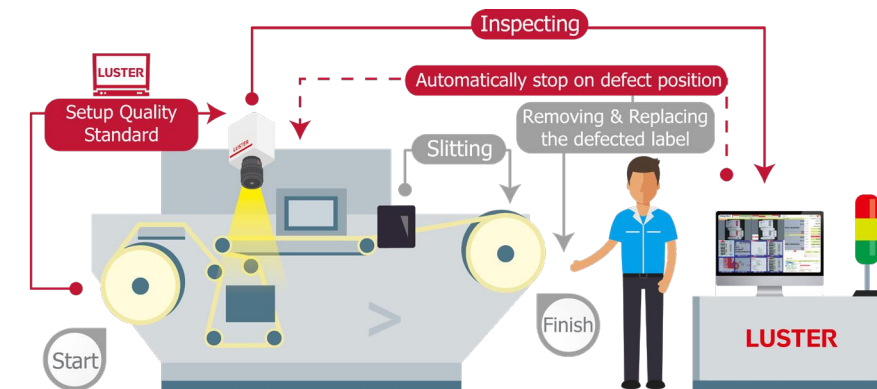
Application	Applied Model
Flexo graphic, digital, letter printing, offset printing press: Inline Inspection	LabelHERO-P Inspection System
Slitter Rewinder: Offline Inspection, automatic stop on defects	LabelHERO-F Inspection System
Workflow Solution: Inline Inspection and Rewinder/Doctor Machine	LabelHERO Inspection System, Workflow system LabelTANK Rewinder/Doctor Machine

Inline Inspection Solution



- Installed on printing machine, to effectively control print quality, avoid large amount of waste and save production cost, and also control color consistency.
- Real-time light and sound alarm, as well as visual alarm
- High-speed and accurate inspection performance to optimize production efficiency, and relief dependence on human experiences.

Offline Inspection Solution

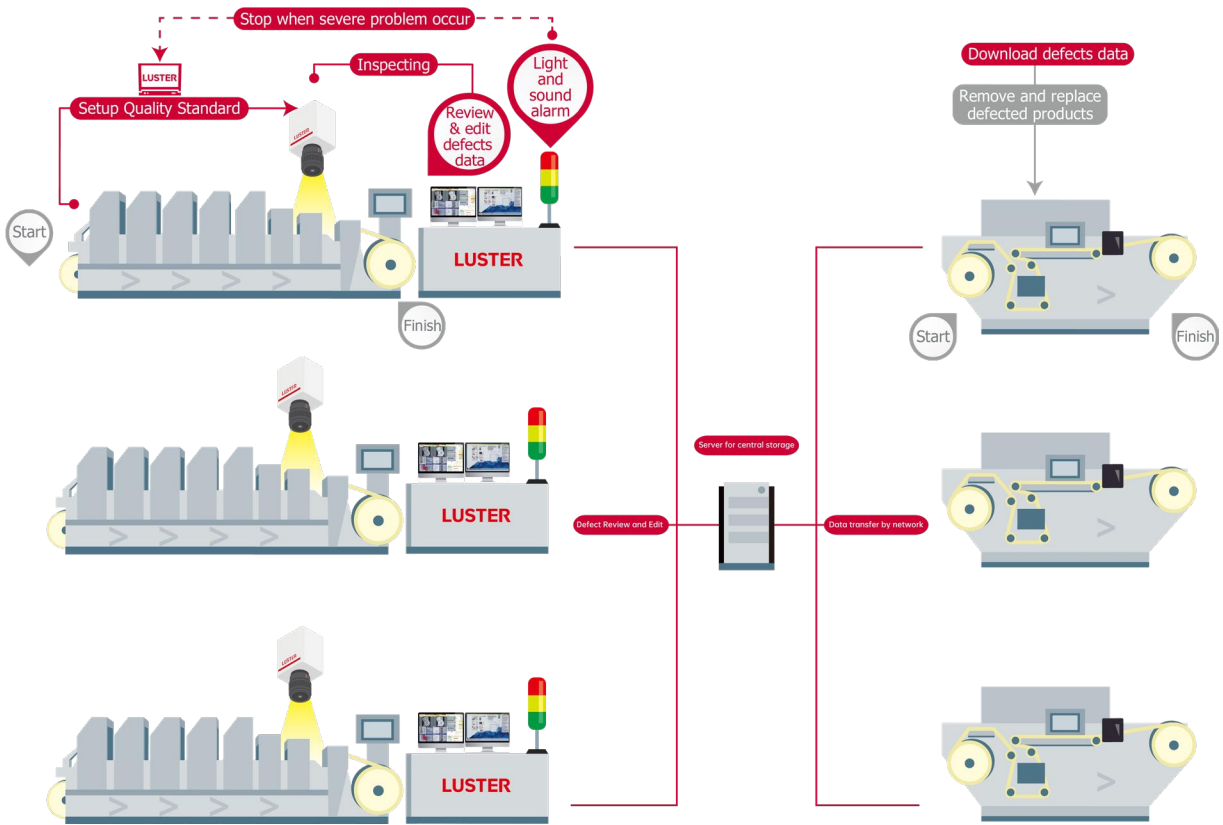
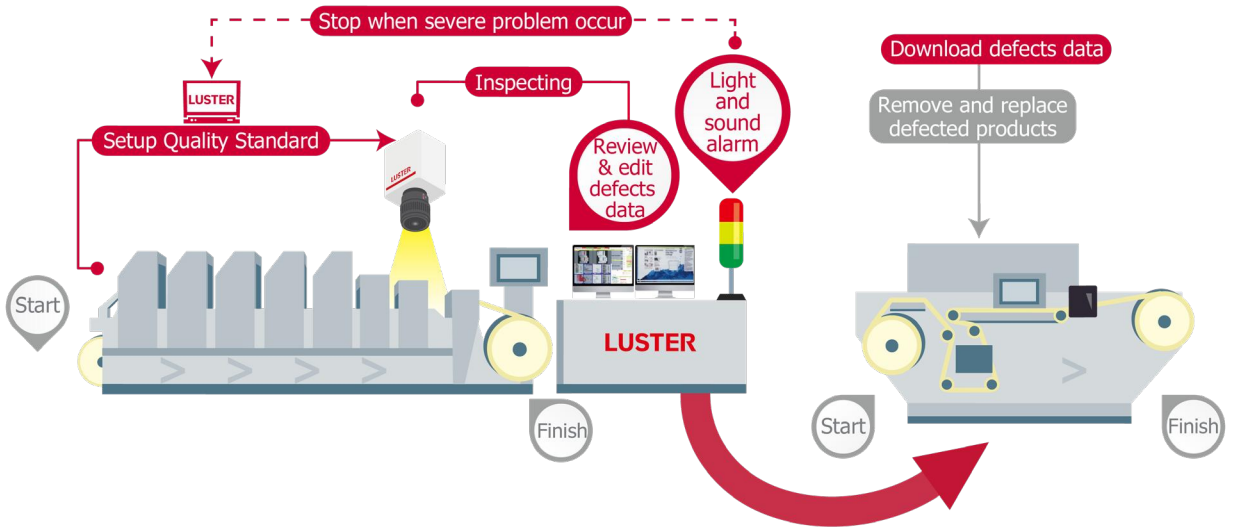


- Mainly installed on slitting rewriter/reviewer for final quality check before delivery. System will control rewriter to automatic stop on the defect position to remove and replace the defected label. The operator can also control and skip the defects that do not need to stop to enhance working efficiency.

Inline Inspection and Waste Removal Workflows

Inline Inspection and Waste Removal Workflows combines both inline inspection process control and offline waste removal into one cost-effective, automatic and efficient solutions for defect material handling. Inline inspection system is installed on printing machine to monitor real-time quality, prevent continuous

waste and record all defect data into database. After defect reviewing and editing, all the selected data will be transferred and downloaded to rewriter which will automatically stop on defect position for removal. Customer can choose for 1- to-1 workflow or N-to-N workflows on actual conditions.



4.2 Label HERO-P Inline Inspection System

Installed on printing machine like flexo press, letter press and digital press, the LabelHERO-P series inline quality inspection system can 100% control print quality for all narrow web applications and labels to reduce waste, production cost and improve efficiency. It is able to inspect defects like incomplete/

missing print, dirty spot, ink spot, mis-registration, color variation, improper stamping& die-cutting, variable code etc. Integrated optical system into one box, different camera and light source options to satisfy ALL kinds of needs.

Main Features

Excellent Optical Solution

- Wide-adaptive optical design and illumination modules enables LUSTER's system to stably detect all kinds of defects on different substrates, including high-reflective, transparent, clear on clear and opaque substrates. Compact and modular design can fit different integration requirements and easy to maintain.

Easy to Use

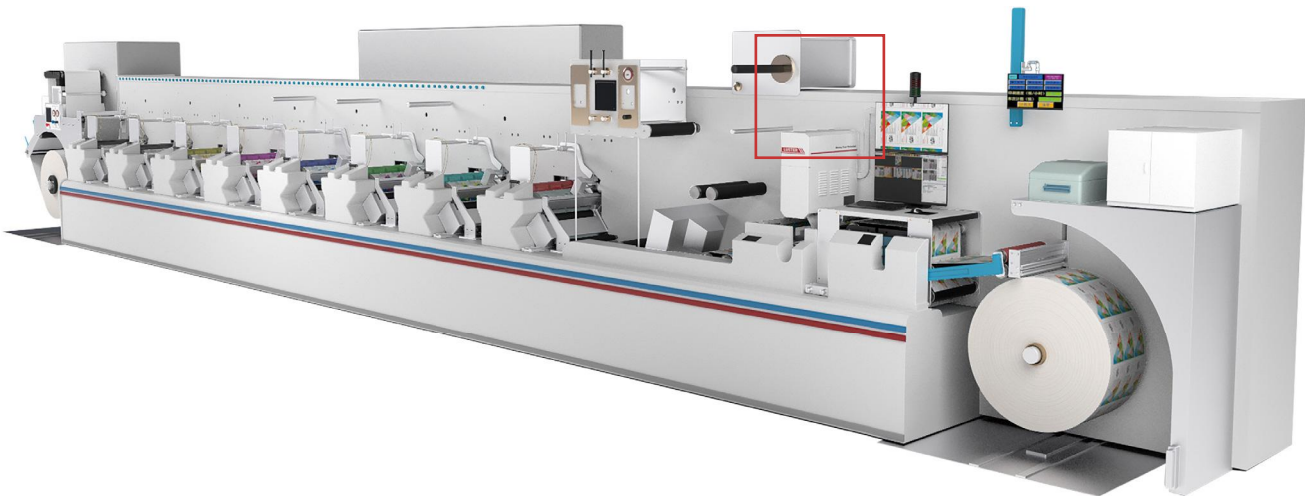
- Only need one master image as reference for job setup, no “template training/learning” process of multiple labels, zero meter to start. Support auto job setup, wand auto selection, tolerance recipes and other features for smarter and automatic operation, to greatly reduce setup time to have quick start. Wizard and simple user interface enable operators to easily understand and operate.

Quality Report and Analysis for Production Improvement

- After every inspection job, a quality report can be generated with detailed inspection statistical analysis, defect images, distribution map and other results to provide tools and evidences for future production improvement. Up to 6 months of defects data will be saved for customer to track historical quality issues at any time.

"All in One" Quality Control

- Not only will the system provide alarm and real-time defects control of print quality, the system also integrates live web monitoring function to zoom and monitor real-time printing quality in pixel level to save cost for additional investment and enhance inspection result.



Specifications

Model	LabelHERO-P
Application	Beauty & personal care label, food label, healthcare label, beverage label, wine label, pharmaceutical label and other selfadhesive labels.
Material Type	Opaque, transparent, reflective, high-reflective, clear on clear materials
Web Width	330mm, 450mm, 520mm (Other width can be provided under request)
Max. Speed	200m/min
Defect Type	❖ Common defects: Dirty spot, ink spot, white spot, missing print, mis-registration, improper die-cutting & stamping, broken writing, color variation, foreign objects etc. ❖ 3D defects (Optional): bubble, scratch, excessive glue, varnishing and coating errors etc.
Camera Options	4K resolution, 8K resolution color line-scan camera; 4k & 8K resolution mono line-scan camera
Other Modules	• Light and sound alarm • Quality report and analysis • Dual monitor: Live web monitoring + inspection control • Variable data inspection (optional) • Color monitoring and Variation Inspection (optional) • PDF job proof (optional) • Workflow system (optional)

4.3 LabelHERO-F Offline Inspection System

Integrated with rewinder/slitting rewinder, LabelHERO-F offers 100% quality control on finished rolls for final quality check to reduce customer rejection and complaints. Up to 300m/min speed, the production efficiency is optimized meanwhile to achieve 100% quality inspection of printing defects, 3D defects and variable data defects like missing print, dirty spot, mis-reg- istration, broken writing, color variation, bubble, scratch and excessive glue etc. In addition, LUSTER also supply slitting rewinder to provide all-in-one platform for better performance and customer support.

Main Features

Strong Inspection Performance

- Real 100% quality inspection of all sorts of printing defects and 3D defects like varnishing, coating and lamination defects. Also effectively inspect clear on clear labels, high reflective labels and other label type.

Easy-to-change Optical System

- Unique “drawer” design enables customer to easily switch different light source and cameras to adapt to different product and substrates, improves system adaptability and utilization.

More Functions Integrated

- In addition to detecting normal printing defects, it also has functions such as defect classification, color management, variable data inspection, PDF job proof etc.

Easy to Use

- Only one master image is required for job setup for quick and easy start. Inspection can start from meter zero. Various automatic setup func- tions during job setup to make operator much easier to learn and use. All previous job will be saved and can be re-used for repeat jobs.



Model	LabelHERO-F			
Application	Beauty & personal care label, food label, healthcare label, beverage, wine and premium drink label, pharmaceutical label and other narrow web applications and labels			
Material Type	Opaque, transparent, reflective materials, also clear on clear labels			
Defect Type	❖ Common defects: dirty spot, ink spot, white spot, missing print, misregistration, improper die-cutting & stamping, broken writing, color variation, foreign objects etc. ❖ 3D defects: bubble, scratch, excessive glue, varnishing and coating errors etc.			
Web Width	330mm	370mm	450mm	520mm
Camera Options	4K resolution, 8K resolution color line-scan camera; 4k & 8K resolution mono line-scan camera			
Variable Data Type (Optional)	Barcode (CODE128, CODE39, CODE93, EAN8, EAN13, UPCA, UPCE, ITF, CODABAR), 2D code (QR code, DM code, PDF417 code), OCR, OCV, Sequence number			
Other Modules	• Light and sound alarm • Quality report and analysis • Variable data inspection (optional) • Color monitoring and Variation Inspection (optional) • PDF job proof (optional) • Workflow system (optional)			

Standard Slitting Rewinder Configuration (330mm)

Thickness	40μm-500μm
Web Width	40mm~330mm
Max. Machine Speed	200m/min or 300m/min
Unwind Diameter	700mm
Rewind Diameter	• 700mm (Dual Rewinder) • 450mm (Turret), 700mm
Web Guider	Two
Slitting	10 slitting knives
Shaft Size	3” air shaft
Counting	Meter count and label count
Motor	Full servo motors

4.4 LabelTANK-220T Series Table Top Inspection Rewinder

Developed and manufactured by LUSTER, LabelTANK-220T series table top inspection rewinder is an innovative all-in-one label inspection solution specially designed for short run narrow web labels and electronic label inspection. It is featured by easy operation, accurate quality control, short web path and small-in-size. It can significantly replace manual check, increase production efficiency and decrease waste of materials

during roll changing and machine adjustment. Rewinder is full servo driven, and assured of high accuracy, long lifecycle and easy maintenance. The machine is highly integrated with LUSTER’s inspection system with touch screen, to guaranty easy operation, precise defect stop and simpler inspection experience.

Main Features

Short Web Path And Small-In-Size

- The dimension of the machine is about 1m x 1m x 1m, which is easy to install, convenient to adjust and space saving. The web path is approximately 2m, which significantly decrease operation time and waste of products.

Full Integration Inspection Solution

- Guarantee of full quality control with 100% Luster inspection system to check printing defects such as dirty spots, registration, color variation, missing print, and also variable code defects.

Intuitive Operation

- The machine is equipped with touch screen HMI. Both the inspection software and machine control are operated in one screen, which is easy to control and use.

Multifunction Rewinding Solution

- Precise machine stop on defects; Bi-directional web path; Label and meter counting function. “Rewinding- Inspection- Defect Removal- Delivery” can be done in one time to significantly increases the production efficiency, reduce labor cost and improved quality control.



Specifications

Model	LabelTANK-220T
Application	Non-transparent labels such as pharmaceutical labels, electronic labels, daily chemical labels etc.
Defect Types	Missing print, dirty spot, ink spot, deckle edge, mis-registration, improper stamping and die cutting, color variation etc.
Max. inspection width	220mm
Max. inspection Speed	50m/min
Min. defect accuracy (as a dot)	0.1mm ²
Registration accuracy	0.1mm
Operation System	Windows 10, 64-bit, English version

Table Top Rewinder Configuration

Width	25mm-220mm (min roll core size≥25mm)
Max. Mechanical Speed (Without inspection)	200m/min
Max. Unwind Diameter	Φ400mm
Max. Rewind Diameter	Φ400mm
Unwind & Rewind Mandrel	Air expanding mandrel 3" (Φ76mm)
Web Path	2m
Dimensions	1100mmx1100mmx1200mm (LxWxH)
Motors	Full Servo Motors
Counting	Label count and meter count
Operation Direction	Bi-directional, forward and reverse winding

4.5 LabelRoll-LT Series Offline Quality Inspection

LabelRoll-LT series is specially developed for printing quality inspection of electronic label, textile label, irregular die cutting label and other label type with high sensitivity of tension. Our

innovative hardware and structure design simulate manual rewinding action to achieve low tension, neat edge and zero excessive glue issue.

Main Features

Strong inspection performance

- It can detect min. 0.03mm2 size of defects to achieve extraordinary inspection results and less false alarm, especially for defects like broken writing, missing print often occurs on intermittent rotary letter press and PS plate press. Customers can also add variable data inspection module for accurate barcode, 2D code inspection and verification. 3D defect inspection is also available for defects like bubble, crease, scratch and excessive glue.

Full Integration Inspection Solution

- Quick and easy to finish job setup. Support tolerance setup on different region of interest and different defect type. The operator can save the job template of same product and re-use it for quick start. For inspection of different batch of same products, you can also quickly replace reference image by clicking one button to start the whole inspection process.

Low Tension Control

- Innovative hardware and structure design that simulate manual rewinding action to achieve low tension, neat edge and zero excessive glue issue during inspection.



Technical Specifications

Model	LabelRoll-LT	
Application	Electronic label, textile label, irregular die-cutting label and other label type with high sensitivity of tension	
Material Type	Opaque, transparent, reflective materials, and clear on clear labels	
Defect Type	• Common defects: Dirty spot, ink spot, white spot, missing print, mis-registration, improper die-cutting & stamping, broken writing, color variation, foreign objects etc. • 3D defects: bubble, scratch, excessive glue, varnishing and coating errors etc.	
Variable Data(Optional)	1D-Codes	CODE128, CODE39, CODE93, EAN8, EAN13, UPCA, UPCE, ITF, CODABAR
	2D-Codes	QR, DM, PDF 417
	SN Codes	SN Code that contains numbers and capital letters
	Sequence Inspection	Sequence mistake, repeated number, wrong number
Web Width	20mm-330mm	
Speed	60m/min-80m/min	
Mechanical Platform Specifications (330mm)		
Max. web width	330mm	
Max. operation speed	Manual mode:40m/min; Auto mode: 60m/min	
Max. unwinding dia.	Φ450mm	
Max. rewinding dia.	Φ450mm	
Web guider	One	
Rewinding accuracy	±0.35mm	
Size of rewinding/unwinding	Unwinding: Φ75 mm air shaft; Rewinding:75 mm slip shaft	
Defect stop precision	±20mm	
Rewinding/unwinding tension	0~30N	
Air pressure	0.4MPa~0.6MPa clean compressed air	
External dimensions	2200mmx1200mmx1350mm (LxWxH)	
Weight	About 0.8 tons	

4.6 LabelRoll-RS Series Roll-to-Sheet Offline Quality Inspection

LabelRoll-RS has the same function with LabelRoll-F, but added sheet cutting unit in the end. It integrates function of printing quality inspection, sheet cutting, eliminating defect sheet and stacking of good sheets.

Technical Specifications

Mechanical Platform Specifications(330mm)			Mechanical Platform Specifications(330mm)	
Material thickness	100μm~300μm		Sheet cutting length	100mm~450mm
Material width	40mm~330mm		Stacking height	100mm
Platform speed	200m/min (rewinding) 60m/min (sheetcutting)		Air pressure	0.4MPa~0.6MPa clean compressed air
Max. unwinding dia.	Φ800mm		Dimensions	5815mmx1200mmx1500mm (LxWxH)
Max. rewinding dia.	Φ800mm		Weight	About 1.8 tons



GLOBAL SERVICE NETWORK





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