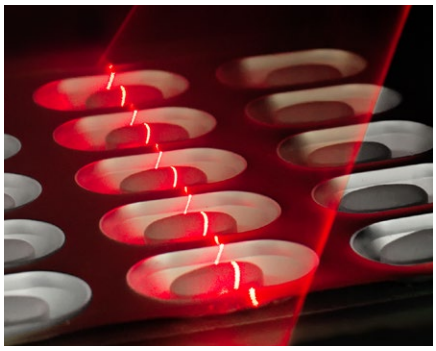
SYSTEM INFORMATION

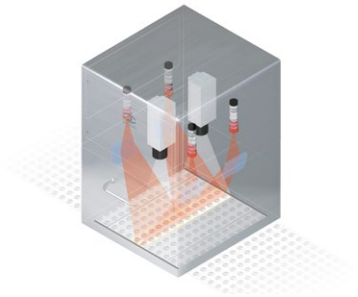


LYNX-SPECTRA 3D 3D Product Inspection

Description

LYNX-SPECTRA 3D is a high-resolution, laser-based image processing system for the inspection of the geometry of packaging material and products to detect distortions, dents and other defects.

Operation Mode
The geometry of the inspected object is illuminated by a laser. The resulting image is captured by a high-resolution 3D line camera. The image is processed, digitalised and evaluated.



Area of Application

Examinable Objects:
- Tablets
- Oblongs
- Hard- and soft gel capsules
- Dry powder
- Aluminium blisters
- PVC blisters after filling
- Multi-layered capsules

Inspection Criteria:
- Presence
- Size
- Shape
- Perimeter
- Position
- Broken product
- Overfilling
- Consecutive errors
- Geometry
- Volume

Highlights

LYNX-SPECTRA 3D enables the safe inspection in the following cases:
- Double filling, both stacked and next to each other
- Broken products next to and underneath the product
- Capped multi-layered tablets
- Low-contrast environments such as grey tablet in aluminium blister
- Powder in minimal dosage

System

LYNX-SPECTRA 3D is particularly useful in low-contrast cases and with fragile products. Since both geometry and volume of the product are evaluated, the system offers great advantages compared to two-dimensional inspection.

LYNX-SPECTRA 3D can be combined with any vision system of the latest generation and operated via a single touch screen interface. This simplifies the use and saves space. In most cases, the system can be equipped with additional hard- and software options.

Hardware

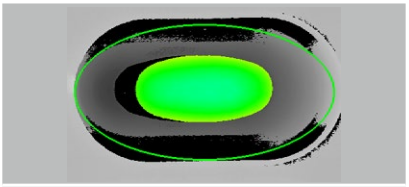
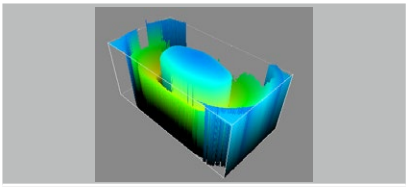
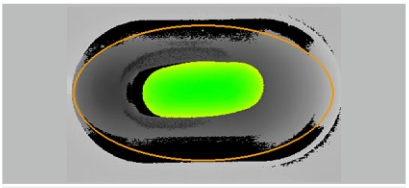
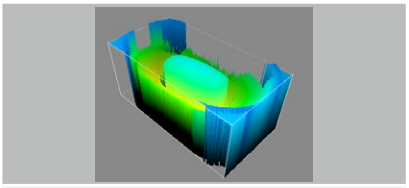
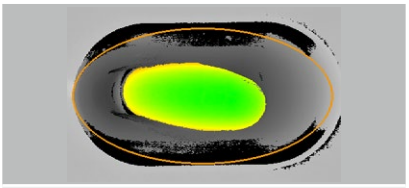
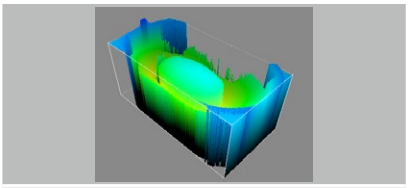
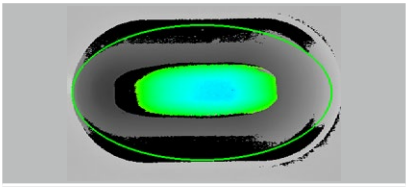
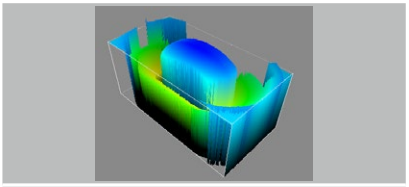
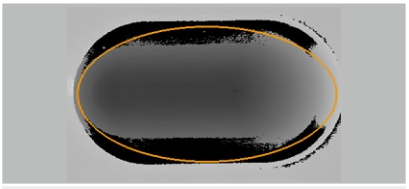
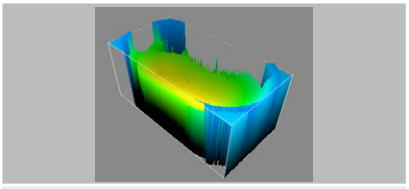
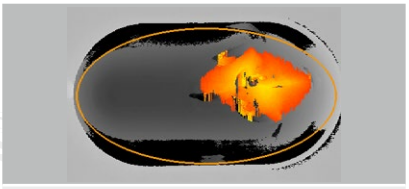
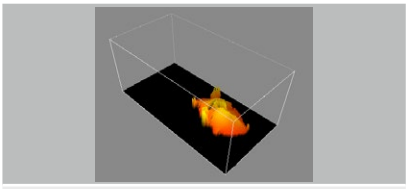
The system is available in various designs.

One version is the two-stage combination with LYNX-SPECTRA HR.

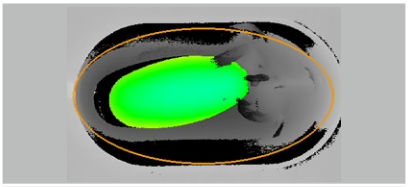
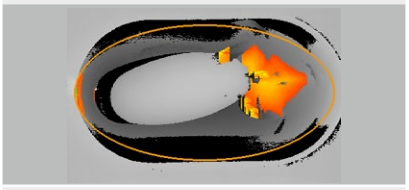
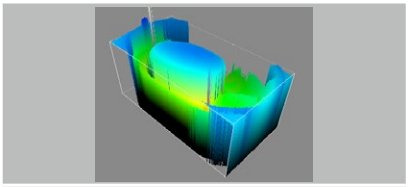
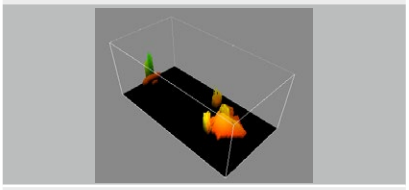
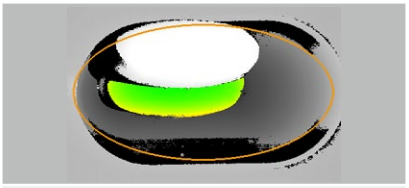
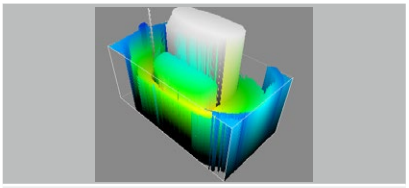
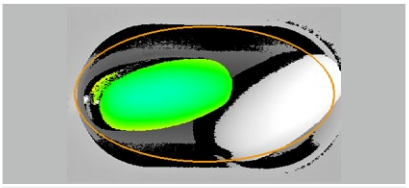
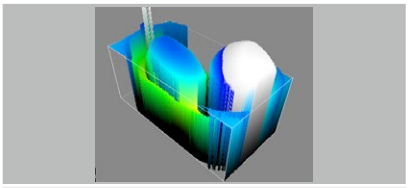
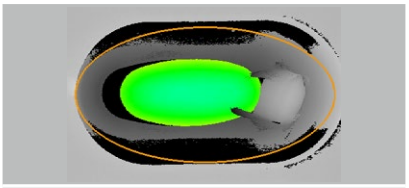
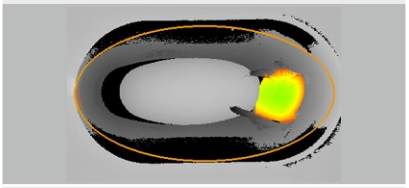
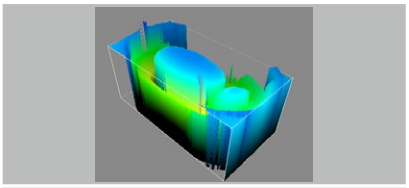
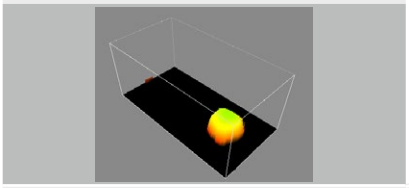
Evaluation unit	19 inch built, 42 TE
Standard I/O System	DIO8/16/32/48/64
Extended I/O System	TCP/IP, EtherCAT, Integrated PLC
Interfaces	2xCOM, 3xUSB, 2xEthernet, VGA/HDMI
Hard drive	16 GB SSD
Frame grabber	scanware, for matrix and line camera BW/Colour
Multiplexer	scanware, up to 15 cameras

Evaluation Examples

[1] pxl = Pixel (Surface Pixel), [2] vxl = Voxel (Volume Pixel), text = recognized as good, text = recognized as incorrect

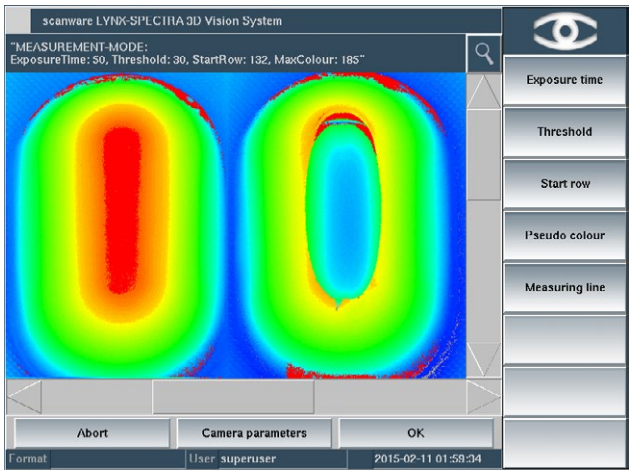
Photography	2D False-colour Presentation	3D Presentation
1. Correct		
		
	Object area ≈ 19,000 pxl[1,3]	Object volume ≈ 2,200,000 vxl[2]
2. Product Size		
		
	Object area ≈ 14,000 pxl[4]	Object volume ≈ 1,300,000 vxl
3. Chipped		
		
	Object area ≈ 19,000 pxl	Object volume ≈ 1,600,000 vxl
4. Upright		
		
	Object area ≈ 17,000 pxl	Object volume ≈ 2,200,000 vxl
5. Empty Pocket		
		
	Object volume ≈ 0 vxl	Volume in background ≈ 0 vxl
6. Damaged Empty Pocket		
		
	Surface in background ≈ 12,000 pxl	Volume in background ≈ 400,000 vxl

[1] pxl = Pixel (Surface Pixel), [2] vxl = Voxel (Volume Pixel), text = recognized as good, text = recognized as incorrect

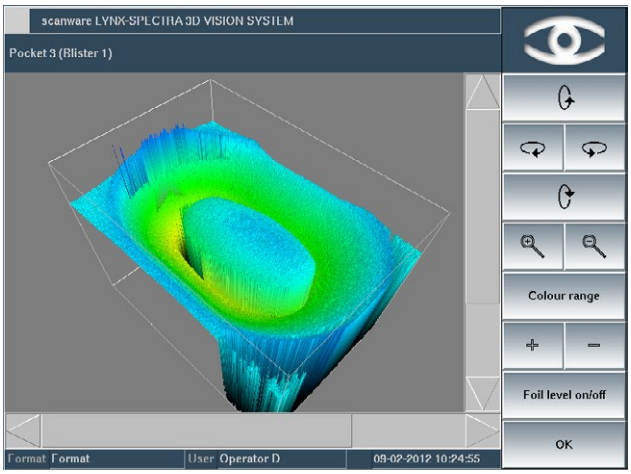
Photography	2D False-colour Presentation	3D Presentation
7. Damaged Pocket + Product		
	 Object area ≈ 19,000 pxl  Surface in background ≈ 10,000 pxl	 Object volume ≈ 2,200,000 vxl  Volume in background ≈ 400,000 vxl
8. Double Filling 1		
	 Object area ≈ 10,000 pxl	 Object volume ≈ 1,900,000 vxl Volume in background ≈ 2,480,000 vxl
9. Double Filling 2		
	 Object area ≈ 19,000 pxl	 Object volume ≈ 2,200,000 vxl Volume in background ≈ 2,200,000 vxl
10. Fragment		
	 Object area ≈ 19,000 pxl  Surface in background ≈ 8,000 pxl	 Object volume ≈ 2,200,000 vxl  Volume in background ≈ 260,000 vxl

Software

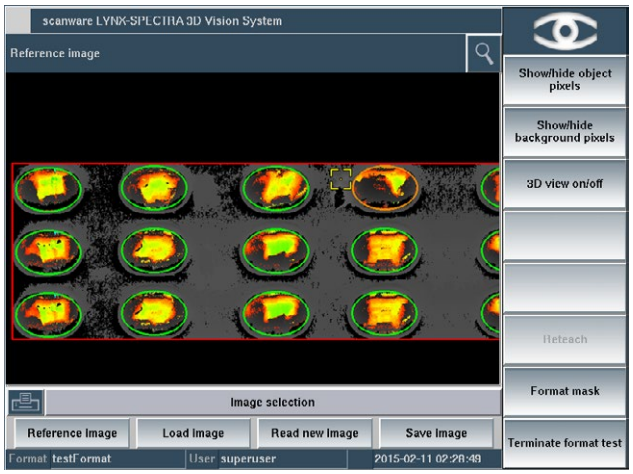
The software of LYNX-SPECTRA 3D includes numerous highlights such as the display of format parameters and documentation. Reference and error images are analysed and product-specific tolerances are set. Also, mask administration can be managed by the user.



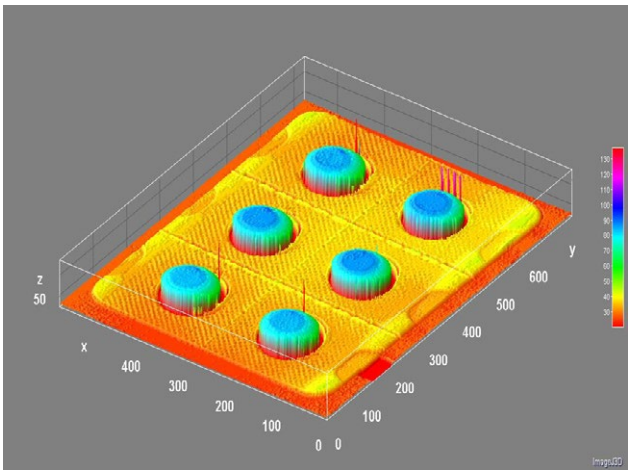
Colour view of evaluation. Every colour represents a height level; red stands for low levels, blue for higher levels.



3D view of the evaluation. This can be angled using the arrows to achieve the ideal product view.



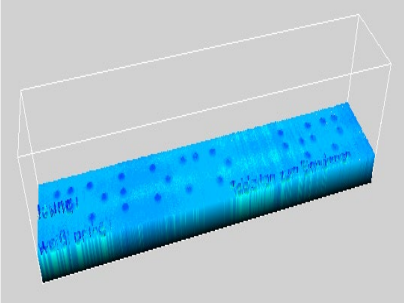
Evaluation of powder. By adapting the standard solids 3D algorithm, the volume calculation is very precise.

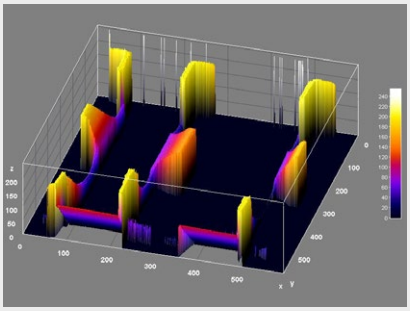


3D evaluation of a sealed blister for the recognition of sealing area and pockets.

Further Application Options

The height level recognition of LYNX-SPECTRA 3D can also be used to inspect braille, ampoules and folding box support.





Technical Data

Laser technology
- Laser class 1 (Normal operation)
- Wavelength 660 nm
- Fan angle 30°

Camera
- Line camera
- Sensor size 1,536 × 512 pixel

LYNX-SPECTRA	3D	High-Resolution System
Camera technology	3D camera	3D camera
Camera port	CameraLink* / GigE	GigE
Camera resolution	1,536 pixels per line	1,536 pixels per line
Max. pictures per minute	900 (at 1000 lines)	450 (at 1000 lines)
Max. foil width per camera	160 mm	80 mm
Height resolution	0.1 mm 128 greyscale height	0.05 mm 128 greyscale height
Objects per image	224	224
Format storage	>1,000	>1,000
Number of cameras	1-3	1-3

* = only available until the end of 2017

The scanware Benefits

- Modular built for a multitude of installation options
- Real-time operating system QNX® for security and speed
- Uniform graphical interface and easy-to-follow menu structure
- Fully 21 CFR Part 11 compliant
- Hard- and software are expandable and upgradable
- Wear-free, electronically controllable scanware W-LED illumination
- Easy to install on all common packaging machinery
- Communication with machine via a VDMA-XML protocol
- Simultaneous use of numerous inspection parameters
- Variety of statistical tools
- Development of special tasks and requirements on your request
- Availability of all parts guaranteed for 10 years
- Service offering solutions and support within 24 hours

LYNX-IMPERA Line Management
LYNX-SPECTRA Product Inspection
LYNX-SIGNUM Code Inspection
LYNX-FOCON Pore Detection
LYNX-CAPA Track & Trace Solutions

Quality is visible.

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