



LMI TECHNOLOGIES

Welcome to **FactorySmart**[®]

3D SMART SENSORS FOR INLINE INSPECTION



Gocator 2420



Gocator 3210

Meet **Gocator**

Two trusted 3D technologies for inline metrology-grade inspection.

LASER PROFILERS

Gocator Point and Line Profile Sensors inspect any **moving target** with height resolutions down to $1.1\ \mu\text{m}$, sampling speeds up to 32 kHz, and a suite of built-in 3D measurement tools and smart features to deliver a complete 3D inspection solution.





SNAPSHOT SENSORS

Gocator Stereo Snapshot Sensors generate 3D data with a single scan trigger. These sensors offer built-in 3D measurement tools to inspect **any stationary target**, or automate assembly using robot guidance.

WELCOME TO **FACTORYSMART**[®] INSPECTION

Gocator[®]

Gocator is a non-contact 3D scanning and inspection sensor ready to deploy into the factory to deliver 100% inspection of parts and assemblies in order to ensure product quality.

Easy to Use

Features such as a web-browser driven point-and-click environment for rapid configuration, built-in measurement tools and rich I/O for communicating results make it easy for factory technicians to get the results they need.

Low Latency with No External Controller Required

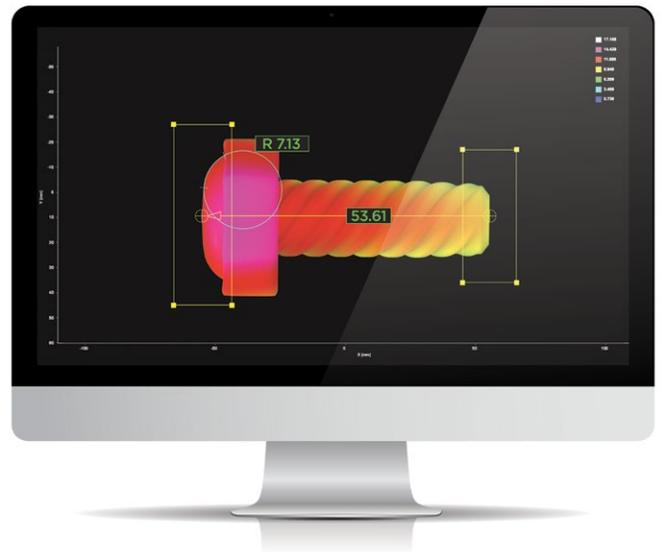
Real-time measurement capabilities minimize lag between data acquisition and decision outputs, which means factories can consistently meet their throughput targets.

Built-In Measurement Tools

Built-in tools provide a drag and drop environment with full 3D visualization, and allow users to set measurements based on the specific feature that needs to be inspected.

Customizable

Sensor customization allows users to develop and embed their own custom measurement tools directly into the firmware itself—with the same functionality and ease-of-use as built-in native tools.



3D IS OUR EXPERTISE

At LMI Technologies we work to advance quality and productivity with 3D sensor technology. Our award-winning, FactorySmart[®] sensors improve inline factory production by providing fast, accurate, reliable inspection solutions that leverage smart 3D technologies. Unlike contact-based measurement or 2D vision, our products remove complexity and dramatically reduce implementation cost while achieving repeatable, high-precision measurement.

TOTAL QUALITY CONTROL WITH SMART 3D

Gocator is used in all major inline manufacturing processes for quality control and improved factory production.

PART MANUFACTURING

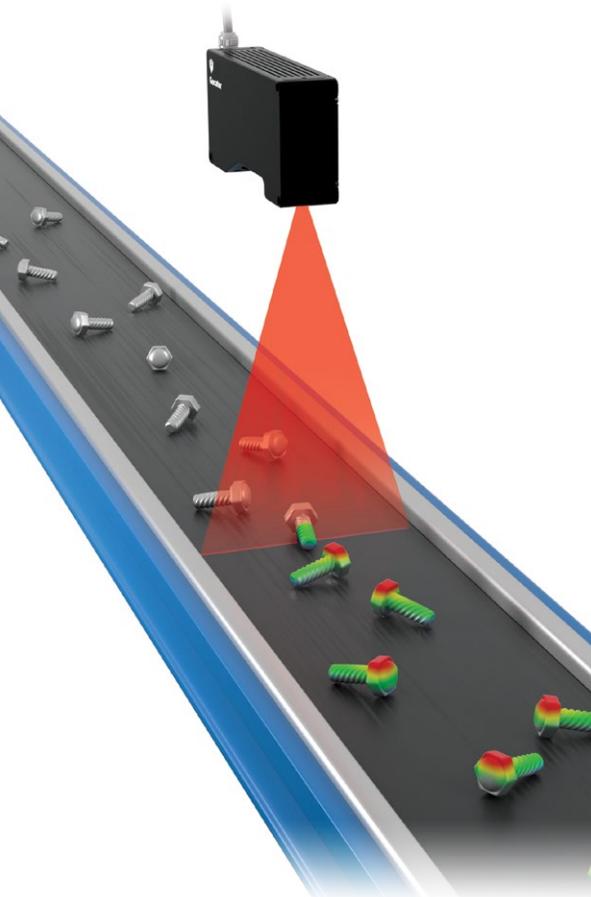
Most parts from processes such as casting, machining, and injection molding are never inspected. Gocator provides 100% inline quality control to ensure every part meets key manufacturing tolerances.

COMPONENT ASSEMBLY

As parts come together to build product assemblies, how each part fits with another determines overall assembly quality. Gocator verifies proper adhesion, fastening, surface gap & flush, and more.

FINISH AND PACKAGING

Finish and sealing is critical to product acceptance. Gocator ensures finished products meet strict quality standards, are packaged correctly, and are ready for shipment.



WHY SMART 3D?

2D vision alone cannot achieve 100% quality control, which is why you need to invest in a smart 3D solution.

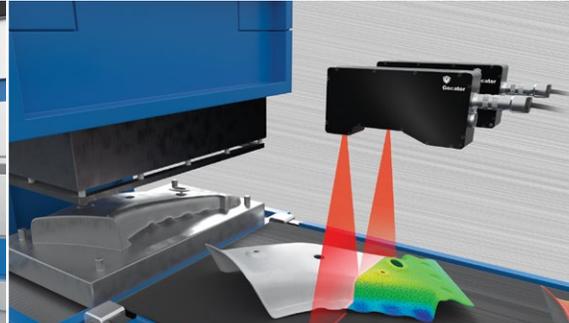
- » Volumetric measurement (X, Y, and Z axis) provides shape and position related parameters—necessary for robot handling
- » Contrast invariant, ideal for inspecting low contrast objects
- » Immune to lighting variation and ambient light
- » Higher repeatability due to integrated optics, lighting, and pre-calibration
- » Simpler to build multi-sensor setups for large object inspection

PART MANUFACTURING INSPECTION

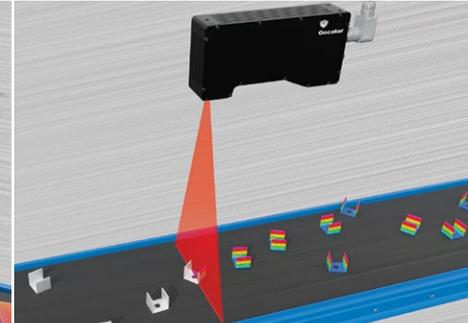
Stamping Inspection



Line profiler used to determine the final bend angle in a press brake

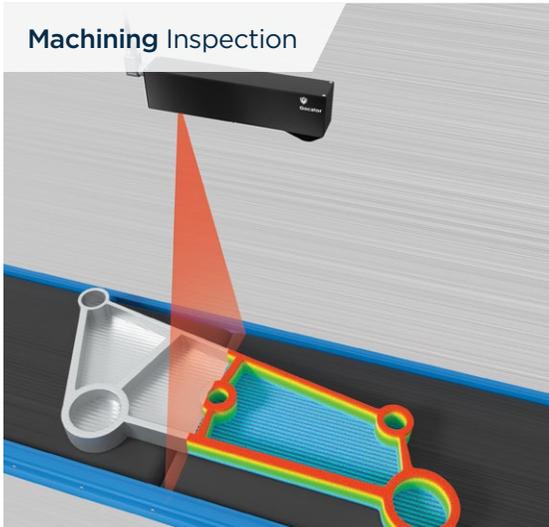


Two sensors in a wide configuration, combining profiles into a single surface scan

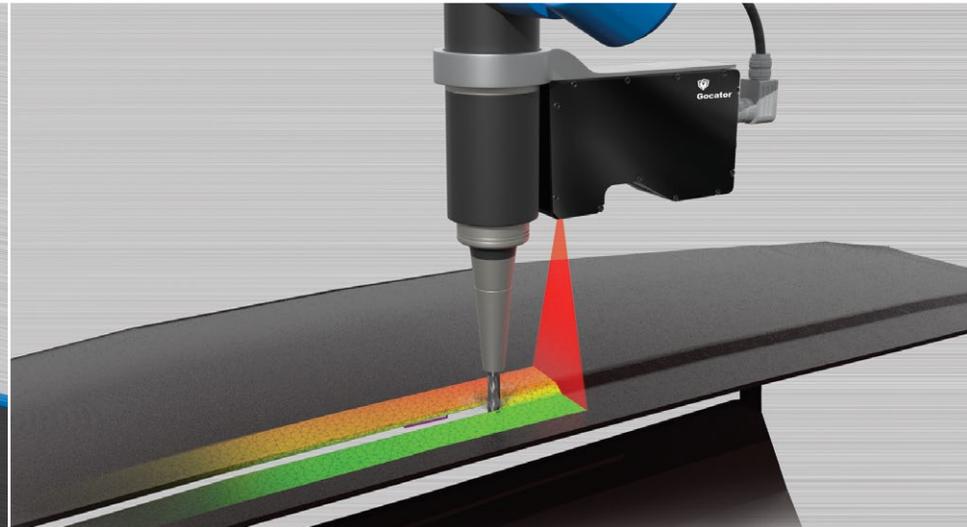


Scanning finished brackets to verify interior dimensions

Machining Inspection



Finished CNC part scanned to verify depths and hole sizes



Vision-guidance for robotic CNC of an automotive dashboard

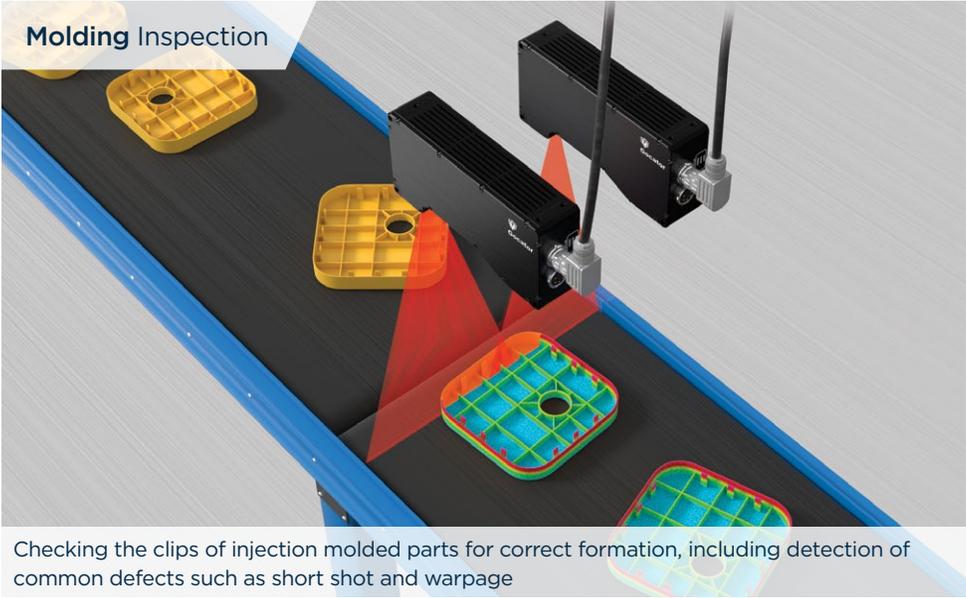


COMMON PROBLEM:
**PART SHAPE AND POSITION VARIATION
IN AN INLINE PROCESS**



FactorySmart® SOLUTION:
**ACHIEVE HIGH GAUGE REPEATABILITY AND
REPRODUCIBILITY (GRR) WITH ANCHORING AND
PART MATCHING**

- » Built-in anchoring tracks the movement of parts within the sensor's field of view and corrects for variations in the height and position of parts.
- » Part matching automatically performs realignment before applying Gocator's built-in measurement tools—eliminating the need to mechanically realign parts.



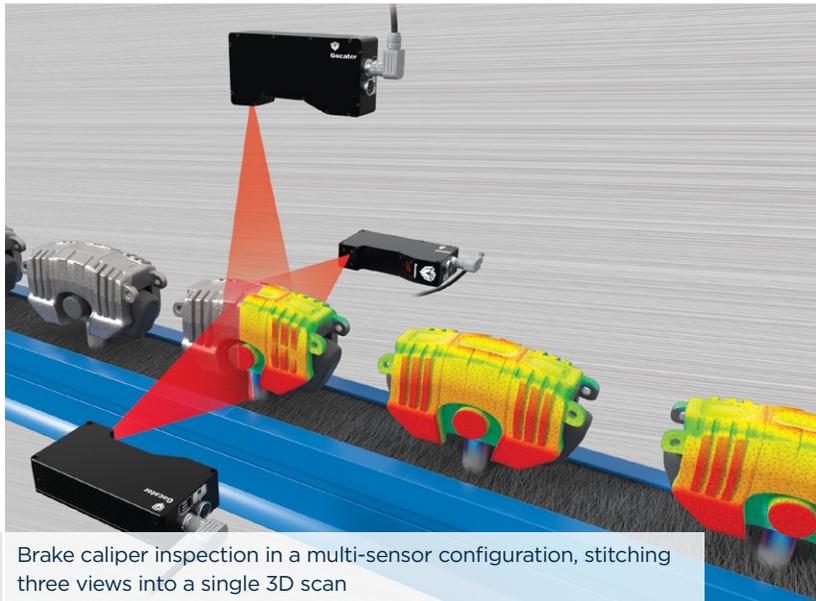
Molding Inspection

Checking the clips of injection molded parts for correct formation, including detection of common defects such as short shot and warpage



Casting Inspection

Detecting surface level of molten metal



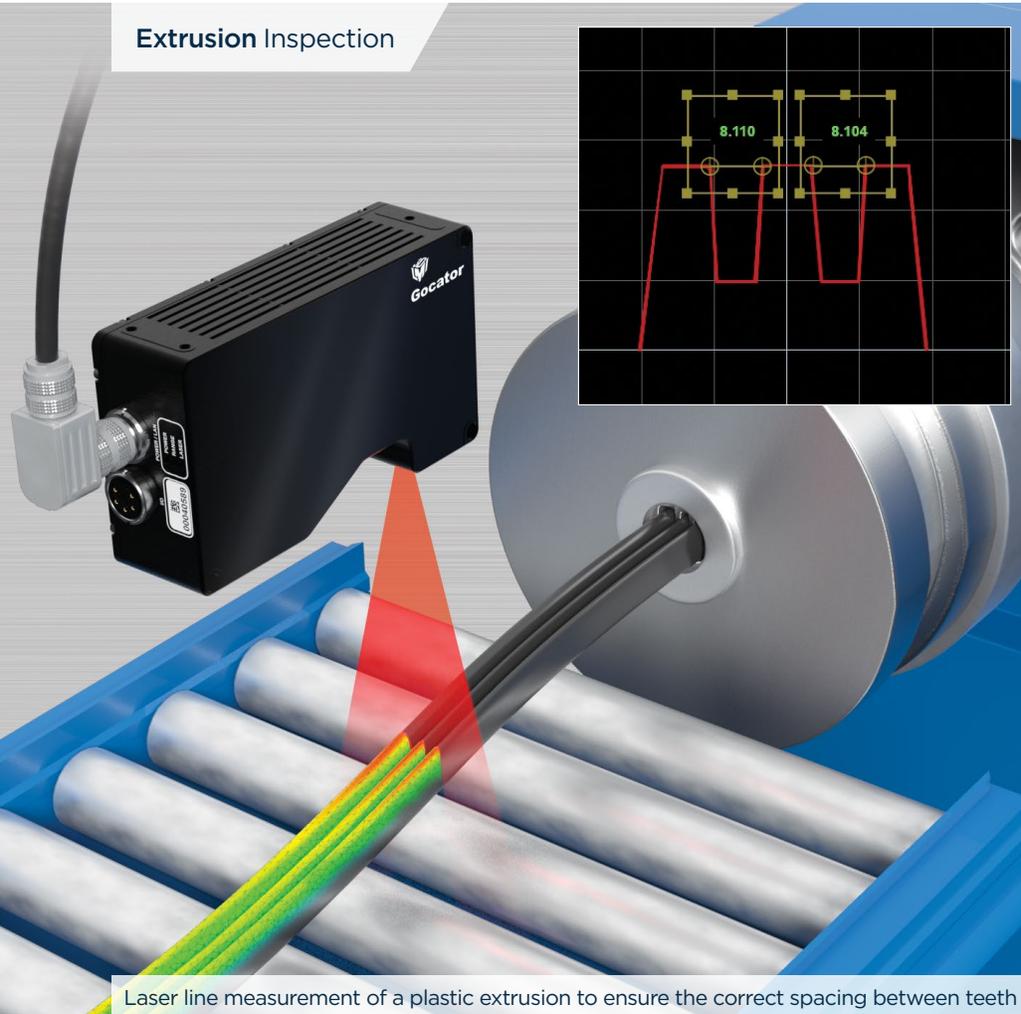
Brake caliper inspection in a multi-sensor configuration, stitching three views into a single 3D scan

WHY YOU NEED 3D GEOMETRY MEASUREMENT

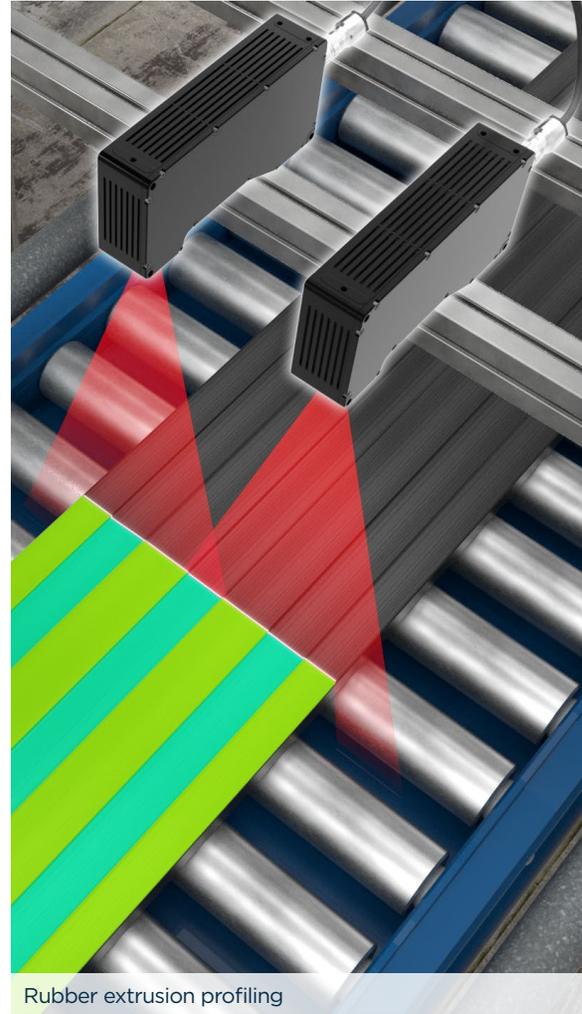
Unlike 2D, 3D measurement produces geometry (i.e., shape) data that is required to determine if a part meets key assembly, fit, and finish tolerances.

PART MANUFACTURING INSPECTION

Extrusion Inspection



Laser line measurement of a plastic extrusion to ensure the correct spacing between teeth



Rubber extrusion profiling



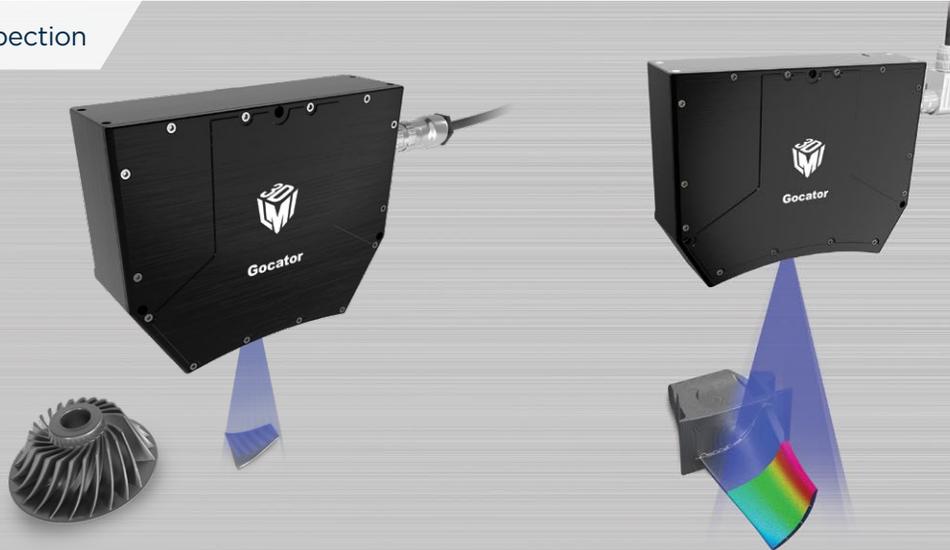
COMMON PROBLEM:
COMPLEX AND TIME-CONSUMING SYSTEM SETUP



FactorySmart® SOLUTION:
WEB-ENABLED TECHNOLOGIES AND ALL-IN-ONE DESIGN

- » Connect to a sensor with any web browser.
- » Generate scans of your object/feature with sophisticated control over triggering, exposure, resolution, part detection, and filtering/gap filling.
- » Built-in drag and drop measurement for full geometric gauging.
- » Ethernet protocols and direct I/O are built-in and communicate pass/fail decisions directly to factory equipment (robots, PLCs, or direct I/O).

3D Printing Inspection



Snapshot sensor capturing surface data of a 3D printed turbine part



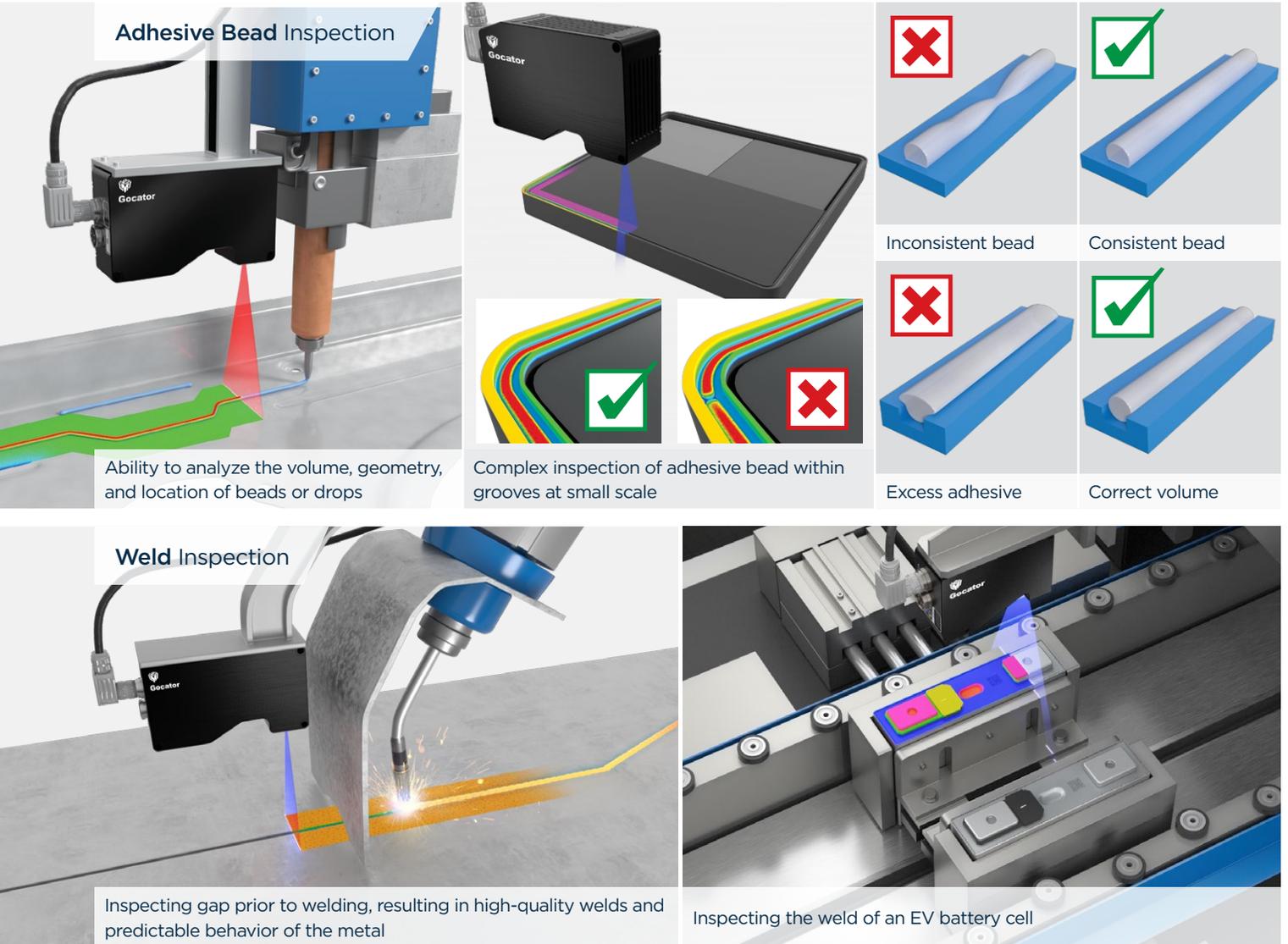
SMART BENEFIT: INDUSTRIAL SENSOR DESIGN FOR HIGH MEASUREMENT RELIABILITY AND LONG PRODUCT LIFE

- » Rugged housing, small form factor, and lightweight design make Gocator sensors ideal for fitting into small spaces and mounting onto robots.
- » IP67-rated design based on industrial grade parts offers long lifetimes in continuous operation.

WHY YOU NEED 3D THE BENEFIT OF COMBINING 2D + 3D

Gocator laser profilers combine 3D and 2D capability for total quality inspection. In addition to 3D shape measurements, the intensity of the projected laser light is used to create a 2D image of the surface of a part. This information can be used to extract surface markings like bar codes and printed text.

COMPONENT ASSEMBLY INSPECTION



Adhesive Bead Inspection

Ability to analyze the volume, geometry, and location of beads or drops

Complex inspection of adhesive bead within grooves at small scale

Inconsistent bead Consistent bead

Excess adhesive Correct volume

Weld Inspection

Inspecting gap prior to welding, resulting in high-quality welds and predictable behavior of the metal

Inspecting the weld of an EV battery cell



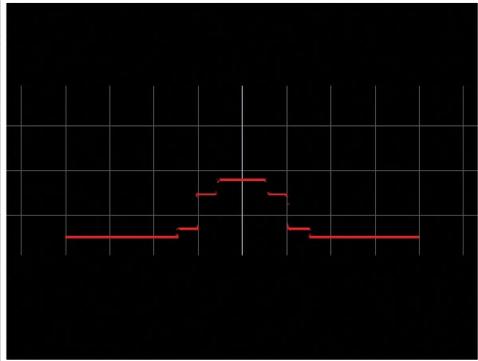
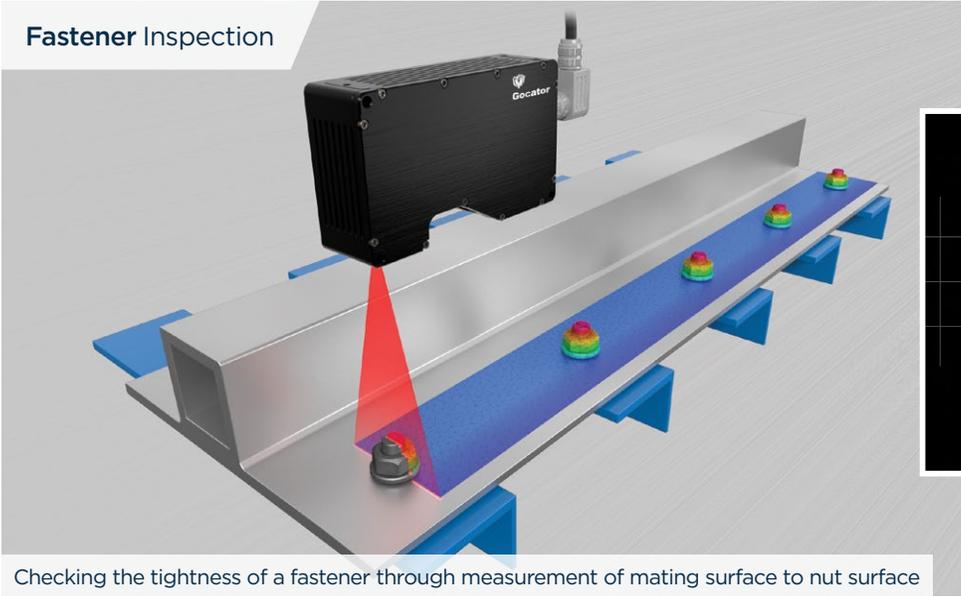
COMMON PROBLEM:
NO CUSTOM MEASUREMENT TOOLS



FactorySmart® SOLUTION:
GOCATOR DEVELOPMENT KIT (GDK)

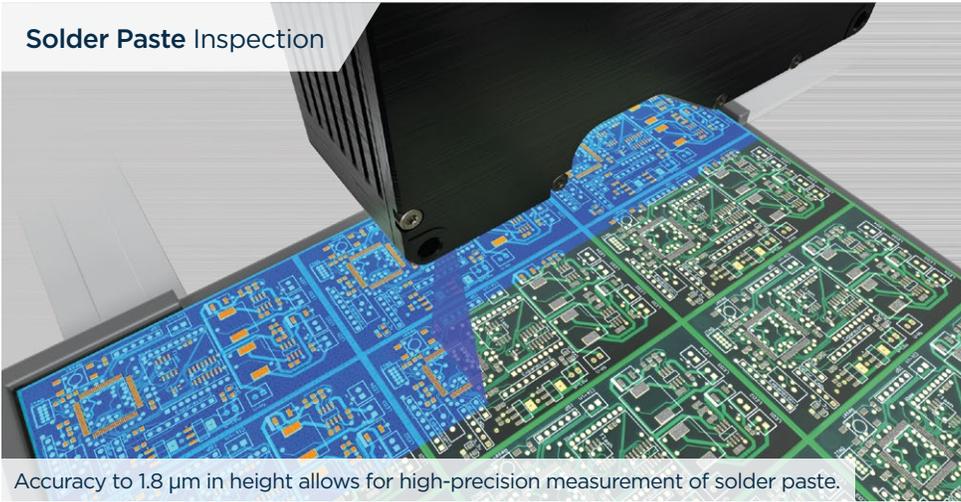
- » Develop and embed your own custom measurement tools and make specialized measurements for applications with unique requirements, while protecting your IP.
- » Create optimized custom firmware builds that run within the realtime OS of the Gocator.
- » Use custom solutions on a variety of different sensors, all on a single platform.
- » Run your own measurement tools in the Gocator Emulator for offline development, testing, and support.

Fastener Inspection

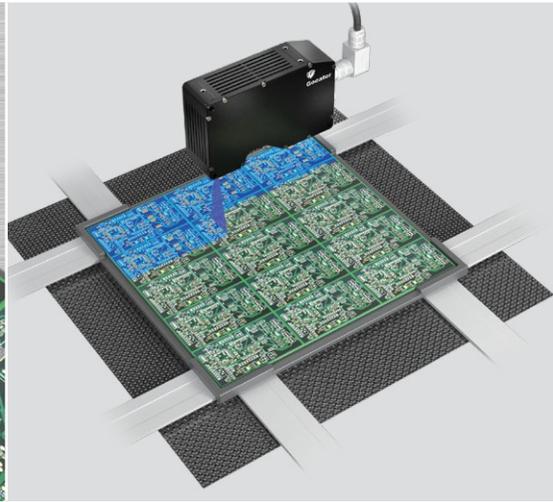


Checking the tightness of a fastener through measurement of mating surface to nut surface

Solder Paste Inspection



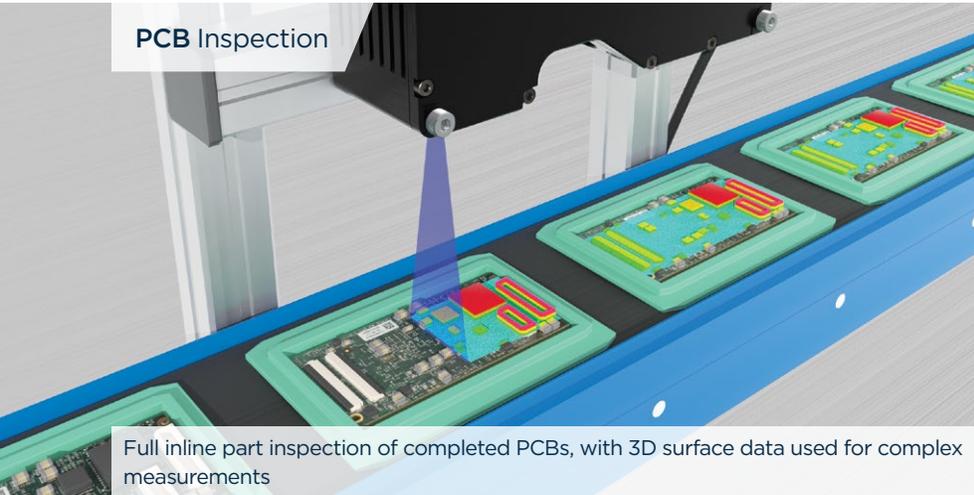
Accuracy to 1.8 μm in height allows for high-precision measurement of solder paste.



SMART BENEFIT: HIGH-SPEED 3D PROFILING OF COMPLEX SHAPES

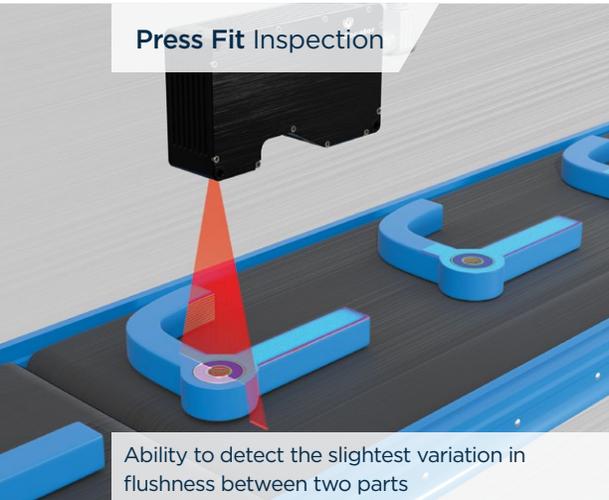
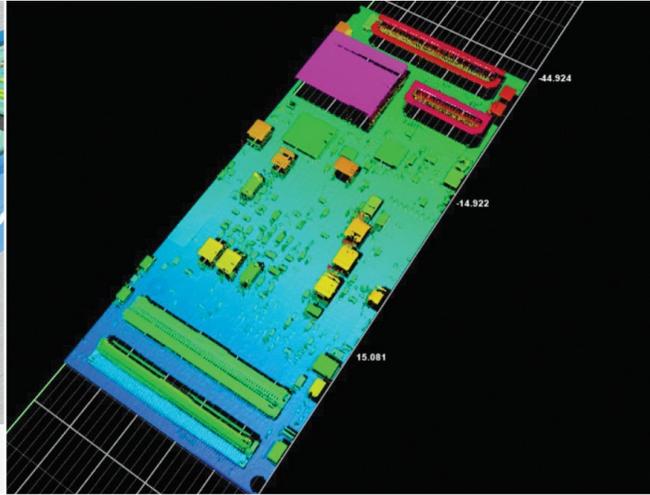
Laser profilers are high-speed devices that generate a line profile by combining range data from the scanned part. You can then easily perform measurements on the profile for dimensioning and inspecting complex shapes.

COMPONENT ASSEMBLY INSPECTION



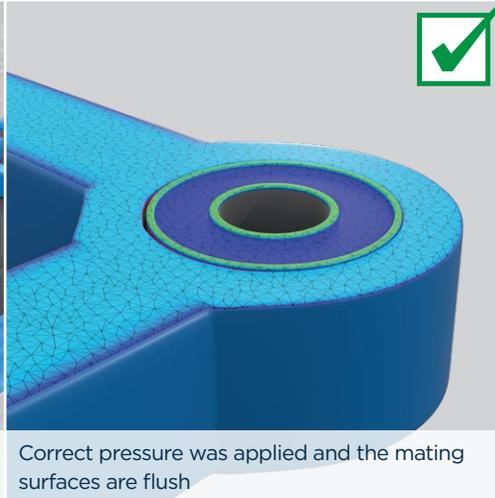
PCB Inspection

Full inline part inspection of completed PCBs, with 3D surface data used for complex measurements

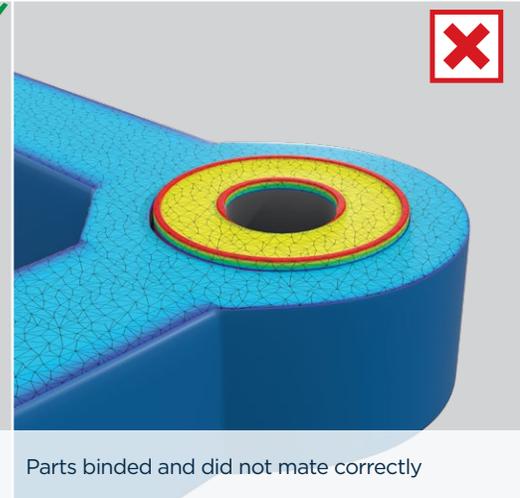


Press Fit Inspection

Ability to detect the slightest variation in flushness between two parts



Correct pressure was applied and the mating surfaces are flush



Parts binded and did not mate correctly



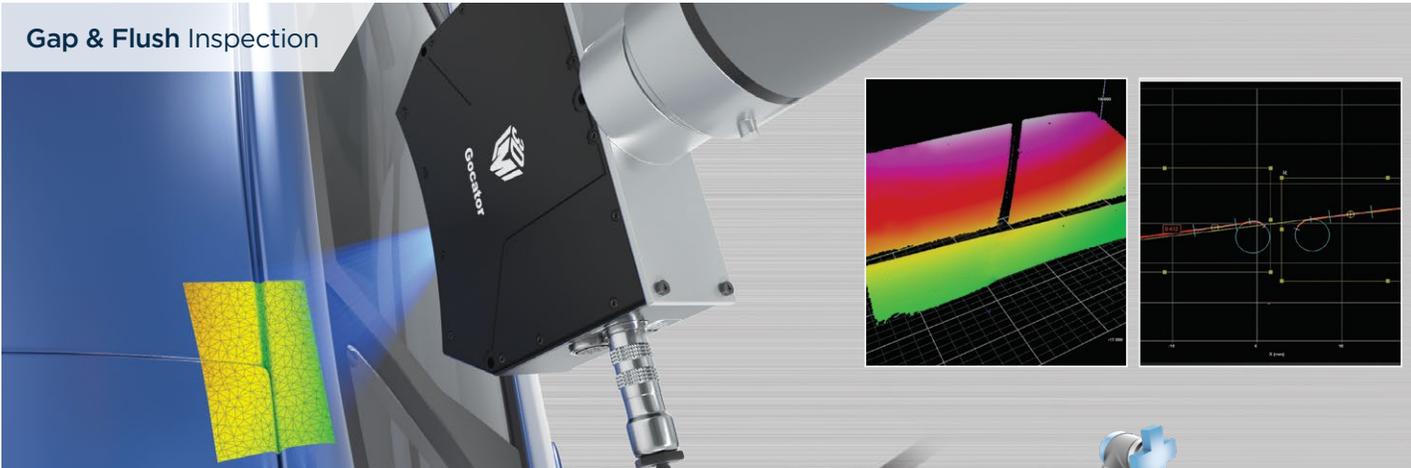
COMMON PROBLEM:
NO TIME OR RESOURCES TO CREATE AND DEPLOY YOUR OWN MEASUREMENT TOOLS



FactorySmart® SOLUTION:
BUILT-IN MEASUREMENT TOOLS

- » Built-in measurement tools make 3D measurement reliable, repeatable, and easy.
- » No need to send 3D point cloud data to 3rd-party software.
- » Tools include Gap & Flush, Groove, Countersunk Hole, Surface Edge, Surface Plane, and many more.

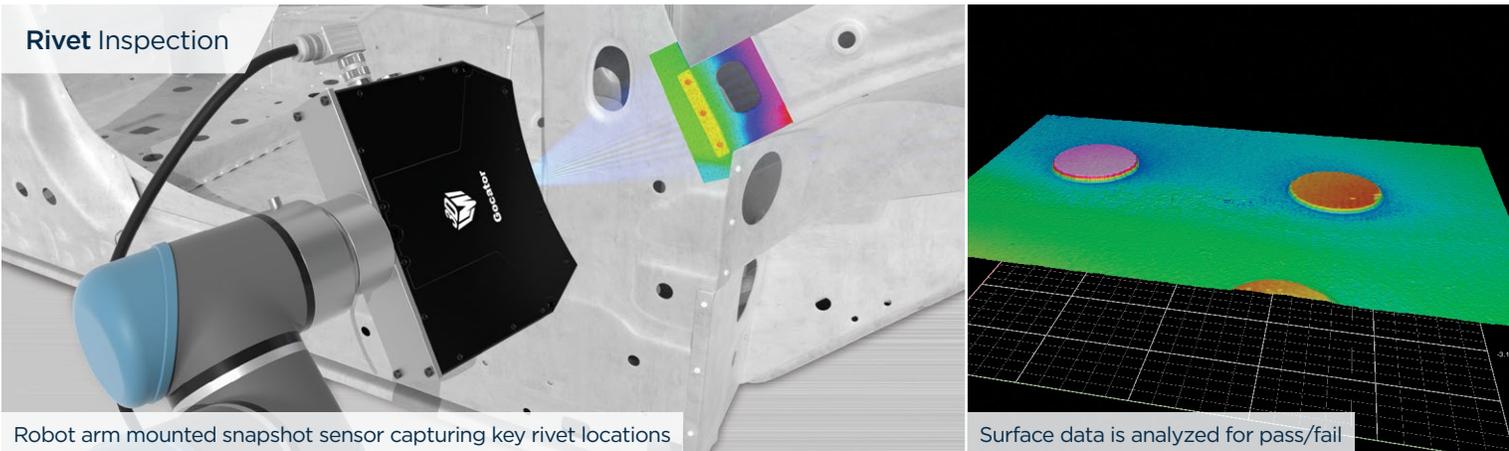
Gap & Flush Inspection



Snapshot sensors are able to measure multiple gap & flush features within a single field of view. 3D surface data is cross-sectioned and measured for multiple profile views.



Rivet Inspection



Robot arm mounted snapshot sensor capturing key rivet locations

Surface data is analyzed for pass/fail



COMMON PROBLEM:
NEED VISION-GUIDANCE AND FLEXIBLE MEASUREMENT FOR ROBOTIC SYSTEMS

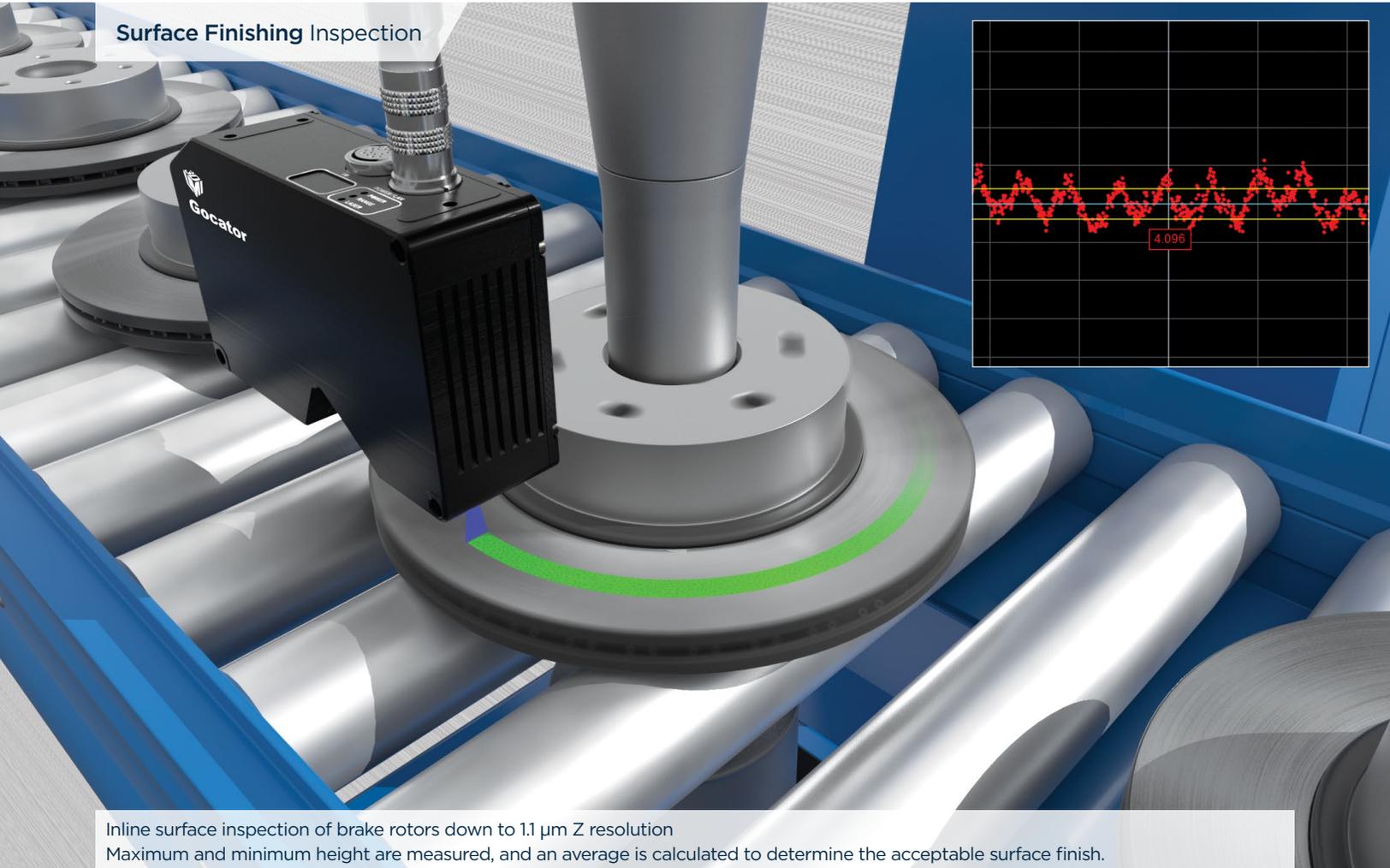


FactorySmart® SOLUTION:
ROBOT-FRIENDLY HARDWARE + SOFTWARE

- » Gocator 3D smart sensors allow a robot to sense variations in its physical environment and adapt accordingly. Gocators are the “eyes” in vision guidance and enable essential applications such as pick-and-place.
- » Gocator 3D snapshot sensors are certified for Universal Robots integration (UR3, UR5, UR10, and UR e-series compatible)

PRODUCT FINISH & PACKAGING INSPECTION

Surface Finishing Inspection



Inline surface inspection of brake rotors down to 1.1 μm Z resolution
Maximum and minimum height are measured, and an average is calculated to determine the acceptable surface finish.



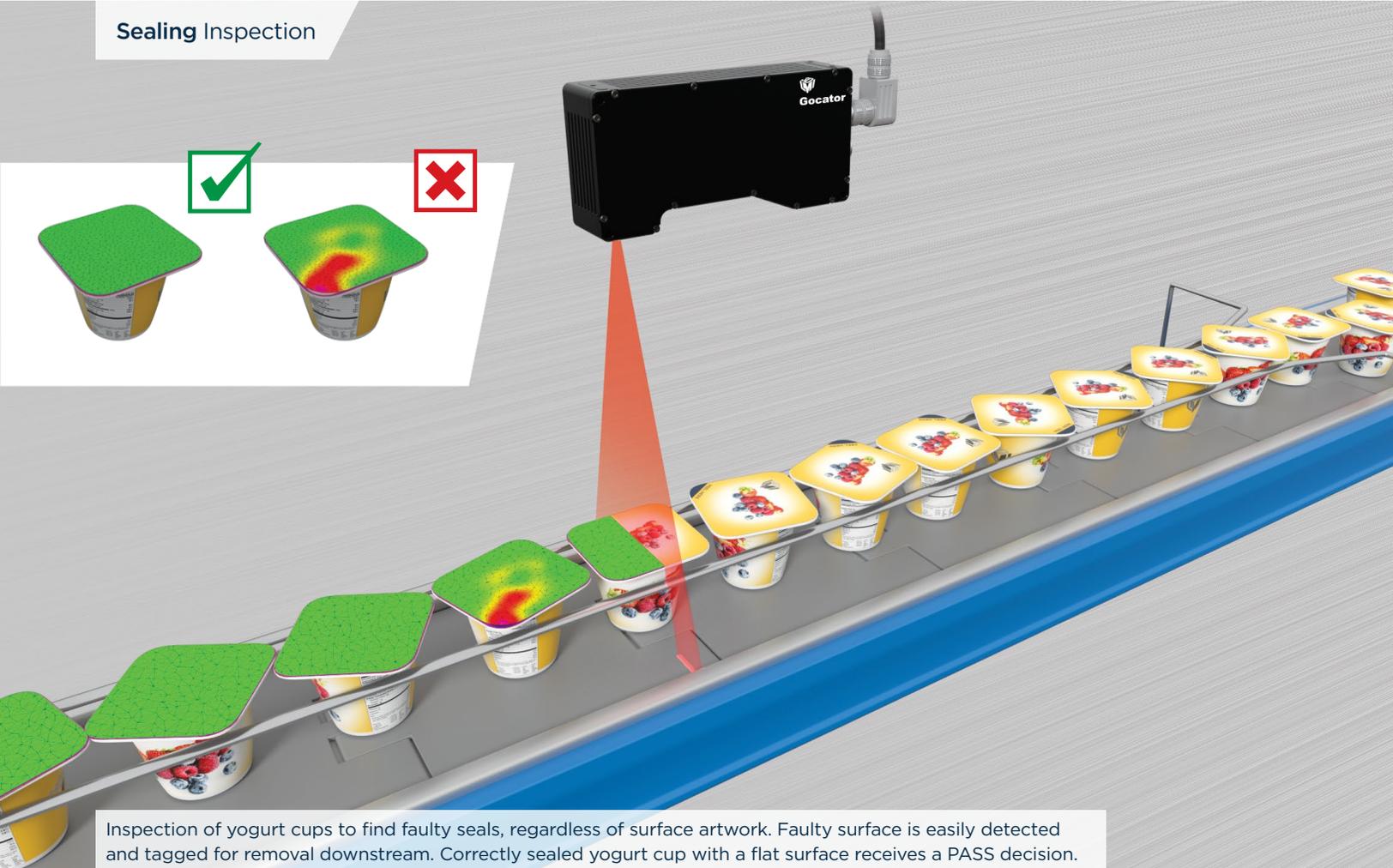
SMART BENEFIT: HIGH-RESOLUTION 3D SHAPE AND SURFACE ANALYSIS

Line profilers generate a high-resolution 3D height map of the target object. Built-in tools allow you to easily perform micron-level measurements of the object's geometry and surface.

WHY YOU NEED 3D ACCURATE SCANNING EVEN WITH OBJECT MOVEMENT

Unlike 2D, 3D provides depth measurement information that prevents errors due to object movement—meaning objects can move anywhere within the sensor's measurement range and still yield accurate results. This eliminates object fixturing requirements and improves overall system reliability.

Sealing Inspection



Inspection of yogurt cups to find faulty seals, regardless of surface artwork. Faulty surface is easily detected and tagged for removal downstream. Correctly sealed yogurt cup with a flat surface receives a PASS decision.



COMMON PROBLEM:
NEED TO MEET INLINE PRODUCTION SPEED



FactorySmart® SOLUTION:
SENSOR ACCELERATION

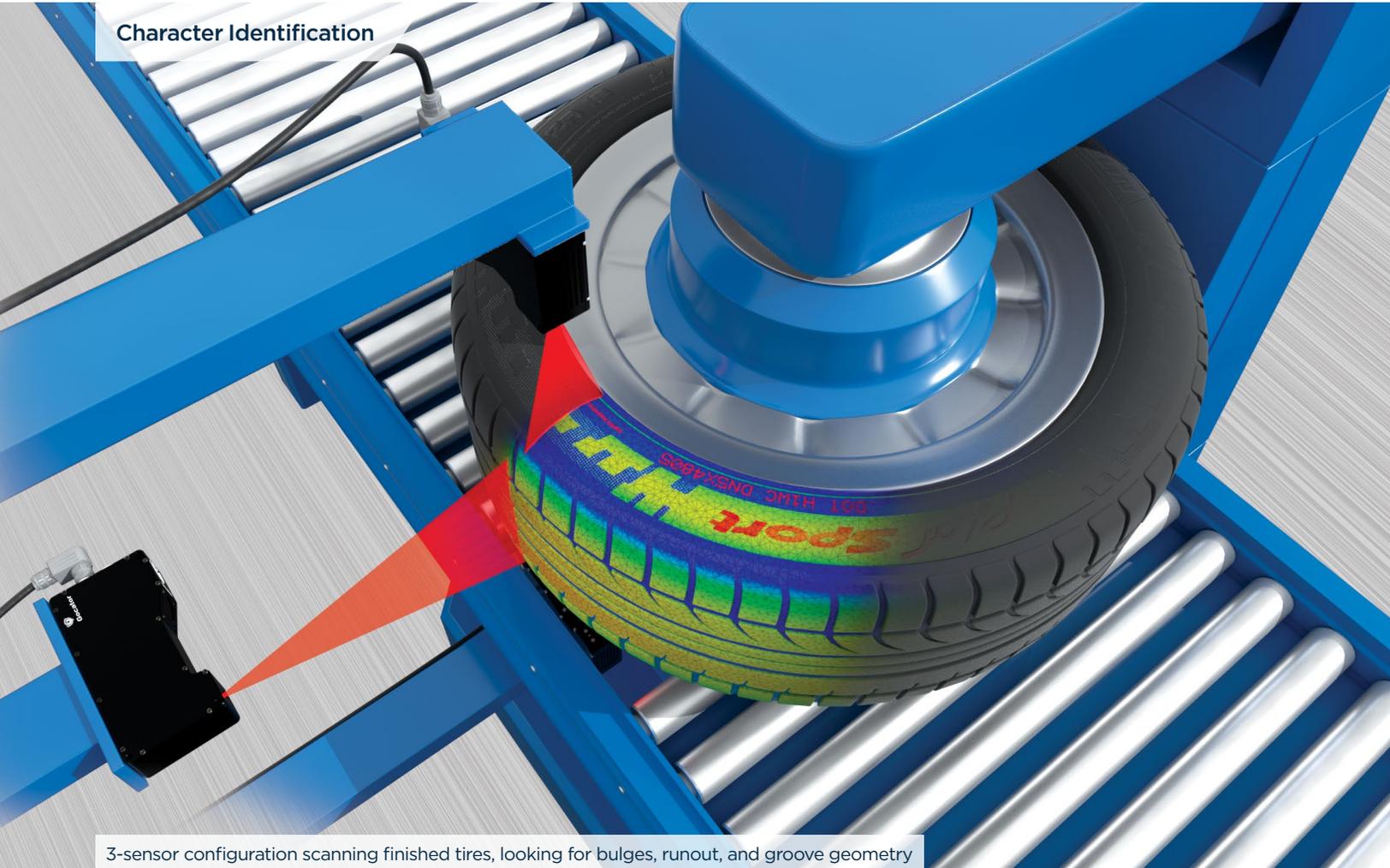
» Accelerate inspection by adding GoMax (a dedicated hardware device) or GoX (a PC-based application) to share the data processing load and achieve faster cycle times.

WHY YOU NEED 3D → EASILY INSPECT LOW-CONTRAST OBJECTS

Unlike 2D intensity imaging, **3D is contrast invariant**. This means shape is measured regardless of surface color—making 3D ideal for measuring low contrast objects. In addition, with 3D you don't have to worry about ambient lighting or shadows affecting your scan results.

PRODUCT FINISH & PACKAGING INSPECTION

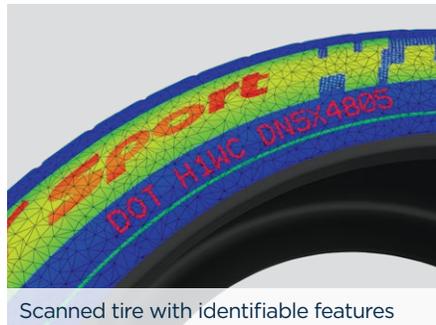
Character Identification



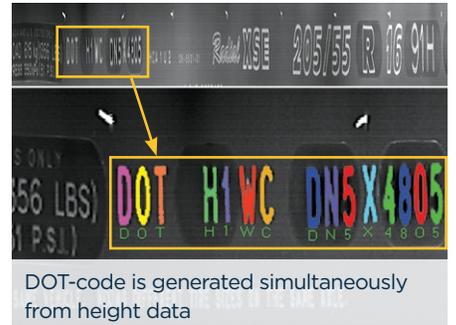
3-sensor configuration scanning finished tires, looking for bulges, runout, and groove geometry



Low-contrast unscanned surface



Scanned tire with identifiable features

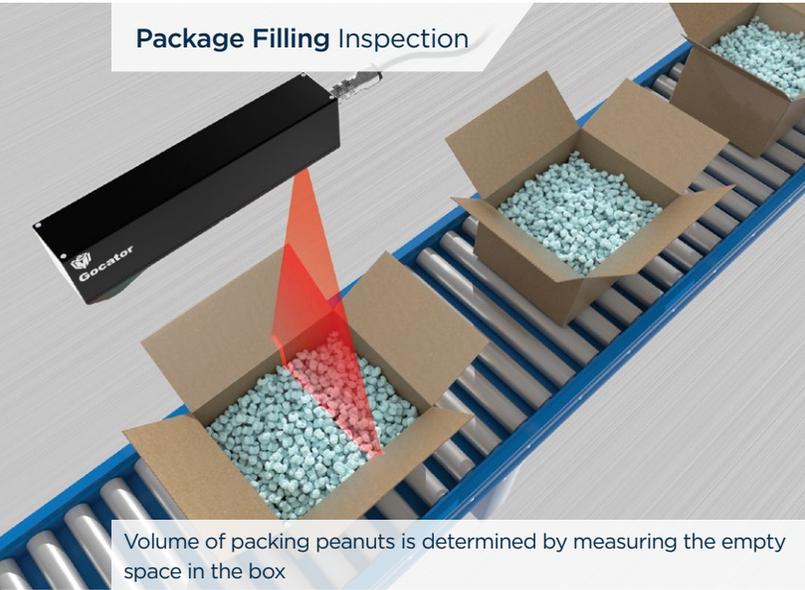


DOT-code is generated simultaneously from height data

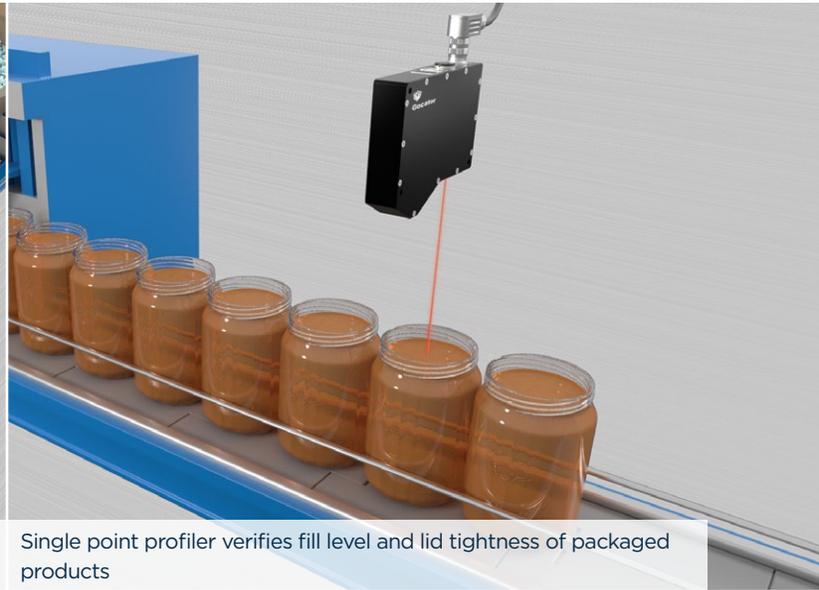
OPTICAL CHARACTER RECOGNITION (OCR) AND BARCODE READING

Leverage the ability to read, recognize, and validate printed barcodes, labels, and alphanumeric text using 2D intensity or 3D height map (embossed) scan data.

Package Filling Inspection



Volume of packing peanuts is determined by measuring the empty space in the box



Single point profiler verifies fill level and lid tightness of packaged products

Multi-Sensor Networking



COMMON PROBLEM:
TARGET IS LARGER THAN A SINGLE SENSOR CAN CAPTURE

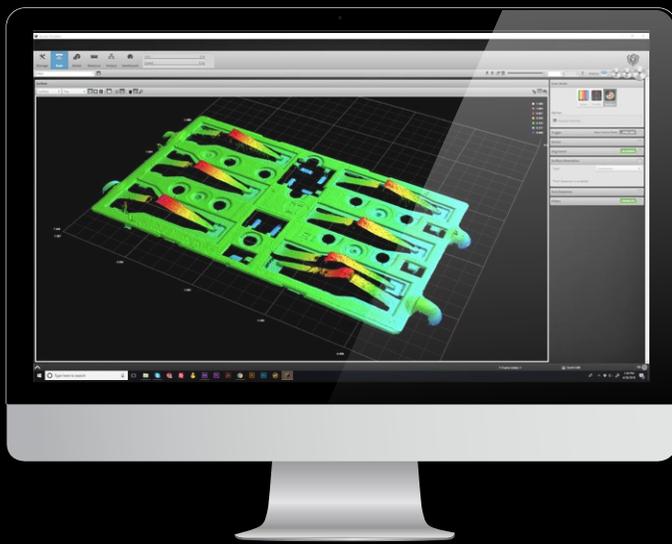


FactorySmart® SOLUTION:
EASY MULTI-SENSOR NETWORKING

- » A Master Hub synchronizes multiple Gocator sensors and combines scans into a single high-density 3D data of the entire surface or target object.
- » Built-in alignment and stitching makes working with multiple sensors easy.
- » Or, use the Surface Stitch tool to combine multiple scans from one sensor into a single 3D height map of a large object

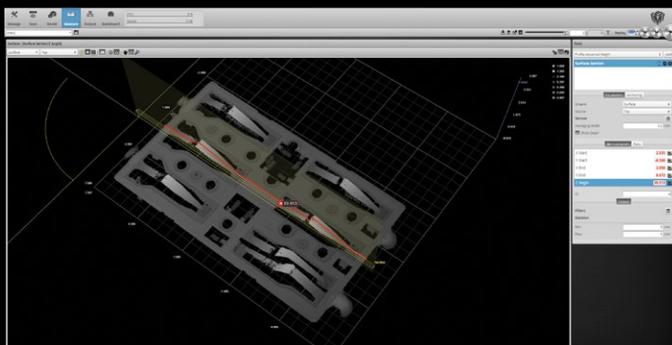
GOCATOR® SOFTWARE

FOR SMART 3D INSPECTION



INTUITIVE AND EASY TO USE

- » Web browser based interface
- » OS independent (PC, Mac, Linux)
- » Point-and-click functionality
- » Firmware included, no separate software required
- » Process 2D intensity and 3D height data for high repeatability



3D surface view with intensity data

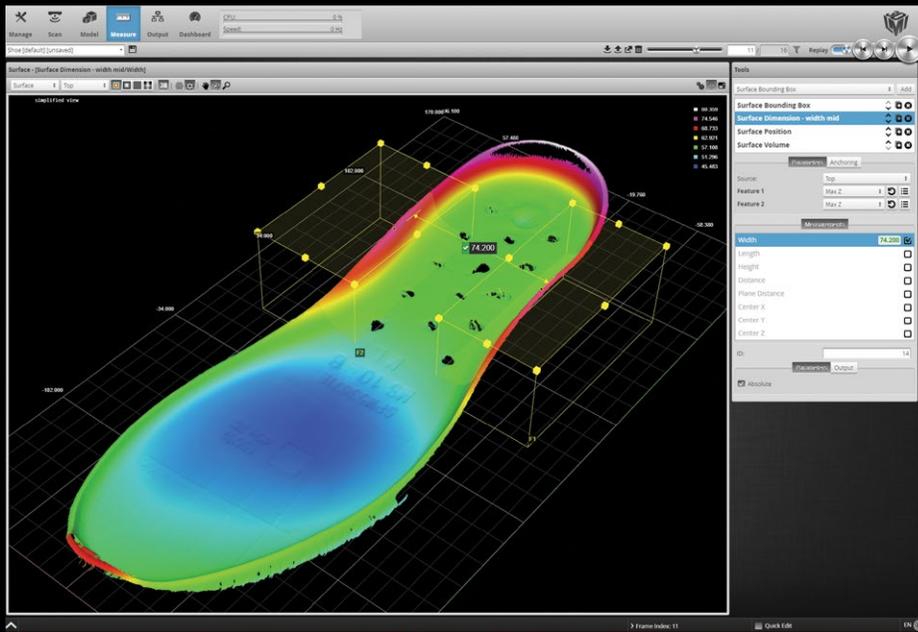


Profile view

BUILT INTO EVERY GOCATOR®

Instant access to scan, measure, and control

Real-time sensor feedback (including speed and CPU usage)

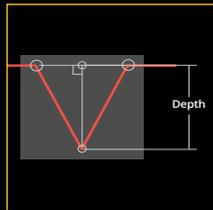


One-click toggling between Video, Profile, and Surface mode

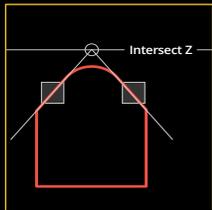
Drag-and-drop measurement tools

Variety of formats for fast and accurate data output

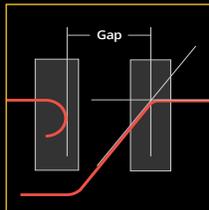
Real-time, high-definition 3D Data Viewer



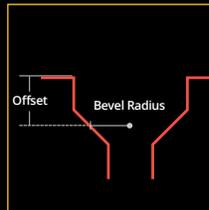
Groove Depth



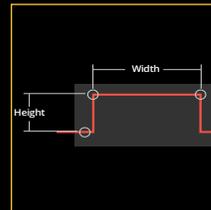
Intersect Z



Gap & Flush



Countersunk Hole



Strip Tool

140+ TOOLS
at your disposal

PRODUCT LINEUP

LASER PROFILE SENSORS



Gocator 1300 Series

High-speed (32 kHz) Point Profilers for Dimensional Measurements

- Unique built-in part detection and profile generation
- Ideal for closed loop control or measuring high speed processes



Gocator 2100 Series

Low Cost, Entry-Level Line Profilers for Basic Inline 3D Inspection

- Handles all of your basic quality inspection needs
- VGA imager, 640 points per profile resolution
- Field of view up to 1260 mm
- Measurement range up to 800 mm



Gocator 2300 Series

Workhorse Line Profilers for Robust Inline 3D Inspection

- Handles a wide range of applications
- Megapixel imager, 1280 points per profile resolution
- Field of view up to 1260 mm
- Measurement range up to 800 mm



Gocator 2400 Series

Ultra High-Resolution Line Profilers for Advanced Inline 3D Inspection

- Handles difficult targets such as micro-features on small parts in high-speed applications
- 2-Megapixel imager, up to 1940 points per profile resolution
- Field of view up to 2000 mm
- Measurement range up to 1525 mm



Gocator 2500 Series

Ultra High-Speed Line Profilers for Small Parts 3D Inspection

- Ideal for fast-moving inline inspection systems
- 2-Megapixel imager. Up to 1920 points per profile resolution
- Scan, measurement, and control at up to 10 kHz
- Field-of-view up to 100 mm
- Measurement range up to 80 mm



Gocator 2880

Dual Triangulation Line Profilers for 3D Inspection of Large Objects

- Two cameras maximize scan coverage and minimize occlusions for applications such as primary log scanning
- Megapixel imager, 1280 points per profile resolution
- Field of view up to 1260 mm
- Measurement range up to 800 mm



Gocator 3504 and 3506

Metrology-grade Sensors for Small Parts Inspection

- For applications such as connector and pin coplanarity, PCB and battery/IC connectors, and stent inspection
- Fast scan rate (up to 6 Hz full-field with accelerator)
- XY resolution down to 6.7 μm
- Z repeatability down to 0.2 μm
- 5-megapixel stereo camera design for high accuracy with minimal occlusions

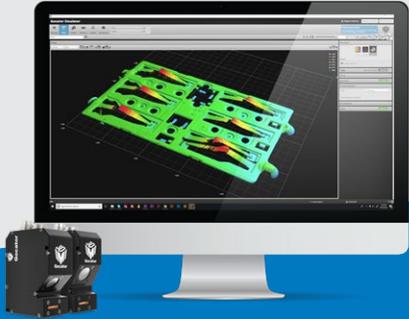
Gocator 3520 and 3210

Metrology-grade Sensors for Medium-sized Parts Inspection

- For applications such as Gap & Flush measurement, engine piston bowl gauging, and medium-scale bin picking
- Fast scan rate (up to 6 Hz full-field with accelerator)
- XY resolution down to 60 μm
- Z repeatability down to 4.6 μm
- Wide field of view up to 282 x 175 mm
- 2 and 5 megapixel stereo cameras for high accuracy with minimal occlusions

TEST DRIVE A GOCATOR® SENSOR

Choose from a variety of application scenarios, then use an exact duplicate of the Gocator interface. Perform measurements on pre-recorded data from a variety of scanned components—all in a web browser-based "virtual sensor" environment. Right from your desktop. Without the need for a physical sensor.



Take Gocator® for a test drive today. Visit www.lmi3d.com/emulator

PRODUCT SPECS

Gocator 1300 Series		Laser Point Profile					
MODELS	1320	1340	1350	1365	1370	1380	1390
Clearance Distance (mm)	40	162.5	200	562	237.5	127	500
Measurement Range (mm)	20	95	200	375	412.5	1651	2000
Linearity Z (+/- % of MR)	0.05	0.05	0.05	0.11	0.07	0.18	0.1
Linearity Z (+/- mm)	0.01	0.05	0.1	0.4	0.3	3.0	2.0
Spot Size (mm)	0.11	0.37	0.50	1.80	0.90	2.60	2.60
Recommended Package Dimensions (mm)	Side Mount (3R) 30x120x149	Side Mount 30x120x149	Side Mount 30x120x149	Side Mount 30x120x220	Side Mount (3B) 30x120x149	Side Mount 30x120x149	Side Mount 30x120x277
Other Package Dimensions (mm)	Top Mount (3B) 49x75x162		Top Mount 49x75x162		Top Mount (2M) 49x75x162		
Weight (kg)	0.75 / 0.8	0.75	0.75 / 0.8	1.0	0.75 / 0.8	0.75	1.25

Resolution Z based on averaging 128 samples. Optical models, laser classes, and packages can be customized. Contact LMI for more details. Specifications stated are based on standard laser classes. Resolution Z and Linearity Z may vary for other laser classes. Refer to specifications in the Gocator Point Profile Sensor user manual for more details.

ALL 1300 SERIES MODELS

Scan Rate (Hz)	32,000
Interface	Gigabit Ethernet
Inputs	Differential Encoder, Laser Safety Enable, Trigger
Outputs	2x Digital Output, RS-485 Serial, Selcom Serial, 1x Analog Output (4-20mA)
Input Voltage (Power)	+24 to +48 VDC (13 Watts); Ripple +/- 10%
Housing	Gasketed aluminum enclosure, IP67
Operating Temperature	0 to 50 °C
Storage Temperature	-30 to 70 °C
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, and PLCs.

Gocator 2100 Series		Laser Line Profile					
MODELS	2120	2130	2140	2150	2170	2175	2180
Data Points / Profile	640	640	640	640	640	640	640
Linearity Z (+/- % of MR)	0.01	0.01	0.01	0.01	0.04	0.03	0.04
Resolution X (mm) (Profile Data Interval)	0.028 - 0.042	0.088 - 0.150	0.19 - 0.34	0.3 - 0.6	0.55 - 1.10	0.51 - 1.58	0.75 - 2.20
Repeatability Z (µm)	0.4	0.8	1.2	2	8	12	12
Clearance Distance (CD) (mm)	40	90	190	300	400	650	350
Measurement Range (MR) (mm)	25	80	210	400	500	1350	800
Field of View (FOV) (mm)	18 - 26	47 - 85	96 - 194	158 - 365	308 - 687	324 - 1010	390 - 1260
Dimensions (mm)	Side Mount 35x120x149.5	Top Mount 49x75x142	Top Mount 49x75x197	Top Mount 49x75x272	Top Mount 49x75x272	Top Mount 49x75x272	Top Mount 49x75x272
Weight (kg)	0.8	0.74	0.94	1.3	1.3	1.3	1.3

Optical models, laser classes, and packages can be customized. Contact LMI for more details. Specifications stated are based on standard laser classes. Linearity Z, Resolution Z, and Repeatability Z may vary for other laser classes. Refer to specifications in the Gocator Line Profile Sensor user manual for more details.

ALL 2100 SERIES MODELS

Scan Rate	Approximately 170 Hz to 5000 Hz
Interface	Gigabit Ethernet
Inputs	Differential Encoder, Laser Safety Enable, Trigger
Outputs	2x Digital output, RS-485 Serial (115 kBaud), 1x Analog Output (4 - 20 mA)
Input Voltage (Power)	+24 to +48 VDC (13 Watts); Ripple +/- 10%
Housing	Gasketed aluminum enclosure, IP67
Operating Temperature	0 to 50°C
Storage Temperature	-30 to 70°C
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, and PLCs.

LASER PROFILE SENSORS

Gocator 2300 Series

Laser Line Profile

MODELS	2320	2330	2340	2350	2370	2375	2380
Data Points / Profile	1280	1280	1280	1280	1280	1280	1280
Linearity Z (+/- % of MR)	0.01	0.01	0.01	0.01	0.04	0.03	0.04
Resolution X (mm) (Profile Data Interval)	0.014 - 0.021	0.044 - 0.075	0.095 - 0.170	0.150 - 0.300	0.275 - 0.550	0.255 - 0.790	0.375 - 1.100
Repeatability Z (µm)	0.4	0.8	1.2	2	8	12	12
Clearance Distance (CD) (mm)	40	90	190	300	400	650	350
Measurement Range (MR) (mm)	25	80	210	400	500	1350	800
Field of View (FOV) (mm)	18 - 26	47 - 85	96 - 194	158 - 365	308 - 687	324 - 1010	390 - 1260
Dimensions (mm)	Side Mount 35x120x149.5	Top Mount 49x75x142	Top Mount 49x75x197	Top Mount 49x75x272	Top Mount 49x75x272	Top Mount 49x75x272	Top Mount 49x75x272
Weight (kg)	0.8	0.74	0.94	1.3	1.3	1.3	1.3

Optical models, laser classes, and packages can be customized. Contact LMI for more details. Specifications stated are based on standard laser classes. Linearity Z, Resolution Z, and Repeatability Z may vary for other laser classes. Refer to specifications in the Gocator Line Profile Sensor user manual for more details.

ALL 2300 SERIES MODELS

Scan Rate	Approximately 170 Hz to 5000 Hz
Interface	Gigabit Ethernet
Inputs	Differential Encoder, Laser Safety Enable, Trigger
Outputs	2x Digital output, RS-485 Serial (115 kBaud), 1x Analog Output (4 - 20 mA)
Input Voltage (Power)	+24 to +48 VDC (13 Watts); Ripple +/- 10%
Housing	Gasketed aluminum enclosure, IP67
Operating Temperature	0 to 50°C
Storage Temperature	-30 to 70°C
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, and PLCs.

Gocator 2400 Series

Laser Line Profile

MODELS	2410	2420	2430	2440	2450	2490
Data Points / Profile	1710	1940	1500	1500	1800	1920
Linearity Z (+/- % of MR)	0.015	0.006	0.01	0.01	0.01	0.04
Resolution X (µm) (Profile Data Interval)	5.8 - 6.2	14.0 - 16.5	37 - 57	90 - 130	100 - 255	250 - 1100
Repeatability Z (µm)	0.2	0.4	0.8	1.2	2.0	12
Clearance Distance (CD) (mm)	19	60	75	183	270	350
Measurement Range (MR) (mm)	6	25	80	210	550	1525
Field of View (FOV) (mm)	10 - 10	27 - 32	47 - 85	96 - 194	145 - 425	390 - 2000
Dimensions (mm)	44x90x145	44x90x145	44x90x155	44x90x190	44x90x240	49x85x272
Weight (kg)	0.88	0.88	1.0	1.2	1.2	1.5

Optical models, laser classes, and packages can be customized. Contact LMI for more details. Specifications stated are based on Recommended laser classes. Linearity Z, Resolution Z, and Repeatability Z may vary for other laser classes.

ALL 2400 SERIES MODELS

Scan Rate	200 Hz, up to 5 kHz. (Note: 2400 series provides up to 2x scan rate for equivalent window size as 2300 series)
Interface	Gigabit Ethernet
Inputs	Differential Encoder, Laser Safety Enable, Trigger
Outputs	2x Digital output, RS-485 Serial (115 kBaud), 1x Analog Output (4 - 20 mA)
Input Voltage (Power)	+24 to +48 VDC (9 Watts); Ripple +/- 10%
Housing	Gasketed aluminum enclosure, IP67
Operating Temperature	0 to 50°C
Storage Temperature	-30 to 70°C
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, and PLCs.

PRODUCT SPECS

LASER PROFILE SENSORS

Gocator 2500 Series		Laser Line Profile			
MODELS	2510	2512	2520	2522	2530
Data Points / Profile	1920	1920	1920	1920	1920
Scan Rate	2.4	2.4	1.6	1.6	2.0
Linearity Z (+/- % of MR)	0.015	0.015	0.006	0.006	0.01
Resolution X (µm) (Profile Data Interval)	8.0	8.0	13.0 - 17.0	13.0 - 17.0	28.0 - 54.0
Repeatability Z (µm)	0.2	0.2	0.4	0.4	0.5
Clearance Distance (CD) (mm)	17.0	17.0	47.5	17.75	40.0
Measurement Range (MR) (mm)	6	6	25	25	80.0
Field of View (FOV) (mm)	13.0 - 14.5 (diffuse)	13.0 - 14.5 (diffuse & specular)	25.0 - 32.5 (diffuse)	25.0 - 32.5 (diffuse); 25.0 (specular)	48.0 - 100.0 (diffuse)
Dimensions (mm)	46x80x110	46x80x110	46x80x110	46x110x110	46x80x110
Weight (kg)	0.65	0.65	0.65	0.65	0.65
Optical models, laser classes, and packages can be customized. Contact LMI for more details. Specifications stated are based on Recommended laser classes. Linearity Z and Repeatability Z may vary for other laser classes.					
ALL 2500 SERIES MODELS					
Interface	Gigabit Ethernet				
Inputs	Differential Encoder, Laser Safety Enable, Trigger				
Outputs	2x Digital output, RS-485 Serial (115 kBaud)				
Input Voltage (Power)	+24 to +48 VDC (15 Watts); Ripple +/- 10%				
Housing	Gasketed aluminum enclosure, IP67				
Operating Temperature	0 to 40°C				
Storage Temperature	-30 to 70°C				
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction				
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions				
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, and PLCs.				

Gocator 2800 Series		Line Profile
MODELS	2880	
Data Points / Profile	1280	
Linearity Z (+/- % of MR)	0.04	
Resolution X (mm) (Profile Data Interval)	0.375 - 1.100	
Clearance Distance (CD) (mm)	350	
Measurement Range (MR) (mm)	800	
Field of View (FOV) (mm)	390 - 1260	
Dimensions (mm)	49x75x498	
Weight (kg)	2.56	
Scan Rate	380 Hz - 2500 Hz	
Interface	Gigabit Ethernet	
Inputs	Differential Encoder, Laser Safety Enable, Trigger	
Outputs	2x Digital output, RS-485 Serial (115 kBaud), 1x Analog Output (4 - 20 mA)	
Input Voltage (Power)	+24 to +48 VDC (13 Watts); Ripple +/- 10%	
Housing	Gasketed aluminum enclosure, IP67	
Operating Temperature	0 to 50°C	
Storage Temperature	-30 to 70°C	
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y and Z directions, 2 hours per direction	
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions	
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, and PLCs.	

Gocator 3000 Series

Structured Light

MODELS	3504	3506	3210	3520
Scan Rate (Hz)	6	3	4	3
Imagers (megapixels)	5	5	2	5
Clearance Distance (CD) (mm)	51.5	87.0	164.0	203.0
Measurement Range (MR) (mm)	7	25.0	110.0	150.0
Field of View (mm)	12.1 x 13.2 (near) 12.7 x 16.4 (maxY) 13.0 x 15.0 (far)	27.0 x 45.0 (near) 30.0 x 45.0 (far)	71.0 x 98.0 (near) 100.0 x 154.0 (far)	179.0 x 115.0 (near) 282.0 x 175.0 (far)
Repeatability Z (µm)	0.2	2.0	4.7	4.6
Resolution XY (mm)	0.0067 (close end) - 0.0071 (far end)	0.020 (close end) - 0.025 (far end)	0.060 (close end) - 0.090 (far end)	0.074 (close end) - 0.121 (far end)
Dimensions (mm)	49x152x177.5	49x136x170	49x146x190	55x167x260
Weight (kg)	1.77	1.52	1.7	2.6
Light Source	Blue LED (465 nm)			
Interface	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet
Inputs	Differential Encoder, Trigger	Differential Encoder, Trigger	Differential Encoder, Trigger	Differential Encoder, Trigger
Outputs	2x Digital Output, RS485 Serial (115 kbaud), 1x Analog Output (4 - 20 mA)	2x Digital Output, RS485 Serial (115 kbaud), 1x Analog Output (4 - 20 mA)	2x Digital Output, RS485 Serial (115 kbaud), 1x Analog Output (4 - 20 mA)	2x Digital Output, RS485 Serial (115 kbaud), 1x Analog Output (4 - 20 mA)
Input Voltage (Power)	+24 to +48 VDC (25 Watts); Ripple +/- 10%	+24 to +48 VDC (25 Watts); Ripple +/- 10%	+24 to +48 VDC (50 Watts); Ripple +/- 10%	48 VDC (50 Watts); Ripple +/- 10%
Housing	Gasketed Aluminium Enclosure, IP67	Gasketed aluminum enclosure, IP67	Gasketed aluminum enclosure, IP67	Gasketed aluminum enclosure, IP67
Operating Temperature	0 to 50 °C	0 to 50 °C	0 to 45 °C	0 to 40 °C
Storage Temperature	-30 to 70 °C			
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions	15 g, half sine wave, 11 ms, positive and negative for X, Y and Z directions	15 g, half sine wave, 11 ms, positive and negative for X, Y and Z directions	15 g, half sine wave, 11 ms, positive and negative for X, Y and Z directions

SOFTWARE AND BUILT-IN 3D MEASUREMENT TOOLS

3D Feature Tools	Openings (holes, slots), Cylinders, Studs (threaded and non-threaded), Plane
3D Volumetric Tools	Volumes, Areas, Bounding boxes, Positions (min, max, centroid), Ellipses, Orientations
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, and PLCs.

FIND YOUR SENSOR. FASTER.

Need some help finding the right Gocator® for your application? No problem. Simply visit our dedicated Product Selector, enter a few details about your application, and the Selector will automatically generate a list of suitable sensor models for you to explore.



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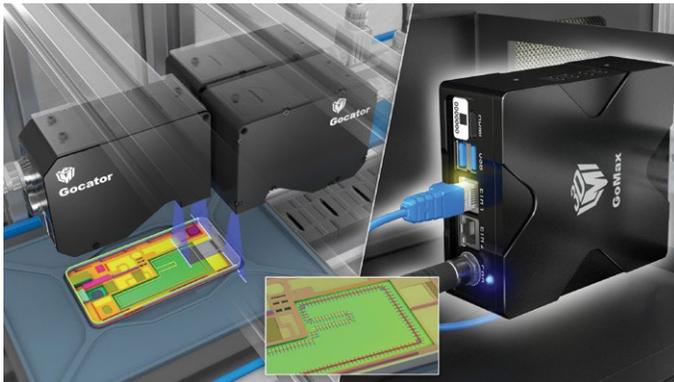
GoMax. SMART VISION ACCELERATOR



GoMax® provides a cost-effective hardware solution to accelerate any Gocator® sensor in order to meet inline production speed. GoMax's small form factor, dedicated data processing, continuous data feed over Ethernet, and automatic recovery from inspection errors allow engineers to replace industrial PCs.

With GoMax's plug and play functionality, you can quickly and easily add massive data processing power to your Gocator® sensor or multi-sensor network, achieving faster cycle times and enhancing overall inspection performance.

- » Data processing acceleration with no industrial PC or controller
- » Plug and play functionality, easy integration
- » Simultaneously accelerate multiple Gocator smart sensors
- » Add multiple GoMax® units as needed



GoMax	Smart Vision Accelerator
Carrier Board	Jetson TX2
CPU	64-bit Quad ARM A57 @ 2 GHz plus 64-bit Dual Denver 2 @ 2 GHz
GPU	NVIDIA Pascal, 256 CUDA cores
Memory	8 GB 128-bit LPDDR4
IO ports	1x USB3, 1x HDMI, 2x GigE, 1x USB2
Dimensions (mm)	120x105x43.5
Weight (kg)	0.7
Operating Temperature	0 to 50 °C

SENSOR NETWORKING

Gocator laser profilers support seamless multi-sensor networking for scanning large or complex objects (i.e., with irregular surface geometry and multiple occlusions). These sensor networks are connected by LMI Master controllers.

MASTER 810 & 2410

Master 810 and 2410 network controllers make it easy to distribute power, achieve microsecond data synchronization, and provide laser safety for up to 24 sensors per Master. Designed to scale, Masters provide uplink/download ports for daisy chaining, and support differential or single-ended encoder and digital I/O.

- » Synchronized within 1 μ s accuracy
- » All-in-one cabling
- » Built-in laser safety control

BENEFITS OF MULTI-SENSOR SUPPORT

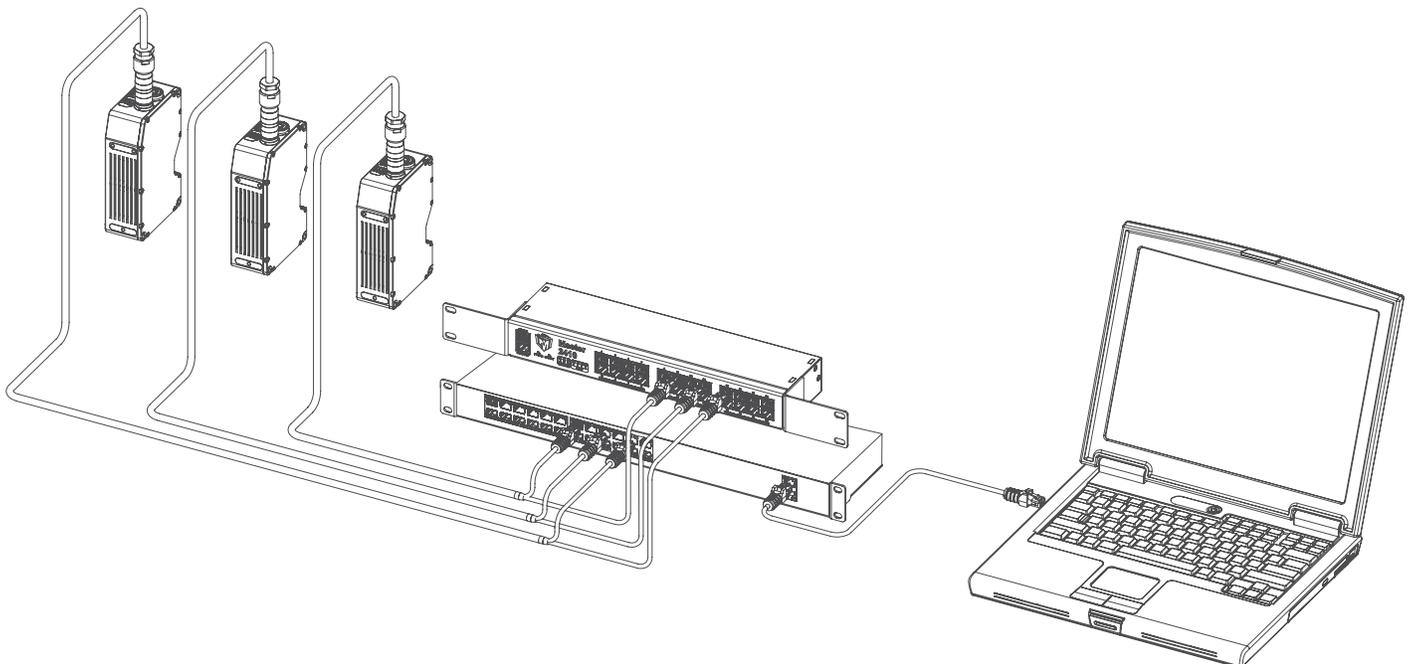
- » Ideal for scanning large or complex targets
- » Simple point-and-click network setup
- » Built-in layout alignment and stitching for maximum ease of use
- » Maintains high resolution across wide FOV



Master 810. Supports up to 8 sensors.



Master 2410. Supports up to 24 sensors.



It's Better to Be Smart.

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