



# IN-SIGHT LASER PROFILER

Solutions for the Automotive Industry

## IN-SIGHT LASER PROFILER: SOLUTIONS FOR THE AUTOMOTIVE INDUSTRY

Generating a single profile, Cognex In-Sight® Laser Profilers are ideal for inspections and measurements which challenge 2D (x,y) vision systems and don't require full 3D vision systems. In-Sight Laser Profilers can quickly solve many factory automation problems by applying advanced vision tools to x- and z- dimensional information. Key applications include height, width, gap, area, angle, and presence/absence. Cognex In-Sight Laser Profilers thrive in low-contrast, poorly lit, and variable color environments that are difficult for traditional 2D vision solutions. Sensors are factory calibrated, providing measurements in real-world units for precise metrology applications. Profiler data can be used for gauging, inspection, and quality management and process control.

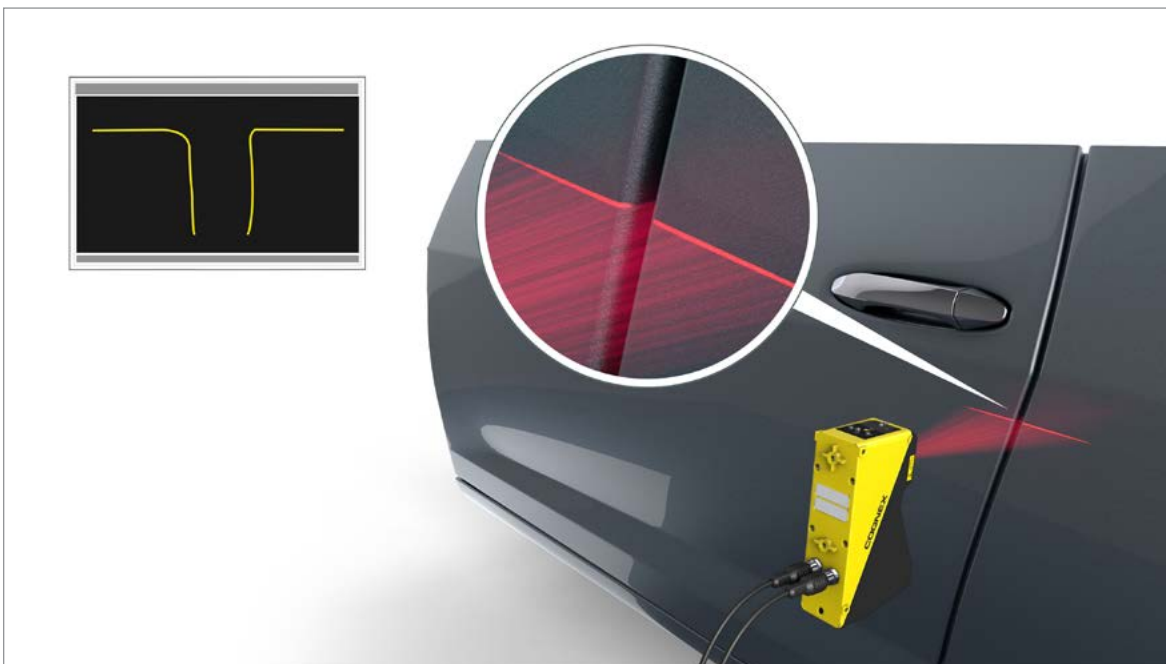
### Gap and Flush Inspection

#### PROBLEM

During final assembly verification, automotive manufacturers check that a car's panels are joined correctly, and adhere to strict dimensional specifications. Doors must lie flush with one another so that they do not pinch near the base. This requires highly accurate gauging of critical gaps and clearances.

#### SOLUTION

Laser profiling offers a turnkey solution for flush and gap measurements. To verify dimensions, an In-Sight Laser Profiler mounted on a robot travels along preselected points of the stationary car doors, generating a 2D profile in x and z. By measuring and comparing z-dimensions, the profiler can detect any difference in height between the two doors. The profiler also computes the gap width between the two vertical edges (x dimension), to ensure it falls within an established tolerance. During inspection, the Profiler's measurements are delivered as a pass/fail to confirm that the panels have been assembled correctly. Precise measurements can also be exported, along with profile data, for quality management and process control. This data is useful for tuning the automation equipment and robotics upstream before major failures occur.



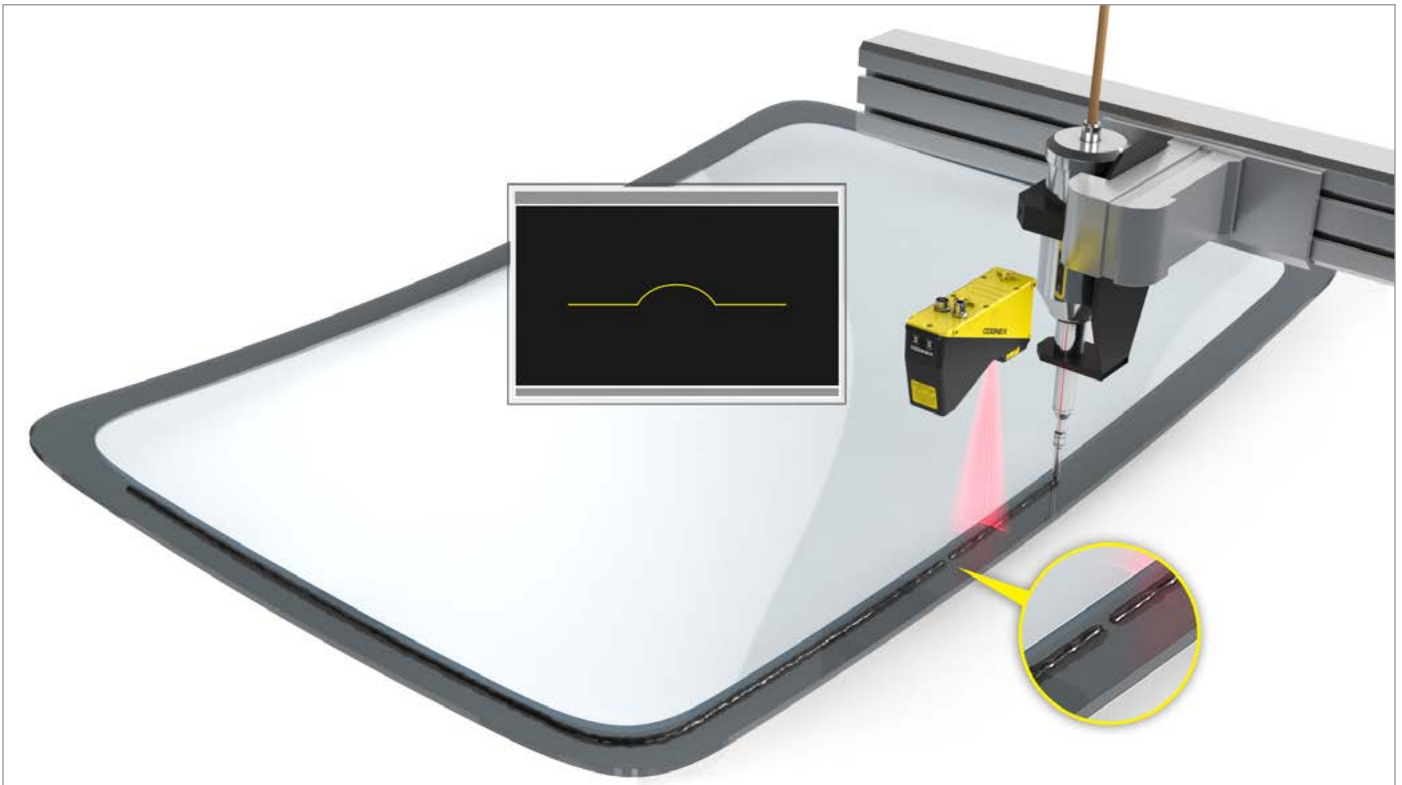
# Bead Inspection

## PROBLEM

Automated glue bead inspections are critical to ensure that parts like windows and sunroofs seal firmly and cleanly. Prior to assembly, machine vision checks for the presence of adhesive beads, measures their relative volume or cross sectional area, and inspects for defects such as voids, bubbles, and gaps. Inspections need to be performed in-line, so that product line and quality managers can monitor the performance of dispensing equipment and catch errors early during production. Freshly applied, wet, or shiny beads make it difficult for 2D vision sensors and even advanced vision systems with bead inspection tools to fixture and inspect the target image properly.

## SOLUTION

The In-Sight Laser Profiler provides an out-of-the-box, turnkey solution for in-line bead inspection without generating a full 3D image. In-Sight Laser Profilers handle low-contrast scenes, checking for the presence/absence of grey or even transparent beads on dark surfaces. 2D profiles are used to compute the cross-sectional area and detect any gaps along the bead line. By combining the In-Sight Laser Profiler area measurements with an encoder output, the downstream PLC can determine approximate glue bead volume to ensure the correct amount of glue has been dispensed. The Profiler communicates dimensional results in real world units or on a pass/fail basis to downstream systems which can track performance and signal the need for corrective measures.



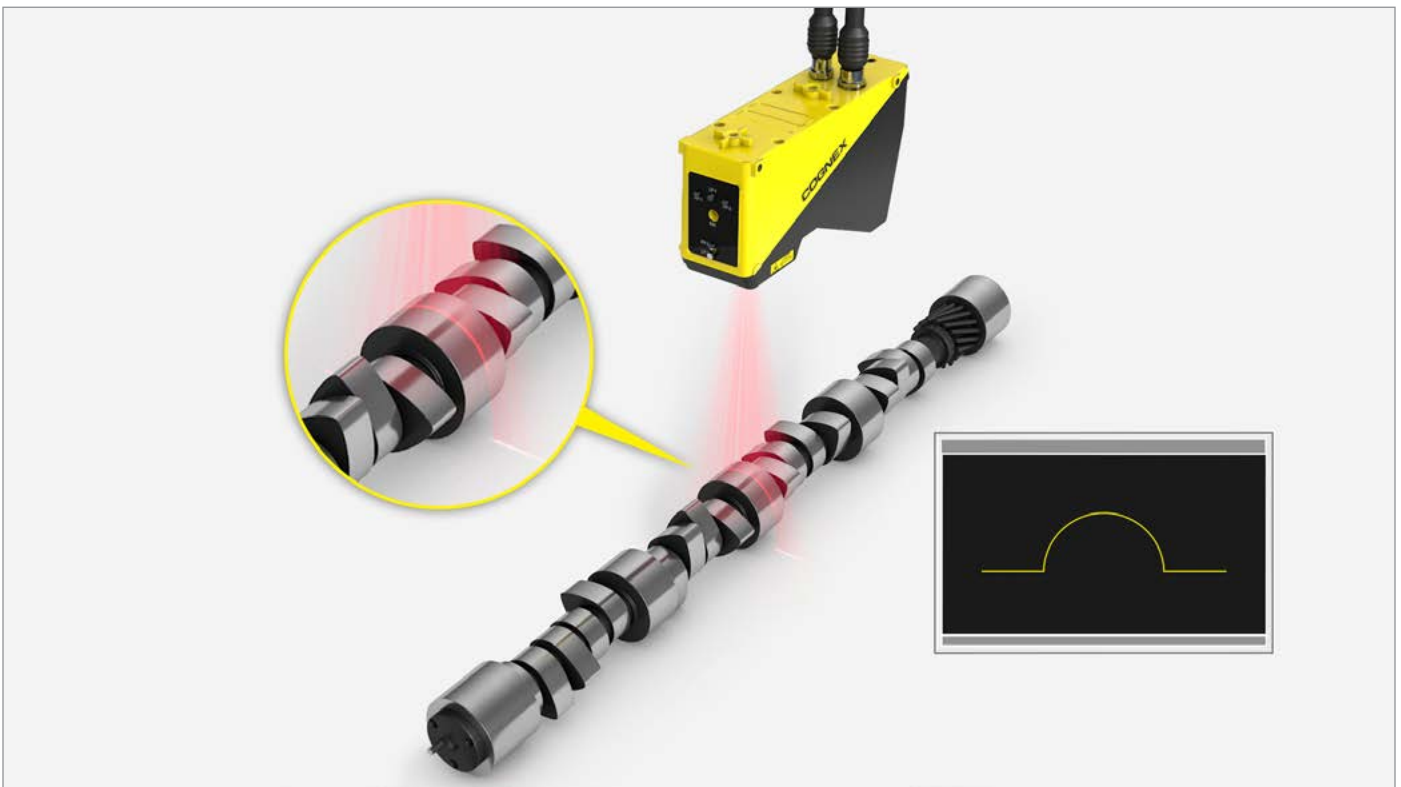
# Cast Component Inspection

## PROBLEM

Prior to assembly, automated inspections check components for extra material (flashing) or other defects in height, shape, angle, or surface quality caused during the casting process. Even slight dimensional variations can adversely affect product quality, consumer safety, and brand integrity. By gauging their dimensions, machine vision can catch poorly cast parts and reject them before they cause problems. Laser sensing technology has traditionally been used during this stage to verify multiple profiles, but has not been able to catch surface defects.

## SOLUTION

The In-Sight Laser Profiler is ideal for performing highly accurate dimension verification on cast parts, such as a cam shaft. Multiple 2D profiles ensure that these and other automotive parts are manufactured within specified height, width, and angle tolerances, while full 3D inspections check for surface anomalies like dents or bumps. Accurate x, z measurements confirm that individual cam shafts meet all shape requirements. All measurement data is expressed in factory-calibrated real-world units, useful for process control and to catch variations early before they significantly affect manufacturing lines and cause inspection failures.





# BUILD YOUR VISION

## 2D VISION SYSTEMS

Cognex machine vision systems are unmatched in their ability to inspect, identify, and guide parts. They are easy to deploy and provide reliable, repeatable performance for the most challenging applications.

- Industrial grade with a library of advanced vision tools
- High speed image acquisition and processing
- Exceptional application and integration flexibility

[www.cognex.com/machine-vision](http://www.cognex.com/machine-vision)



## 3D LASER PROFILERS

Cognex In-Sight laser profilers and 3D vision systems provide ultimate ease of use, power, and flexibility to achieve reliable and accurate measurement results for the most challenging 3D applications.

- Factory calibrated sensors deliver fast scan rates
- Industry-leading vision software with powerful 2D and 3D tool sets
- Compact, IP65-rated design withstands harsh factory environments

[www.cognex.com/3D-laser-profilers](http://www.cognex.com/3D-laser-profilers)



## IMAGE-BASED BARCODE READERS

Cognex industrial barcode readers and mobile terminals with patented algorithms provide the highest read rates for 1-D, 2-D, and DPM codes regardless of the barcode symbology, size, quality, printing method, or surface.

- Reduce costs
- Increase throughput
- Control traceability

[www.cognex.com/BarcodeReaders](http://www.cognex.com/BarcodeReaders)



Isotron Systems B.V.  
Afrikalaan 21-23  
5232 BD 's-Hertogenbosch  
Nederland  
Tel: +31(0)73 639 16 39

WWW.ISOTRON.EU  
info@isotron.eu

Isotron Systems BVBA  
Antwerpse Steenweg 45  
B-2830 Willebroek  
België  
Tel: +32(0)3 450 70 45

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