

GOCATOR 3100 SERIES SNAPSHOT SENSORS USED FOR HOLE INSPECTION ON AIRPLANE FUSELAGES

In aerospace applications, precision cuts to materials and parts are crucial to ensure vehicle assembly manufacturing is safe and reliable. Accurate cuts also decrease drag, which translates into improved fuel economy. For this reason, cuts and holes have to be inspected to meet strict tolerances.



Airplane Fuselage

The Challenge

Cutting into assemblies like plane fuselages is risky when you're not 100% sure that the cutting tools are in good condition and installed properly. As a precautionary measure, manufacturers will often cut into test material first and then inspect these cuts. If the test cuts pass inspection, cuts are then made on the actual target. Proceeding in this fashion significantly reduces the risk of damaging expensive components.

Countersunk Hole Measurement

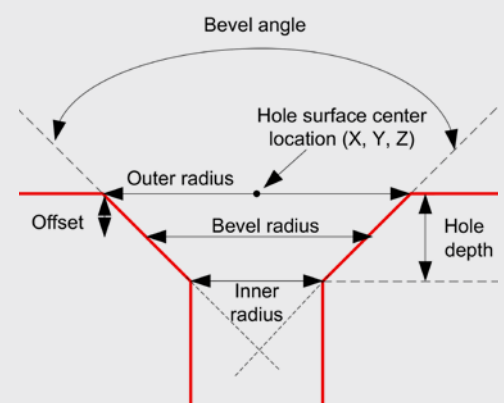
The Solution

Gocator 3100 series snapshot sensors offer a 3D non-contact approach to accurately and quickly scan and analyze cut materials. Gocator sensors are easily mounted onto robotic systems to automate 100% inline verification of the fuselage assembly process.

Specifically, a Gocator 3109 mounted onto a robotic system moves to a hole on a piece of test material and quickly takes a scan of the hole. The built-in Countersunk Hole measurement tool locates the hole and returns several measurements—including the radius of the outer and inner holes, the depth of the hole, and its counterbore.

Any holes showing a counterbore indicate they have been installed incorrectly. Radius measurements are also used to identify holes not cut deep enough.

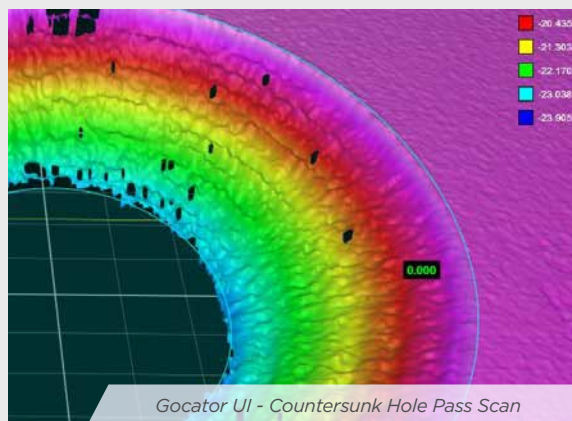
In either case, the hole cutter is not used on the actual assembly until it has been re-installed, tested again, and passed the required tolerances.



Gocator's built-in Countersunk Hole tool provides the user with easy, drag and drop functionality for highly accurate and repeatable results.

Advantages of Gocator 3100 Series Snapshot Sensors in Hole Inspection:

- Top mount housing makes sensors easy to integrate into robotic systems or fit into height-restricted areas.
- The built-in, drag-and-drop Countersunk Hole Tool makes hole measurement fast and easy—including measurement of radius, depth, and counterbore.
- Sophisticated detection logic allows for rapid inspection and pass/fail control decisions.



Benefits of Gocator's Built-In Countersunk Hole Tool:

- Locates a countersunk circular opening within a region of interest on the surface and provides measurements to evaluate characteristics of countersunk holes.
- Measures the position (X, Y, and Z) of the center of the hole, outside radius of the hole, hole bevel angle, and the depth of the hole.
- Can measure countersunk holes on surfaces at an angle to the sensor.
- Supports measuring holes drilled at an angle relative to the surrounding surface.

POINTS TO HIGHLIGHT:

- Web-browser based interface makes setup and sensor use easy and intuitive.
- Gocator Development Kit (GDK) allows advanced users to develop and embed their own custom measurement tools—with the same functionality and ease-of-use as native tools.

The Result

Gocator 3100 series snapshot sensors allow the user to quickly acquire accurate 3D representations of countersunk holes on a variety of materials. They can then leverage this data to determine whether cutting tools are in good working condition and installed correctly. This reduces the risk of making faulty cuts in expensive assemblies, and saves significant time and money in the process.

To learn more about Gocator All-In-One 3D Smart Sensors, please email contact@lmi3d.com

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