

How to Use Optical 3D Imagers and Analysis Software for Automated Inspection

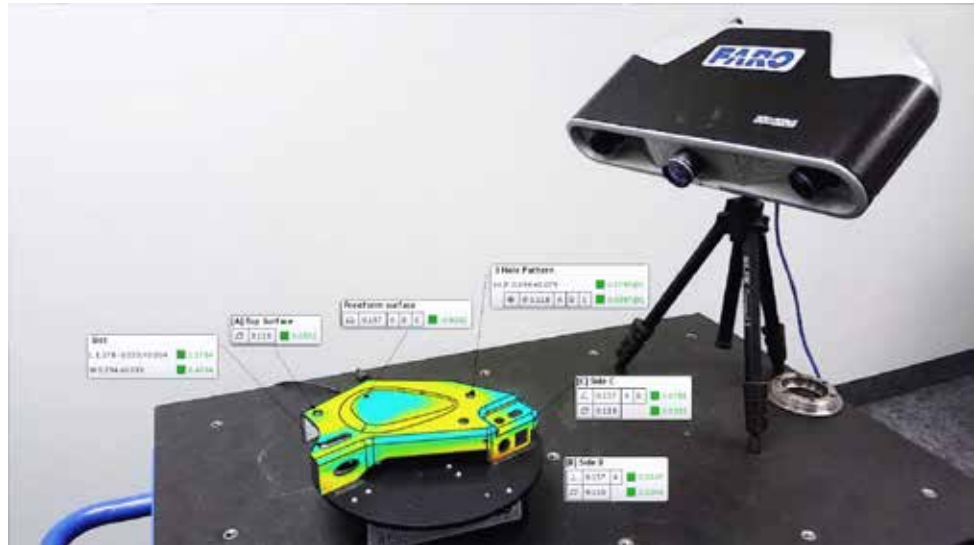
As the need for quality inspection increases and in some cases, requires 100% inspection, the inspection process can become a bottleneck in manufacturing. To increase efficiencies, manufacturers are moving toward automated inspection.

WHAT IS AUTOMATED ANALYSIS WITH AN OPTICAL 3D IMAGER?

An optical 3D imager is a metrology-grade non-contact scanner which utilizes blue light technology to capture millions of high resolution 3D coordinate measurements. As it records anything within its field of view, it scans surfaces at a much higher resolution than hard-probe methods. And since capturing an image takes seconds, it is significantly faster than laser line probe scanning. Often, its field of view is enough to measure all features in a single shot, but for some objects, measurements need to be taken from different vantage points. In those cases, multiple imagers can be combined into an array to record data in parallel, keeping the data capture time short while increasing the coverage area.

An automated inspection process takes a repeatable measurement workflow and, using software programming, performs the standardized steps to make it easily scalable. Typically, an inspection includes the digital capture of 3D measurement data, alignment to CAD, analysis of deviations from CAD, passing or failing the manufactured part, and the generation of reports. Paired with robotics, inspection can be integrated into a fully machine-run in-line manufacturing process.

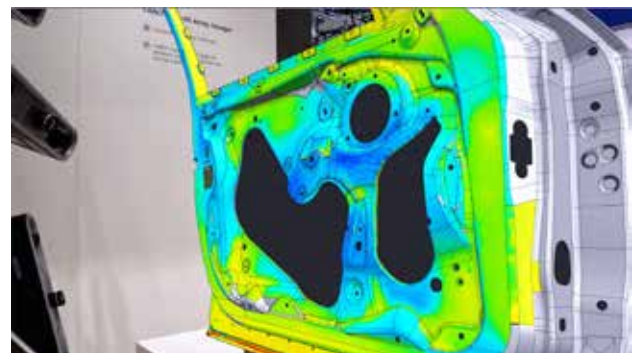
Combining optical 3D imaging with automation delivers an ideal solution for complex measurement in a repeatable, time-sensitive package.

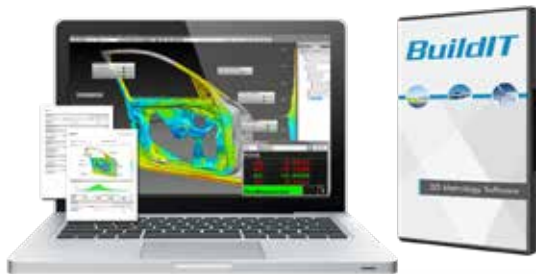
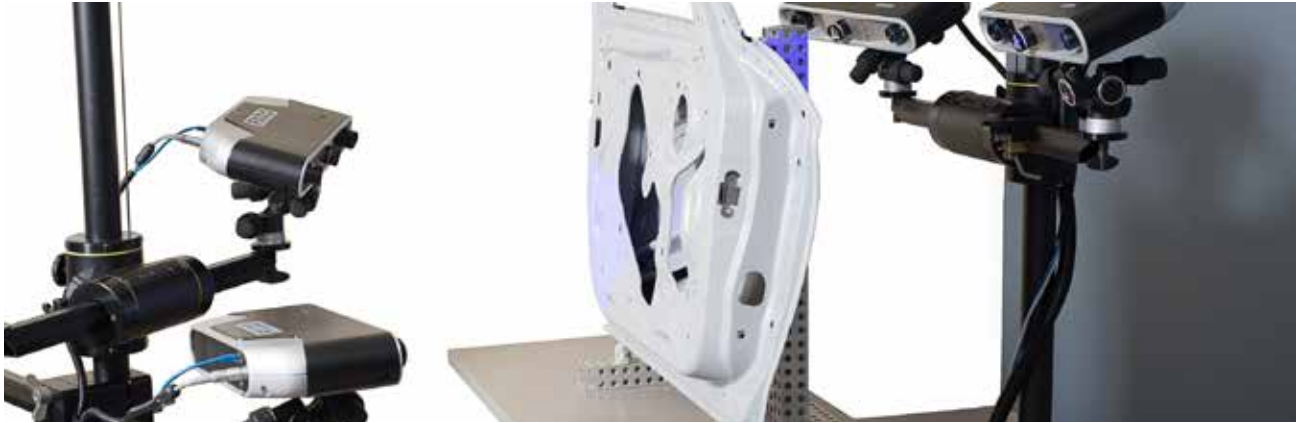


WHEN SHOULD I USE AUTOMATED ANALYSIS WITH AN OPTICAL 3D IMAGER?

Automated optical imaging is best used in high-paced, high volume-based manufacturing lines with medium-to-high complexity inspections. Automated inspections run faster, give repeatable results, and reduce user error.

When performing an in-line or next-to-line automated inspection, optical 3D imagers are ideal because of their speed, portability and flexibility. An optical imager can easily be used with a rotary table, mounted on a robot or linear actuator in order to measure different areas, or conversely, the machinery can be used to move the part





itself. Optical imagers are able to drive and receive data from a variety of robots and actuators.

Automated processes are particularly valuable when scaling up production; they become embedded in the manufacturing process and are essential for long-term cost savings.

HOW CAN AUTOMATED ANALYSIS WITH AN OPTICAL 3D IMAGER IMPROVE MY PROCESS?

Automated optical imaging improves manufacturing processes in two main ways: speed and repeatability. An in-line inspection with FARO® Cobalt Array Imagers mounted on robots, coupled with an analysis by BuildIT Software, can be performed within seconds. Increasing coverage by using an array of Cobalts can also reduce inspection time. It is an automated metrology solution that provides sophisticated in-process measurement, minimizing integration and infrastructure costs.

BuildIT inspection software's automation module is very powerful: It has the ability to build micro processes, combine them into larger processes, use logic variables and inputs, interface directly with robots, and provide user instructions. Combining its automation abilities with the Cobalt Imager results in a versatile and seamless solution. Its user interface allows you to easily maintain and modify your process, simply adapting as you expand to new product lines.

All in all, automated optical imaging will increase your throughput, assure consistent inspection results, decrease inspection labor and reduce unnecessary scrap. It is an ideal solution for both in-line as well as next-to-line dimensional inspection.

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