How 3D Structured Light Scanning Enhances Your Quality System
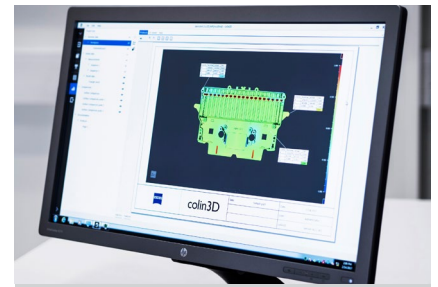
ZEISS COMET

ZEISS COMET is an ultra-compact 3D sensor that offers incredible flexibility while providing fast and accurate measurements. COMET combines the latest sensor technology with project-oriented software – ZEISS colin3D – to capture and process high-quality measurement data. Add in compatibility with ZEISS CALYPSO metrology software and ZEISS PiWeb data management software, and COMET provides a comprehensive solution that fits seamlessly into any quality system and improves root cause analysis (RCA) capabilities.
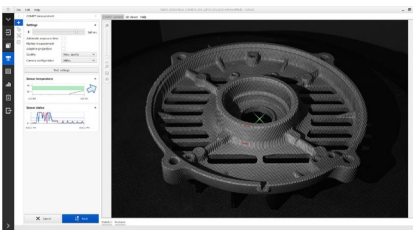
COMET is the ideal optical metrology solution for a wide range of applications:

- *Quality control/inspection*
- *Tool and model making*
- *Design*
- *Rapid manufacturing*
- *Reverse engineering*

COMET captures millions of measurement data points in as little as one second with fringe projection technology.

colin3D live camera view

Feature measurement via STL data import

STL data 3D color map and CAD comparison

3D Structured Light Scanning

COMET uses 3D structured light scanning to capture millions of measurement data points in as little as one second. This is possible via fringe projection technology. COMET projects blue LED light as a striped pattern onto the object it is measuring. This pattern is specifically distorted by the geometry of the object and captured by COMET's camera.
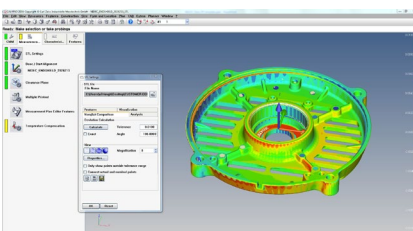
The colin3D software then links each individual camera pixel to a point on the part via triangulation calculations to generate a point cloud. This point cloud is then converted to a triangle mesh in STL format so that a 3D model can be generated, which can then be used in comparison to the part's 3D CAD model. COMET's use of 3D structured light scanning is ideal for RCA because it generates historical images of a component with millions of data points for reference. Whether or not you measure a specific dimension or characteristic at the time the image

and data are captured, you can still accomplish the measurement task retroactively because you have a complete part history.

STL Data Imports to CALYPSO

If you already have CMM measurement plans built in CALYPSO, you can execute them using the STL scan data captured by COMET. Simply import the STL data into CALYPSO, and the software will virtually measure the part using the same strategies and alignments used on your CMM. This allows you to insert COMET into your quality system immediately, utilizing your software experience and existing measurement plans.

This functionality provides you with significant time savings by eliminating the need to move your parts between measurement machines. It also frees up your CMM to measure other parts or run different routines. These benefits enhance and streamline your quality assurance processes, and in turn, boost your overall production.
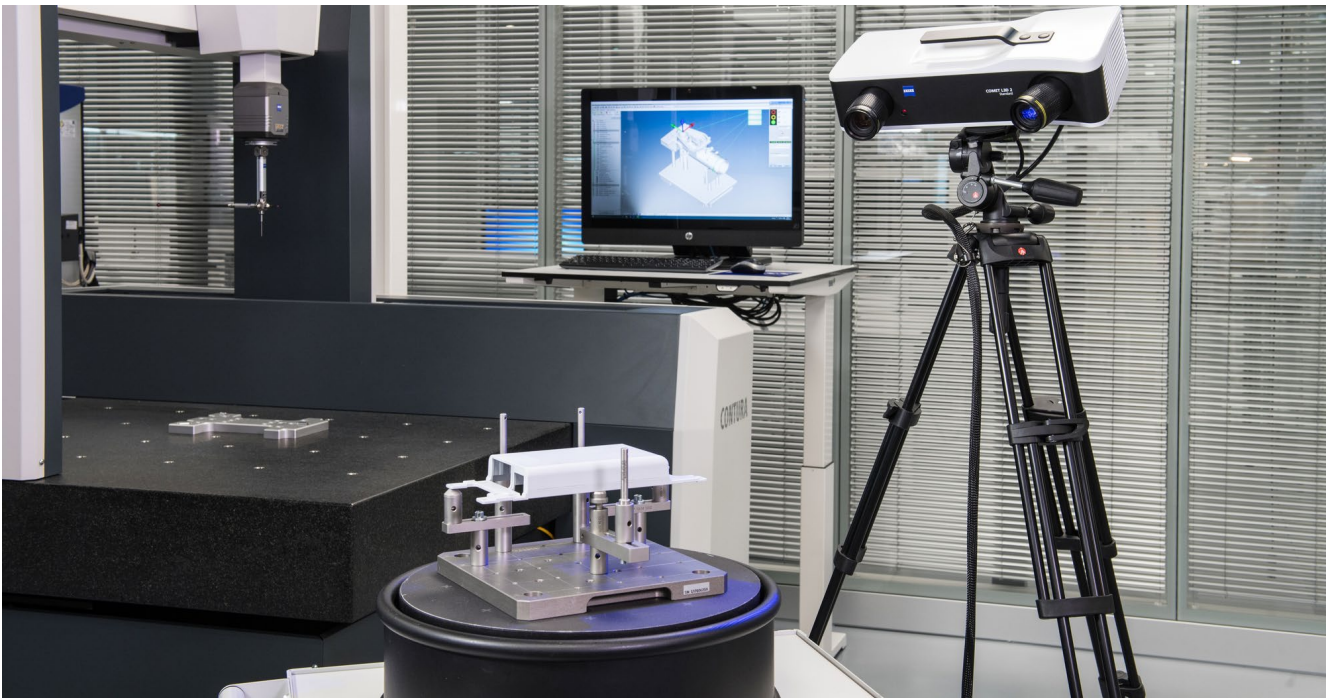
COMET's blue LED 3D structured light scanning works in concert with a rotary table.

Robust Data Management and Reporting with PiWeb

Because COMET captures so much measurement data so quickly, you need a way to provide a holistic view and history of your workpieces. You can harness the full power of your data with ZEISS PiWeb's robust data management and reporting capabilities.

With PiWeb, you can store and generate reports from STL data and images captured by COMET for your entire part's history. Not only do you have that data readily available, PiWeb offers customizable report templates for your customers and internal stakeholders. PiWeb's powerful reporting and SPC evaluation capabilities provide critical insights into your metrology data, which combined with the speed and accuracy of COMET's measurements, gives you an optimal solution for performing RCA.

PiWeb STL data characteristic reporting

For more information about ZEISS COMET solutions, click below.