

NDI APPLICATION NOTE

PART-TO-CAD INSPECTION USING A PORTABLE CMM

PROBLEM

Handheld measurement tools are extremely limited in capability when used to measure large parts or complex surfaces. In order to verify dimensional properties, a Coordinate Measuring Machine (CMM) is usually required. Unfortunately, conventional CMMs require special, environmentally-controlled rooms. This means they are not readily accessible to the production floor: moving large assemblies, fixtures or parts for inspection purposes can be impractical, time consuming and expensive.

SOLUTION

A Portable CMM provides Part-to-CAD Computer-Aided Inspection right on the shop floor. By bringing the machine to the part rather than the part to the machine, problems can be quickly solved at the source.

Operators simply use a handheld digitizing probe, or optional laser scanner, to quickly measure parts while the inspection software automatically compares measured data to corresponding CAD data. Deviations from nominals and out-of-tolerance conditions are clearly displayed in real-time using colour-coded error maps and labels. Quality reports are easily customized and are automatically generated simplifying the entire inspection process. Freeform measurement for one-off inspections and guided measurement for repetitive inspection tasks are both supported resulting in a truly versatile shop floor tool.

Operators can also use the system's unique and powerful Dynamic Referencing capabilities to reduce measurement errors and to enable Fixtureless Measurement, Vibration Compensation and Automatic Alignment.

PRODUCT

The best products to assist you with your Part-to-CAD Inspection needs include:

- NDI OPTOTRAK PROseries Measurement System.
- Delcam PowerINSPECT Inspection Software.
- Applied Precision Preseon 1000, a Certus-based Portable Coordinate Measurement System.
- Steinbichler T-Scan, an OPTOTRAK-based Handheld Laser Scanning System.

BENEFITS

- Truly portable and easy to set up.
- No moving parts or arms to support, allowing for greater range of movement.
- No laser beam to worry about blocking during inspection routine.
- Powerful Dynamic Referencing capabilities, improves accuracy and usability.
- Dynamic Measurement software also available for Door and Closure Testing.



INDUSTRIAL APPLICATIONS

By attaching targets to any object, you can measure or track its position and orientation. Using convenient digitizing probes you can also capture 3D surface points easily. NDI technologies offer many possible solutions, some of which include:

Coordinate Measurement

- Part-to-CAD inspection
- Reverse engineering
- Assembly verification
- Fixture verification
- Offline programming
- Real-time 3D/6D feedback
- Cell alignment

Dynamic Tracking

- Part positioning/alignment
- Vibration analysis
- Part deformation
- Part dynamics
- Structural testing
- Guided assembly
- Door and Closure Testing



With over 10,000 installations in more than 30 countries worldwide, NDI technology provides the accuracy and reliability our customers have come to trust. Let us help you determine the NDI product best suited to solve your most demanding measurement problem.



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