

Vision Software Helps Check Parts Fast

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The Speed of Updated Vision Software Increases Check Speed and Enhances Capabilities of Measurement at Accu-Tech, Inc.

STERLING HEIGHTS, Jan. 11 – Our company, an A2LA 17025-1999 accredited contract-measurement lab, once measured customer parts on CMMs equipped only with touch probes. But we needed a method that would trim time off projects while still providing exact measurements and readily traceable standards of accuracy. A version of PC-DMIS Vision software that operates on Tesa, Mycrona, and certain models of OGP and Ram Optics vision-measurement equipment helped us make a smooth transition from tactile to vision measurement and without learning complicated programming. The software allows use of a wide range of vision sensors instead of, or in addition to, tactile probes.

Part of the easy transition was no doubt due to the software having a CAD-based programming and operating environment almost identical to our existing CMM measurement software. Thus, I already knew about 80% of what I needed to know to become a proficient Vision programmer.

The rest came from only six months of trial-and-error, on-the-job learning about lighting, focus, and magnification factors unique to vision probes. For select jobs we used the ultra-precision Mycrona Altera multisensor machine purchased with the software. I programmed in vision sensing where it improved accuracy or measurement throughput. Some of the layout work was simply a matter of importing existing programs and editing them to add vision-probing aspects.

We are training another programmer-operator to use the equipment and don't expect any difficulties. However, should problems arise, the software includes many tutorials that cover every phase of vision-measurement programming. Help is also available by phone to customers with a maintenance contract.

A few features in the software include:

Edge Points, a feature that lets the CMM rapidly capture numerous points from the vision camera as it moves along an edge or around the periphery of a part. In fact, the algorithm for calculating point positions is so fast, the developers had to include a freeze function so programmers could see the points on the animated measurement-preview screen. Capturing edge points is about four times faster than collecting the same data with hard probing.

True 3D Surface Points allows measuring 3D geometries that are inaccessible or too small for hard-probe measurements. It also allows capturing points on curved surfaces. This lets us handle measurement jobs involving soft, easily deflectable surfaces such as automotive air-conditioner door seals.

A **Comparator/Vision Microscope** capability simulates the function of an optical comparator. Users place a part on the measurement table. They instruct the measurement system to capture, say, six representative locations by clicking on the CAD model. The software aligns the part to its model. A wide range of virtual tools lets users then check dimensions on features such as angles and holes, and print deviation results. This capability is easy to use and fast.

Users can edit part programs using menus. For large amounts of editing, they can use the **Free Form Editing** mode. This lets users see a list of annotated instructions that show exactly what is happening. It reads like a book, giving an overview of the program. Users can make individual changes or recreate repetitive operations by cutting and pasting, looping, and even mirroring instructions. This can be done in any sequence.

For example, take a case in which a circle needs to be measured at 10 different points in the program. The instructions for measuring any one circle can be copied and pasted in nine other positions. Then users need only adjust nominals and tolerances as needed.

Lastly, an **Automatic Lighting Recalibration** feature has a powerful algorithm that detects when magnifications or part locations have been changed and adjusts the light sources (our system has three) accordingly. It almost always provides acceptable results. When making, say, 30 changes that require lighting adjustments, the feature cuts at least an hour off programming time.

The software could use a few enhancements. For example, I would like it to automatically convert tactile probing instructions in an existing program to vision instructions. Also, the software has multiple basic 3D-geometry capabilities such as line, circle, and slot, but others, such as cone, are still in the works. And white-light sensing probes are still under development. They will further improve the measurement system's scanning abilities. These minor gripes aside, the software has let us rapidly implement superior measurement processes.

PC-DMIS Vision is part of the Wilcox Enterprise Metrology Suite of software products from **Wilcox Associates Inc.**, 200 Frenchtown Rd., North Kingstown, RI 02857, www.wilcoxassoc.com

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About Accu-Tech, Inc.

Accu-Tech, Inc.'s primary objective in business is to provide its customers with the most professional, easy to follow solutions for third-party metrology services. With a focus on the customer's needs, they are able to bring forth solutions that help aid to the growth in business. While maximizing their resources to further enhance the business, they will continually improve the level of measurement service for our customers.

They have been in the third-party inspection service for the automotive and aeronautical industries for over ten years. Expanding the business to the medical industry with the purchase of Mycrona vision systems has vastly improved their capabilities of measurement. Their inspectors have well over fifty years of combined experience as special machine builders, model and tool builders, fixture builders, and most importantly CMM inspectors.

Source: Machine Design

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