Better vision with Orus 3D. A good vision system can ensure that raw castings are without flaws. The result means less time for production and lower costs. And Montreal-based Orus 3D has the fastest and most precise automatic in-line metrology system around.

Francois Simard, an engineer and vice president at Orus 3D, a Montreal-area firm that is one of Canada’s leading designers of machine vision solutions is excited about the prospects of RoboGauge, a 3D-based, automated measuring machine for industrial robots.

“It’s simply the fastest and most precise automatic in-line metrology system in the world,” says Simard, a design engineer, vice president and one of the half-dozen private investors in Orus 3D, the Montreal-area firm that makes the new machine. “Its features are designed to provide time- and money-saving solutions for the end user.” A set of tools that create or transform any industrial robot into a powerful in-line coordinated measuring machine (CMM), RoboGauge is designed to provide high-precision and real-time inspection of critical dimensions in 3D for optimal quality control in almost any manufacturing process and production line. RoboGauge features a Skeye 3D laser scanning head, an rt-series vision controller and a Fly and ActiveFly 3D imaging library for the creation of grabbing sequences and automated inspections.

Mounted on the end of any industrial robot or multi-axis system (it can even be mounted on a gantry system for plants that manufacture large components), RoboGauge scans parts and converts the data using proprietary optimized algorithms that produce a highly accurate and repeatable representation of the surface to be scanned. A part-specific inspection
scheme is then performed for quality control with a scan of up to 6 million points per second – light speed, compared with the few points per second ability of cmm. Depending on the head model – 35, 150 or 300, a choice that is made in the design phase to meet each customer’s needs – the accuracy of the RoboGauge system varies between 25 and 200 microns.

Although its principal application is as a metrology tool for the measurement of critical dimensions, RoboGauge can be set up to ensure the presence – or absence – of any part component in an assembly process. The system can also perform inspections and detect differences on the surfaces of products in any manufacturing process. That ensures, for example, that air bubbles or voids that result from the die-casting process are detected prior to the machining of parts.

It is the system’s use of cutting-edge, 3D technology that sets RoboGauge apart from the competition. “It’s the big difference between our system and normal systems like cmm,” says Stéphane Baldo, president of Orus 3D. “You don’t need a qualified operator because it’s automatic, and inspection time is hundreds of times faster than 2D or other systems.” He adds that the increased productivity and guaranteed quality control that can be achieved from RoboGauge’s flexible design is best suited for the automotive, aeronautic and military industries.

The first prototypes are currently being used by two potential customers, one in the automotive industry and the other in the aeronautics field, where they are generating critical performance-related comment and feedback.

Throughout the various stages of the system’s development, validation and demonstration, Orus 3D has chosen to mount RoboGauge on abb controllers and robots. “The reason is simple,” says Baldo. “The repeatability and dependability of abb’s robots helps to guarantee the accuracy we need.”

**FACTS**

The benefits of using RoboGauge as an in-line coordinated measuring machine (CMM) are:

- Completely automated (does not require a qualified technician to operate the system)
- Completely flexible and re-programmable
- Eliminates the need for costly part-specific mechanical fixtures that can cost more than 10,000 Canadian dollars each and need to be recalibrated every year
- Teaching of scan sequence takes a few minutes, compared with several hours with traditional CMM
- Scan sequence (run time): 6,000,000 3D points per second (as much as 100 times faster than other scanners)
- Scans and inspects every part in-line, so defects are caught early in the process, reducing waste.