



Your Success,
Our Commitment

INDUSTRIAL EMBEDDED SYSTEMS

Industrial GPU Computer Helps Industrial Metrology Increase Scan Speeds up to 10X Faster.

Real-world Challenge

Industrial metrology covers a wide field of applications for calibration, testing, and measurement to ensure the quality of manufacturing and any other processes vital to business objectives. In dealing with micro measurements of end products, industries can significantly reduce their production costs with proper skillful calibration and a tighter process control resulting in less waste and a higher quality product.

According to the American Society for Quality ([ASQ](#)), the [Cost of Quality \(COQ\)](#) is a fundamental measure that businesses use to determine the expense of failing to provide a quality product or service. The consequence of poor calibration during manufacturing can impact corporations [up to millions of dollars in cost each year](#). By implementing strict quality process improvements using high precision instruments, manufacturing operations can increase potential savings and establish brand equity.

In pursuit of an innovative and quicker application of industrial metrology, Premio's client, a pioneer in precision automation is developing a solution that ensures superior product quality at the lowest manufacturing cost. Compared to traditional Coordinate Measuring Machines (CMM), the new metrology platform utilizes advanced

vision and multisensor technology to capture millions of data points per second resulting in completion rates 10X faster. Analyzing complex geometries with multiple facets down to microns, or a millionth of a meter, was essential for the success of the system solution.

To achieve the objective targets, Premio provided the computation power behind the metrology platform with the [VCO-6020-1050Ti](#). The rugged machine vision embedded system designed for industrial factory integration was the perfect solution to support the high precision nature of metrology applications.

Premio Benefits

- Superior image processing power for high precision metrology dealing in microns with an NVIDIA GeForce GTX 1050 Ti.
- Industrial design features for wide temperature operation, wide voltage input, shock/vibration, and voltage protection measures.
- Easy serviceability and maintenance with single-sided access to the system ports. Mountable on wall, book, or DIN-rail configurations.

Application Diagram

VCO-6020-1050Ti



Premio's Application Solution

By using a non-contact approach to measuring intricate parts, this new metrology platform scans parts with a multisensor array and delivers simultaneous multiple measurements in just minutes. In order to process the digital image scans quickly and accurately, a powerful Graphics Processing Unit (GPU) is necessary to analyze all the data points and compile the results efficiently. For that reason, the VCO-6020-1050Ti was chosen with its proven machine vision computing capability for industrial applications.

Premio's performance embedded solution features NVIDIA's GeForce GTX 1050 Ti to drive the parallel processing workloads of vision and sensor technology. Based on NVIDIA's Pascal architecture, the GTX 1050 Ti is built with 768 CUDA Cores and 4GB GDDR5 memory to power the high precision measurements needed for identifying discrepancies during production quality control. In addition to a quicker overall process, the graphical image processing is powerful enough to measure the surface finish at a microscopic level giving exact details on the color, gloss, and texture of any object surface.

For this specific industrial metrology application, the embedded system needed to consider diverse factory environments and be able to withstand extreme conditions for continuous operation as is the nature of all automation machinery. Intuitively designed for factory implementation, the VCO-6020-1050Ti is a rugged embedded system with functionality and adaptability built in.

In particular, the metrology platform required the system to be easily accessible and maintained for serviceability. Designed for industrial applications, the VCO series can be mounted on a DIN rail and provides single-sided access to vital ports needed to control all connected sensors, scanners, displays, and any other mechanisms.

Thanks to Premio's robust construction and design, the VCO-6020-1050Ti is capable of withstanding wide voltage inputs (9~50VDC), wide operating temperatures (-25°C to 60°C), and high shock vibration levels (5Grms) found in the types of factory environments our client's industrial metrology platform operates in.



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