

New infinitely positioning probe head for DCC CMMs to be shown at Control 2006

Renishaw is focusing on measurement time and throughput issues at Control 2006, with a range of revolutionary new five-axis scanning systems for co-ordinate measuring machines (CMMs). Control is the world's leading exhibition for quality assurance technologies, and takes place in Sinsheim, Germany from 9th to 12th May, with Renishaw exhibiting in Hall 6, stand 6302.

The most significant advance in CMM technology for 20 years, **Renscan5™** is a new enabling technology that will allow highly accurate, ultra high speed five-axis scanning measurement on CMMs. This new technology allows the development of a range of breakthrough five-axis scanning products that will measure at speeds of up to 500 mm/second, and virtually eliminates the measurement errors normally associated with existing three-axis scanning systems.



The first product to take advantage of the new Renscan5™ technology is **Revo™**, a revolutionary measuring head and probe system that will maximise inspection throughput, whilst maintaining a high-level of system accuracy. Revo™ uses synchronised motion when scanning to quickly follow changes in part geometry, without introducing its own dynamic errors. This allows the CMM to move at a constant velocity along a constant vector whilst measurements are being taken, removing the inertial errors that result from acceleration of the machine during conventional 3-axis scanning.



Revo measuring head and probe system

Also being shown is Renishaw's new **Gyro™** dynamic measuring head for DCC co-ordinate measuring machines, offering a compact and versatile measurement solution adaptable to suit multiple applications, whether for touch trigger probing or full five-axis scanning measurement.

Available early in 2007, Gyro™ is an infinitely positioning dynamic measuring head designed for efficient accessibility to part features. Rapid orientation of the stylus results in significantly lower inspection cycle times, thus maximising throughput. Users can easily access features to be measured, and optimise system performance by ensuring the probe is aligned at the optimum angle for accurate measurement.

Gyro™ is available in three levels of functionality, providing a measurement solution for today, with the ability to upgrade to solve the inspection problems of tomorrow. Gyro™ with touch-trigger

probe functionality is a touch-trigger only product designed to optimise feature accessibility, and greatly enhance the way single measurement points are taken. In many cases, features can be measured using only the motion of the head.

Gyro™ with Renscan3™ technology incorporates scanning functionality to achieve rapid measurement, even though reliant on CMM motion, as the head remains stationary. Traditionally, CMM motion scanning applications are restricted to around 10 mm/sec if accuracy is to be maintained. However, by utilising patented technology, Gyro™ with Renscan3™ allows 3-axis scanning at up to 150 mm/sec.

Gyro™ with Renscan5™ gives full five-axis scanning functionality whereby both the CMM and the head axes move synchronously. The advantages provided by a 5-axis system using Renscan5™ technology are primarily the elimination of the dynamic errors caused by the mass of the moving CMM structure, allowing scanning speeds up to 500 mm/sec by using the motion of the head.

As the Gyro™ head is much lighter and more dynamic than the CMM, with a significantly better frequency response, it is able to quickly follow changes in the part geometry without introducing harmful dynamic errors. This minimises the demands on the CMM, as in the majority of cases it is simply required to move along a vector at constant velocity.

Based on the same laser tip-sense probe technology as the revolutionary Revo™ head, Gyro™ benefits from a novel probe design that uses laser light to accurately sense the exact tip position. This ensures that measurement takes place as close to the point of stylus contact as possible and eliminates errors associated with using conventional long styli.

The novel probe design is incorporated within the construction of the Gyro™ head, where the probe is capable of 3-axis measurement in the X, Y and Z directions. This, together with an extensive range of M2 compatible stylus holder lengths, makes Gyro™ suitable for both small and large DCC CMMs, optimising machine working volume and protecting future investment.

Stylus changing is realised via Gyro™ stylus change ports that are compatible with Renishaw's popular MRS (modular rack system). Used in conjunction with these stylus holders, Gyro™ change ports provide fast, repeatable stylus exchange, without the need for re-qualification of the stylus tip.

The real strength of the Gyro™ system is its versatility and adaptability to a user's changing requirements. Through a simple software upgrade, Gyro™ with touch-trigger functionality can be transformed to 3-axis or ultimately 5-axis scanning functionality, opening the door to vast improvements in throughput.

At the heart of Renscan5™ products, and therefore Gyro™, is Renishaw's UCC2, universal CMM controller. This contains the processor power to run the head and the CMM synchronously and provides the platform necessary to upgrade from touch-trigger probing to full 5-axis scanning.

Gyro™, along with the ultra-high performance Revo™ head are the future for high-speed, high-accuracy measurement on CMMs.