

Renishaw launches a unique new versatile gauging system

The new patented Equator™ gauging system cuts purchase, maintenance and fixture costs, can be pre-programmed for multiple parts and in minutes re-programmed for design changes. Equator is a radical new alternative to traditional dedicated gauging, filling a gap in the market never before addressed. It is more than just a new gauging system, it marks the launch of Renishaw's first gauging product line.

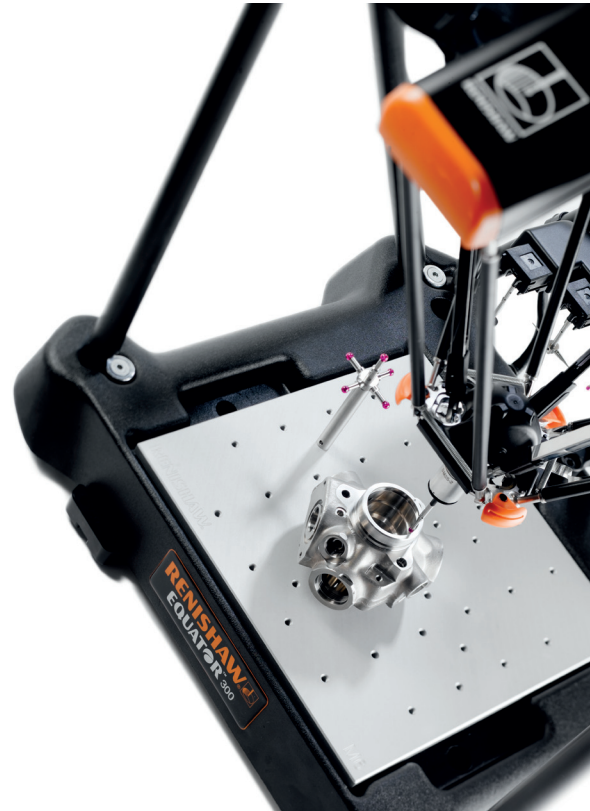
The patented low-cost design, unique in construction and method of operation, is capable of high-speed comparative gauging for inspection of high-volume manufactured parts. It has been developed and proven on the shop-floor in collaboration with industry-leading companies in multiple industries and applications.

Equator has been conceived and developed by working closely with automotive, aerospace and medical gauging users, alongside their manufacturing machines. The result is a lightweight, fast and highly repeatable gauge that operators can use with 'push-button' simplicity. Equator can switch between parts in seconds, perfect for flexible manufacturing processes or accepting parts from multiple machines.

Faster and more repeatable

Based on an easily scaleable and adaptable 'parallel kinematic' structure, Equator's unique patented principle allows high speed scanning and rapid moves between features, while retaining stiffness that delivers impressive point to point repeatability, critical for accurate gauging.

Installation of an Equator is possible in minutes, and an operator can switch between gauging of different parts in seconds. Re-configuration of the gauging system to cater for part design changes, or to measure new parts, is possible in a fraction of the time taken with conventional custom gauging, using the comprehensive industry standard DMIS programming.



Equator uses a 'parallel kinematic' structure for high speed scanning and impressive repeatability



Equator Organiser – operator front end with 'push-button' simplicity

Easy operation, easy programming

Equator systems are available with two levels of software, a programmable version for production engineers to create DMIS programs and, at a lower price, a shop floor system which allows those programs to be executed but prevents operators from making modifications.

Both software levels include the intuitive MODUS™ Organiser operator front-end software, requiring little or no training, while on the programmable system the comprehensive MODUS™ Equator programming software allows engineers to rapidly create gauging routines for any part - simple or complex, prismatic or free-form. MODUS Equator features the ability to easily program scanning measurements and touch points, using the industry-standard Renishaw SP25 compact scanning probe. By scanning, thousands of data points can be taken to define a feature, allowing true form analysis of any feature.

By taking the dongle provided with the programmable system and plugging it into a shop floor system, full programming functionality is activated on that shop floor system, ideal for engineers to adjust programs but also retain control.

Thermal stability

Equator's innovative and highly repeatable gauging technology is based on the traditional comparison of production parts to a reference master part. Re-mastering is as swift as measuring a production part and immediately compensates for any change in the thermal conditions of a shop-floor environment. Equator can be used in factories with wide temperature variation – simply re-master and the system is 're-zeroed', ready for repeatable comparison to the master.

Traceability to calibrated CMMs

Master parts do not need to be expensive custom parts like a traditional gauge; take a production part and measure it on a co-ordinate measuring machine (CMM) to establish feature variation from CAD or drawing nominals. The results from any CMM, operating with any CMM programming software, can be configured to be used directly within the Equator software.



Equator gauging medical component

Effectively, the calibrated absolute accuracy of the CMM (often located in remote temperature controlled rooms to ensure accuracy) can be 'extended' onto the shop floor to provide calibrated traceability to Equator measurements. With the calibration file loaded into the Equator software, measurements made in the Equator system can be referred back to the CAD or drawing nominals. This allows true process control with SPC packages.

Equator controller

The Equator controller, included in the purchase price of every Equator system, is a powerful dedicated control system that provides a secure and robust environment for running the Equator gauging system software. It is similar to machine tool control systems, with the added ability to run Equator-specific Windows applications. Designed for Equator, it incorporates all the necessary electronic boards and software in one package. The user can create and execute DMIS measurement programs, change measurement settings and transfer data or programs.

An additional PC is not required when operating the Equator, reducing cost to the customer and eliminating the chance of incompatibility or unpredictable performance arising from the wide variation of PC architectures.

Low-cost fixturing

Compared to dedicated gauging, Equator cuts fixture costs considerably. By using fixturing that positions parts to within 1 mm of where the master was measured, which has no significant effect on system repeatability, and by establishing the part orientation and datums on the part itself, the need for expensive precision fixtures is removed.

Integrated stylus changing

Further versatility is offered by the Equator-specific stylus changing rack, included in the purchase price of an Equator system, allowing automated in-cycle changing of SM25 stylus modules. The SM25 modules couple to the industry-standard SP25 CMM probe, allowing Equator users to swap the stylus configurations without re-qualifying each time.

Up to six stylus combinations can be loaded into the rack at any time. These can be used on a single complex part or with multiple parts of varying geometries.

Automation options

Equator can be integrated into automated cells, using the optional I/O interface to connect it to a robot, or by outputting the gauging results to an SPC package. Some SPC packages also offer the ability to connect to certain modern machine tool controls to update offset values, for true automated process control.

The versatile gauge™

Equator is unique in its design and method of operation, and has already changed the thinking of hundreds of production engineers, making it the new gauge of choice. Together with its versatility and repeatability, Equator looks set to change the world of gauging.

www.renishaw.com/gauging