RENISHAW
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www.renscan5.com

For more than 30 years, Renishaw has delivered innovations that have been milestones in industrial metrology.

Renscan*5*™ is the result of the biggest research and development program that Renishaw has ever undertaken. Based upon breakthrough head, sensor and control technology, it delivers unprecedented scanning speed and measurement flexibility, whilst avoiding the speed versus accuracy compromises inherent in conventional techniques. It boosts measurement throughput, minimises lead times and gives manufacturers a more comprehensive appreciation of the quality of their products.

A measurement revolution

REVO™ is a revolutionary measuring head and probe system from Renishaw, a dynamic head which incorporates Renishaw's innovative Renscan*5*™ technology.

Every process and feature in a REVO™ system has been designed to enable users to achieve previously unobtainable levels of inspection throughput;

- 5-axis scanning of complex forms, REVO™'s ability to gather very large quantities of accurate inspection data at ultra-high scanning speeds is invaluable.
- Very high speed gathering of touch points using the servo head's infinitely variable 2-axis motion.
- Innovative, patented tip-sensing probe technology allowing the sensing to be very close to the surface measured, yielding better accuracy.
- Novel calibration, Renscan*5*™ tip-sensing probe heads only require a single tip calibration to be accurate at all angles of rotation, typically saving several hours in the set-up routine.
- Infinite positioning and 5-axis synchronised motion, which facilitates access to features.

REVO™ 5-axis high speed, high accuracy measurement offers a wide range of benefits resulting in significant throughput improvements.

Two current applications have been selected, comparing actual cycle times of existing 3-axis measurement methods versus the REVO™ system.

Automotive cylinder head

690% improvement in throughput

The inspection sequence comprised 12 valve seats and three circular scans on each of the 12 valve guide bores.

Conditions		Measurement time
3 axes scan speed:	**15 mm/s**	**29 minutes, 13 seconds**
REVO™ scan speed:	**400 mm/s** *for valve seats* **50 mm/s** *for valve guide scans*	**3 minutes, 42 seconds**

Aero engine blisk

922% improvement in throughput

The inspection sequence comprised nine sectional scans of the airfoil profile, eight longitudinal scans on the blade, two scans of the root profile and a single scan on the annulus profile.

Conditions		Measurement time 1 blade	Measurement time All 29 blades
3 axes scan speed:	**10 mm/s**	**46 minutes**	**22 hours, 14 minutes**
REVO™ scan speed:	**200 mm/s**	**4 minutes 30 seconds**	**2 hours, 10 minutes, 30 seconds**

Probe calibration

Calibration on traditional CMM systems consumes a considerable amount of time that could otherwise be used for part measurement. Using a table mounted sphere, the simple and practical calibration technique for REVO™ determines the actual head and probe geometry, allowing measurement in any position from a single operation.

Where a CMM is used only for a single or limited number of parts, typically there may be 10 head orientations used. Calibration time for these positions may take around 30 minutes. REVO™ requires only 10 minutes; 3 times faster!

If the CMM is used for multiple parts, typically there may be 40 head orientations, dramatically increasing the time required for calibration to around two hours. Again, REVO™ requires only 10 minutes; 12 times faster!

These time savings accumulate as the calibration process is repeated on a regular basis to comply with Quality Procedures or following a probe crash. REVO™ ensures maximum availability of the CMM for the reason it was purchased, to measure parts!

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