*March 2016 – for immediate release Further information: Chris Pockett, +44 1453 524133*

**Renishaw’s unique ATOM™ encoder is key to enhanced metrology performance**

Renishaw, the global engineering company, has launched REVO-2, a new improved version of the revolutionary multi-sensor 5-axis measuring head for use on Co-ordinate Measuring Machines (CMMs). REVO-2 and its new CMM controller, UCC S5, build upon the successful REVO system with enhanced power and communications capability to carry the latest REVO sensors such as the RVP vision measurement probe. The REVO multi-sensor system is one of Renishaw’s flagship products and enables customers to perform 5-axis measurements on a 3-axis CMM, measure 1000s of points/sec and operate at speeds up to 500 mm/s.

The redesign also has implications for the original onboard encoder - a custom design developed before highly accurate miniature encoders had been brought to market. REVO-2 incorporates Renishaw’s latest ATOM miniature incremental rotary encoder with RCDM rotary (angle) scales on both of its axes (yaw & pitch) and is the first product to have the ATOM encoder designed-in at the concept stage. Each 20 µm-pitch RCDM glass disc is face-read by a dual-readhead setup which helps to optimise REVO-2 performance by eliminating rotational eccentricity error.

In this application, ATOM offers higher resolutions and accuracy that enable increased servo-loop gain levels and outstanding servo stiffness for excellent position holding and accurate surface scanning of parts and features. The ATOM system was also chosen for several important design features including: relative mechanical simplicity and optional optical / electrical disc alignment methods for improved installed accuracy; ease of assembly via set-up LEDs allowing both incremental signal calibration and auto-phasing of reference marks without oscilloscopes or external equipment; and availability of chrome-on-glass rotary scale, with a graduation accuracy which enables REVO-2 to achieve a resolution of 0.002 arc seconds, delivering high precision over the full operating temperature range. These set-up benefits help to streamline the REVO-2 manufacturing process, saving time while still providing exceptional metrology performance.

**More on ATOM**

The ATOM system was launched in 2014 as the world’s first miniature encoder with advanced filtering optics. ATOM’s unrivalled metrology provides class-leading accuracy with low Sub-Divisional Error (SDE), low jitter, high signal stability and long-term reliability. ATOM offers analogue speeds to 20 m/s (29,000 RPM on a 17 mm disc) and digital resolutions to 1 nm when used with Renishaw’s interpolation electronics. A range of linear and rotary scales is available in stainless steel and glass.

Applications for ATOM’s ultra-compact readhead include laser scanning, precision micro-stages, semiconductor, medical applications, DDR motors, microscopy and scientific research. Additionally, the FPC variant of ATOM measures just 6.8 mm x 12.7 mm x 20.5 mm and is ideally suited to a variety of space-critical motion control, inspection and metrology applications. ATOM has CE approval and is manufactured by Renishaw, using strict quality controlled processes that are certified to ISO 9001:2008, and, like all Renishaw encoders, is backed by a truly responsive global sales and support network.

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