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**Renishaw to demonstrate latest co-ordinate measuring machine (CMM) technologies at IMTS 2024**

Renishaw, a global leader in metrology systems, will showcase its innovative 5-axis measurement technology for CMMs at IMTS 2024 in McCormick Place, Chicago.

The REVO® 5-axis multi-sensor system will be on show with its extensive range of probes. The 5 axis CMM measurement system offers automatic switching between tactile scanning, touch-trigger, ultrasonic, vision, and surface finish measurement.

By integrating multiple sensors on the same CMM, the REVO system enables manufacturers to increase productivity significantly and can eliminate the need for other dedicated inspection equipment. This single machine solution also overcomes the delays and risks of damage associated with transferring parts across multiple inspection locations. Reducing the number of machines required can lead to lower energy consumption and maintenance costs.

Renishaw’s 5-axis technology minimizes dynamic errors at ultra-high measuring speeds by synchronizing the motion of the three CMM axes and the measuring head’s two axes. This technology provides access to part features that are out of reach for conventional 3-axis systems, significantly reducing inspection cycle times, enhancing throughput, and guaranteeing part quality. The resulting improvement in throughput times can reduce the overall CMM count when, for example, two 5-axis equipped machines achieve the same throughput as three 3-axis equipped machines.

The CMM demonstration will highlight the crucial role of Renishaw’s 5-axis multi-sensor CMM measurement capability in manufacturing electric vehicle (EV) parts. The REVO 5-axis system’s flexibility allows for inspection of the features of stator laminate stack sub-assemblies, preventing faulty components from rendering valuable finished parts scrap.

The REVO system’s RSP2 tactile scanning probe leverages the 5-axis motion to inspect complex geometries rapidly and accurately. It is particularly effective in scanning planes, cylinders, and valve seats and guides on an engine head. Traditional methods often involve slower, point-by-point data collection, but with RSP2, dense data sets are gathered quickly, leading to more efficient inspection processes. Additionally, the RSP2 probe’s ability to sweep scan the hairpin heights on the top of an EV stator and report the highest point of these pins provides valuable data for quality control and process optimization.

The ability to automatically change between sensor types on a single CMM is particularly significant for automotive manufacturing. The SFP2 surface finish probe offers a wide range of specialized modules and extends the surface finish measurement capability of the REVO system. The SFP2 probe allows access to surfaces that are challenging to reach with conventional equipment. For example, the G1 surface finish module is used for groove measurement in engine cylinder bores before a plasma coating process (also known as LDS). Another example is the H1 module, characterized by its elongated skid with a large radius (125 mm), enabling it to be used with components such as cut-off values larger than 0.8 mm. This makes the SFP2 capable of measuring parts that may not be perfectly clean while still complying with international standards.

Another valuable tool available to the REVO system is the RVP vision probe, which allows for the inspection of features that are difficult to reach. One of its critical applications is measuring the heights of paper insulators used to isolate the hairpins from the housing in an EV stator. The non-contact probe measures these heights without disturbing the paper insulators, ensuring they remain in the correct position throughout the process. This capability is crucial in maintaining the integrity of the insulation system and the overall performance of the EV stator.

Software is an integral element of the REVO 5-axis measurement solution, and Renishaw’s MODUS™ metrology software delivers high-performance industrial inspection, optimizing the performance of the REVO multi-sensor measurement system.

MODUS 1.13 software offers multiple enhancements in flexibility and usability for REVO sensors. Users can benefit from powerful new features within its specialist programming ([MODUS Planning Suite](https://www.renishaw.com/en/modus-planning-suite--45491)) and reporting (MODUS CHART) tools.

Additionally, MODUS software enhances process monitoring capability by linking directly to the Renishaw Central manufacturing connectivity and data platform, making it easy for a variety of systems and processes to access Renishaw device data.

For further information on Renishaw’s latest industrial metrology solutions for improved productivity, visit Booth 134314, East building, level 3 at IMTS Chicago 2024 (18-23 September 2024), or visit [www.renishaw.com/revo](http://www.renishaw.com/revo)

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