

MEASUREMENT FOR DUMMIES

DEA GLOBAL Silver Performance and ROMER Absolute Arm
at Johnson Controls, Novo Mesto, Slovenia



Hexagon Metrology measuring systems ensure that drivers and their passengers will be sitting comfortably and safely in their new vehicles

by [Kate Bailey](#)

At the Johnson Controls manufacturing site in Novo Mesto, Slovenia, two hundred people are employed in the production and assembly of seats, interior fittings and chassis parts for the automotive industry. As sole supplier to Revoz, the Slovenian manufacturing subsidiary of Renault, Johnson Controls produces a number of critical parts for the seating setup of the latest-generation Renault Twingo. The company must meet the most demanding quality standards in its product delivery, and a strong working relationship with Hexagon Metrology helps the team to deliver such results.



Measurement of the steel seat frame using the DEA GLOBAL Silver Performance CMM from Hexagon Metrology.



The position of vehicle occupants in their seats is assessed against strict safety standards by using the ROMER Absolute Arm to measure dummies seated in the car.

Meeting new measurement requirements

Johnson Controls has been using Hexagon Metrology equipment since purchasing a ROMER Sigma Arm portable measurement system in 2005 to conduct post-assembly checks. In 2013, when the factory introduced an additional production line to weld seat frames in-house, the new application brought with it a new metrology requirement. Because of their previous good experience with Hexagon Metrology's portable measurement equipment, the management team decided to invest in a new stationary coordinate measuring machine (CMM) from this same trusted supplier.

"We have always had good support from the highly professional and skilled team at the local Hexagon Metrology office here in Slovenia," says Darko Pasič, Quality Engineer at Johnson Controls. "And of course we had to be sure the price was right for us too."

After consultation about their tolerance requirements, the CMM that Johnson Controls selected to inspect components from the new product line prior to assembly was a Hexagon Metrology DEA GLOBAL Silver Performance 9.20.8 with PC-DMIS software. Compared to the measurement techniques previously in use at the factory, which relied on manually-operated callipers, height gauges and micrometers, the company saw an almost instant improvement in product quality using the CMM, as well as saving time and reducing waste parts.

Supporting the process from start to finish

The GLOBAL CMM is typically engaged in measuring the steel seat frames prior to assembly, but on occasion the machine's versatile nature is utilised to measure other car seat components or parts supplied by third-party companies. Once assembly is completed, Johnson Controls uses the portable arm to measure the shape of the seat and check its installed position within the car's coordinate system. However, the most critical measurement is the position of a seated driver or passenger's hips in relation to the headrest – an important safety factor and legal requirement for manufacturers – and one that requires accurate measurements to be taken in the confined space around a dummy placed in each fitted seat.

The positioning of the dummies for testing is a manual process, but repeatability is essential for maintaining safety standards. To ensure that these strict requirements are adhered to, employees must complete a forty-step process using multiple tools and gauges as well as the portable arm to place the dummy and check the seat around it. The suitability of the equipment available in the factory can therefore have a significant impact on the time taken to complete the checks.

Updating technology for user benefits

Such is the importance of this task that in 2014, Johnson Controls upgraded to a more modern and accurate



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portable measuring system. At 3 metres in length, the new 75-series Hexagon Metrology ROMER Absolute Arm has a larger measurement volume than the Sigma model, along with improved point repeatability and volumetric accuracy relative to the size. However, Pasič notes, it was the user-friendly design of the system that made the biggest impression with the shop-floor operators.

“We decided to purchase the ROMER Absolute Arm really because the old arm was a bit too short for the vehicles of today. But we found that the new generation ROMER Absolute Arm offers a much more ergonomic way to measure in the tight spaces the team are working in.”

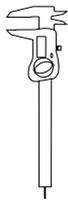
In fact, the ROMER Absolute Arm benefits from several usability features introduced since the purchase of the Sigma, making it easier to take these critical measurements quickly, accurately and with the minimum operator workload. The system requires no referencing or calibration, even after probe switches, so setup time is kept to a minimum while the new arm's extra reach saves the time previously spent relocating the equipment between measurements.

Uniting results across the factory

Like the GLOBAL CMM, the ROMER Absolute Arm runs on the PC-DMIS software platform. Comparing measurement data and compiling reports across the production cycle could not be simpler, which is ideal for two independent



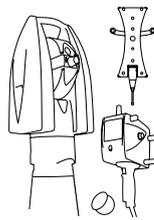
systems which operate as part of a single process. As Pasič concludes, “We are certainly satisfied with both our stationary and portable metrology capabilities, and we couldn't be happier with the support from Hexagon Metrology Slovenia.”



PRECISION MEASURING INSTRUMENTS



PORTABLE MEASURING ARMS



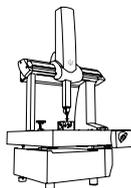
LASER TRACKERS & STATIONS



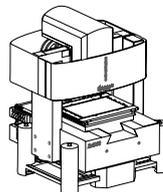
WHITE LIGHT SCANNERS



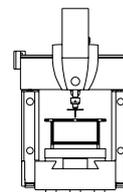
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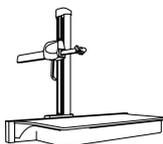
BRIDGE CMMS



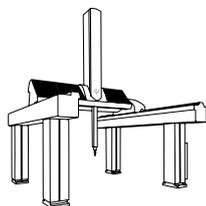
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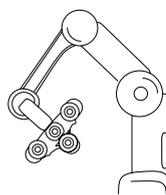
ULTRA HIGH ACCURACY CMMS



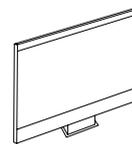
HORIZONTAL ARM CMMS



GANTRY CMMS



AUTOMATED APPLICATIONS



SOFTWARE SOLUTIONS



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