Eco-friendly servo presses

"With a global focus on environmental protection and reduction in energy consumption, our mission is to produce a world-class servo press, utilising the latest technology to provide our customers with sophisticated, energy-saving and intelligent products. SEYI servo presses feature a Direct Drive transmission and a rigid frame design to reduce total clearance," press specialist, SEYI, told *ISMR*.

"All SEYI servo motors are designed and manufactured specifically for press-forming applications, using low revolution speed to produce extremely high levels of torque. These retain maximum efficiency with the pinion shaft integrated into the motor to provide a true Direct Drive transmission. Direct Drive servo technology can reduce energy consumption by up to 50% when compared to a traditional mechanical press, and up to 75% when compared to a hydraulic press," it added.

SEYI Direct Drive servo presses perform stamping applications such as drawing; blanking; progression; coining etc. all on one servo press. The Taiwanese manufacturer supplies medium and large servo presses designed for high precision and performance, environmental sustainability and energy efficiency.

"By combining the advantages of a hydraulic press's fully programmable slide stroke with mechanical press speeds, manufacturers can control tonnage and speed at any point in the stroke. This makes it possible to form more complicated geometric parts, while dwell profiles can be programmed to eliminate spring-back in high-tensile materials and produce higher quality parts," SEYI explained.

Servo application solutions, automated peripheral integration solutions and smart stamping management systems are the three main pillars of SEYI's development strategy. In addition to actively marketing its servo presses, SEYI has developed solutions such as intelligent stamping production lines and the seamless integration of automated peripheral systems. At the same time, it is embracing the challenges of Industry 4.0 in the manufacturing industry. ■

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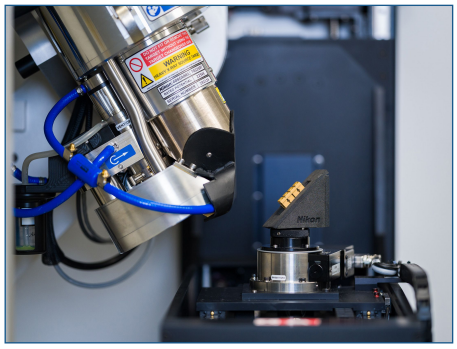
Faster scanning for dual-material assemblies

The Industrial Metrology Business Unit of Nikon Corporation has introduced a new reconstruction algorithm allowing scanning times to be reduced typically ten-fold. Dual.Material CT software, as its name implies, achieves this dramatic increase in efficiency on assemblies featuring two materials of different densities.

"It significantly improves the ability to distinguish between the two materials in the voxel (3D pixel) image reconstructed from 2D X-rays taken as the component rotates in the chamber of a Nikon X-ray CT machine," outlined the metrology specialist.

The benefits of X-ray CT for non-destructive inspection and measurement of both the interior and exterior of components are well known. Traditionally, however, CT scanning of assemblies made from two materials (such as metal and plastic), which is common in the industry, can be unsuited to quality control (QC) in a production environment.

This is because long scan times are required to generate datasets that are sufficiently clear to be processed, which is contrary to the requirements of real-time inspection. Alternatively, if scanning speed is raised, manual post-processing by highly skilled operators is needed to remove artefacts that appear in the images to achieve accurate results. Again, this slows the procedure and introduces variability due to human intervention.



"Depending on the size and complexity of the component, pre-launch trials demonstrated that Dual.Material CT performed an order of magnitude faster on a typical metal and plastic connector, making production line integration on the shop floor a possibility alongside sample inspection. Core applications will be found in factories producing over-moulded connectors, for example, or medical assemblies such as inhalers or adrenaline pens. Dual.Material CT is also likely to find uses in non-industrial environments, such as research," explained Nikon Metrology.

During each image reconstruction, the software engine reduces the degree to which streak artefacts, caused by the higher-density material, obscure the lower-density areas. Typical systems on the market use reconstruction engines that assume the X-rays are monochromatic, when in fact they are polychromatic. This means they must use X-ray filtration, which lengthens exposures and slows image capture. Nikon's reconstruction engine overcomes the effects of a polychromatic X-ray beam by adjusting the attenuation for the different material combinations in dual-material assemblies, greatly improving the contrast-to-noise ratio. Consequently, the X-ray source with a Dual.Material CT scan does not require filtration, so the detector can be used at much shorter exposures, resulting in faster frame rates and scan times.

"As it is automated, reconstruction by Dual.Material CT is highly repeatable from component to component and does not require advanced knowledge of scanning techniques when inspecting assemblies comprising two materials of different densities. QC productivity is raised by enabling better visualisation and more accurate definition of defects (on the surface or inside a component) in a fraction of the time taken by traditional CT image reconstruction," outlined Nikon Metrology.

"The high-speed scanning, and the fact that no manual data editing is required thanks to the new software and automated part handling, enables fast and automated quality control of dual material assemblies in a production environment, consistent with the requirements of Quality 4.0," it added. ■

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