High-Speed Milling Machine Provides Excellent Surface Finish and Part Detail

The new high-tech, high-speed MIKRON HSM 200U LP milling machine from GF AgieCharmilles will make its North American debut at the 2013 Medical Design and Manufacturing (MD&M) West Show in booth 4167. The show takes place Feb. 12-14 at the Anaheim Convention Center in California.

Available in 3- and 5-axis versions, the MIKRON HSM 200U LP (linear performance) brings speed, efficiency and precision to the machining of small, highly complex components, such as medical implants, electrodes and watch components. With a compact footprint, the machine easily fits into most facilities, which is key for dental labs, watchmaking shops and other locations where floor space is often extremely limited.

According to Gisbert Ledvon, director of business development for GF AgieCharmilles in North America, the MIKRON HSM 200U LP accommodates the medical industry’s increased need for lean manufacturing via small-footprint, high-speed machines that bring amazing accuracy and supreme surface finishes to small parts production.

The MIKRON HSM 200U LP can produce workpieces via true 5-axis simultaneous high-speed machining. Linear motor technology in the main machine axes and optimized direct-drive motors for the B and C axes result in high precision and superior part surface finishes as fine as Ra 0.05 µm. Furthermore, the machine’s powerful 50,000-rpm, 11.4-hp Step-Tec spindle also assists in providing excellent surface finish and part detail.

To counteract the high levels of heat that can develop over prolonged periods of high axis feedrates, the MIKRON HSM 200U LP employs a sophisticated thermal management system. Each of the linear axes features a cooling unit to systematically draw the heat out of the machine, creating geometric stability and high repeatability of movement guidance.

A Heidenhain iTNC 530 control system and smart machining modules on the HSM 200U LP provide advanced levels of monitoring critical to the production of high-value precision medical parts. The system allows the machine to automatically check and evaluate tools and workpieces, inspect tools for breakage and perform measurements of the workpiece. Additionally, the smart machine modules automatically monitor spindle vibration, calibrate machine geometry and transmit process status messages to an operator's cell phone.

To avoid inconsistent loading of small tools and 3D geometry errors due to the inaccurate measurement of those tools, the MIKRON HSM 200U LP features Intelligent Tool Measurement (ITM). ITM records the complete tool tip up to a diameter of 0.47" on image sensors. Special software cleans and measures the recorded tool geometry for repeatability in the micrometer range.

The MIKRON HSM 200U LP's robust polymer concrete machine base provides increased performance in the areas of vibration dampening and thermal stability, extending tool life and reducing operating cost. Also, attention to the ergonomics of the machine's design allows for uncharacteristically easy access to workpieces.

Lastly, the MIKRON HSM 200U LP possesses the capability for 24/7 unattended machining using its optional MIKRON pallet magazines with System 3R and Erowa interfaces. These fully integrated pallet magazines can be loaded without interrupting cutting operations already in progress. The automation of tool or workpiece handling is possible from three sides of the machine.

GF AgieCharmilles
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