



NEWS RELEASE

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Mazak VTC-300C FSW Combines Milling and Friction Stir Welding Capabilities

FLORENCE, Ky., August 12, 2019 – A part of Mazak’s family of HYBRID Multi-Tasking machining centers, the VTC-300C FSW combines milling capabilities with those of FRICTION STIR WELDING (FSW). With a full traveling-column design, automatic tool changer and powerful 40-taper spindle in addition to the FSW package, this machine helps shops achieve reduced lead times and greater part accuracy with less required capital equipment and floor space – all while enabling completely novel methods for processing parts with stronger welds than ever before.

Designed and manufactured in Kentucky in partnership with the Provo, Utah-based Mazak MegaStir, the VTC-300C FSW joins Mazak’s series of HYBRID Multi-Tasking machines, which adds such capabilities as advanced additive, joining and gear-cutting technologies to the world-class Multi-Tasking capabilities found in Mazak machines.

The machine’s FSW package uses a process that involves frictional heat and forging pressure to create full-penetration, defect-free welded joints stronger than conventional methods. A solid-state joining process with a non-consumable tool pin, the Mazak FSW head joins two metal plates without melting the workpiece. Commonly considered a forging process, FSW is well-suited for joining alloys with low melting points, including aluminum, copper and brass, among others.

MegaStir, which was acquired by Mazak in late 2018, has led the industry with improved FSW tool material innovation and applications since 2002. Mazak first collaborated with MegaStir on the full 5-axis VTC-800 FSW Vertical Machining Center. The new Mazak MegaStir will continue to pursue further system advancements while providing technical expertise as the future home of a full FSW technology center.

The FSW process is performed with a Mazak MegaStir-supplied tool holder equipped with a Bluetooth-enabled wireless sensor connection; a second tool holder or FSW tool pin is available as an option. The closed-loop FSW process control utilizes integrated thrust and temperature sensors for constant thrust control and the ability to perform

manual thrust offsets during welding operations. The VTC-300C FSW comes equipped with robust HMI software designed for the quick and simple programming of plunge/traverse/extract operations, with all process data logged and stored.

The new welding technology complements the existing VTC-300C machine platform, which delivers a standard 15,000-rpm, 30-hp, 40-taper spindle capable of handling a wide variety of metalcutting applications. Additionally, the machine and waycover design has been enhanced to provide 1,574 ipm rapid feedrates on all axes. Its fixed 78.74" x 30" table provides process flexibility for a wide range of applications, while an optional center partition can divide the machine's work envelope into two separate work zones to allow the machine to be in cycle in one area while loading, unloading or setting up a part in the other. The machine's axis travels measure 65.35" in X, 30" in Y and 25.6" in Z.

The machine also features Mazak's MAZATROL SmoothG CNC, which makes it easy to generate programs for highly complex parts production. It has several advanced functions that ensure the shortest possible machining cycle times, especially with fine-increment programs for free-form die-mold machining. These functions include High-Gain Feed Forward Control, Fast Rotary Axis Speeds, VARIABLE ACCELERATION CONTROL and INTELLIGENT POCKET MILLING.

Ergonomics play an important role in the functionality of the MAZATROL SmoothG CNC. A large 19" display presents all of the critical machine data within a single page view, while the tilt control panel allows for optimum positioning based on operator height. An intuitive multi-touch screen, which is similar to that of a smartphone, enables fast and smooth programming operations. An SD card allows the CNC to store up to 32GB of data.

The VTC-300C FSW machine also seamlessly integrates into a variety of robotically loaded solutions provided by Mazak Automation Systems, and its SmoothG control makes it easy to take advantage of machine monitoring software like SMOOTH Link and IIoT connectivity tools like MTConnect® and the Mazak SmartBox.

In addition to FSW, the new HYBRID Multi-Tasking technologies include AUTO GEAR (AG), a combination of SMOOTH Gear Cutting technology and fully optimized machine tool platforms; HOT WIRE deposition (HWD), a fast additive manufacturing solution that utilizes an arc torch in addition to lasers; and both single and multi-laser metal deposition for the ultimate in additive manufacturing (AM).

About Mazak Corporation

Mazak Corporation is a leader in the design and manufacture of productive machine tool solutions. Committed to being a partner to customers with innovative technology, its world-class facility in Florence, Kentucky, produces over 100 models of turning centers, Multi-Tasking machines and vertical machining centers, including 5-axis models. Continuously investing in manufacturing technology allows the Kentucky iSMART Factory to be the most advanced and efficient in the industry, providing high-quality and reliable products. Mazak maintains eight Technology Centers across North America to

provide local hands-on applications, service and sales support to customers. For more information on Mazak's products and solutions, visit www.MazakUSA.com or follow us on Twitter and Facebook.

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