

Media Release

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GF Machining Solutions showcases new EDM solutions at EMO Milano 2021

At EMO Milano 2021, GF Machining Solutions highlights EDM technologies designed to help manufacturers increase productivity and accuracy. These die-sinking and wire-cutting EDM machines – along with robust solutions that target the mold and die industry – provide operating precision, superb part quality and automated options.

The show marked the unveiling of the new AgieCharmilles CUT P Pro series of wire-cutting EDM machines designed for increased productivity, always available and ideal for every application with the largest technology database. The series includes the CUT P 350 Pro, the 550 Pro and the 800 Pro with robust designs and intuitive HMI as well as several automation options for lights-out operation.

At EMO Milano, GF Machining Solutions also announced the AgieCharmilles CUT X series of wire-cutting EDM machines, featuring new technologies that significantly increase operating precision. They are capable of holding extreme pitch positioning and contouring capabilities for superb part quality. The series includes the CUT X 350 and the CUT X 500 machines.

Particularly for mold makers in microelectronics, telecommunications, medical technology, connectors and optical systems, GF Machining Solutions demonstrated its AgieCharmilles FORM X 600 die-sinking EDM at EMO. The machine delivers positioning accuracy within 1 µm, and general machining accuracy on the workpiece down to 5 µm, combining speed and precision.

The new Uniqua human/machine interface (HMI), available for the CUT P Pro and the CUT X series, capitalizes on more than a century of EDM technology, with optimal functionality and ergonomics in a 19" vertical touchscreen, full keyboard and mouse. It is designed for every skill level, every approach and every user. For the utmost compatibility, Uniqua supports legacy file types from various EDM manufacturers. It also creates, imports, modifies and executes sequential (ISO-based) and object-oriented (dynamic) programs from previous versions of VISION and AC CUT. With offline and at-the-machine programming, ISO-based functionality and object-oriented programming, Uniqua provides a powerful graphic tool with integrated CAM and also ensures compatibility with major CAD/CAM programs.

The CUT P Pro series – Precise, consistent performance

With Intelligent Power Generator (IPG) technology, CUT P Pro series machines deliver surface finishes as smooth as Ra 0.08 µm and heighten accuracy with integrated thermal regulation that allow to achieve an accuracy of ±2µm.

Linear scales and rotary encoders form a double measuring system that protects the X, Y, Z, U and V axes. In the event of a collision, the system differentiates between the linear and the rotary encoder, and the energy absorber system automatically stops the axes without damage to machine or workpiece. This full protection applies at machine speeds of up to 3m/min.

In the QUADRAX® mechanical system of the CUT P Pro series, the table, work tank and dielectric liquid remain stable, and the workpiece does not move, accommodating heavy workpieces. Independent U/V and X/Y axes with equal length (X = U travel; Y = V travel), constant, lower mass and completely independent movement produce large, precise tapered cuts. In addition, the Rhenocast machine base offers lower thermal conductivity and a vibration damping system.

Automation solutions for the CUT P Pro series include Automatic Slug Management (ASM), Automatic Slug Welding (ASW), and the option of a fixed or retractable Renishaw mechanical touch probe to measure workpiece planarity and position on the machine's worktable. Scalable automation options from System 3R maintain unattended production, including a WorkPartner 1+ compact robot with raw materials that can feed up to two wire-cutting EDM machines for more than two days without operator intervention.

The CUT P Pro series optimizes production for electronics, automotive, medical and mold and die manufacturers with more than 600 pre-programmed cutting processes. These cover a wide range of parts from less than 1 mm to 510 mm (.039" to 20.078") in height and weights up to 3,000 kg (6,613.87 lbs), and work with materials such as steel, carbide, copper, aluminum, titanium, polycrystalline diamond (PCD) and graphite. Wires are available from 0.0762 mm to 0.33 mm (0.003" to 0.013") diameters. Based on the Spark Track technology, the ISPS (Intelligent Spark Protection System) prevents wire breakage and the intelligent iWire process reduces wire consumption, detecting variations in the workpiece profile and adapting wire spool unwinding speed accordingly.

The CUT X series – Higher accuracy, higher repeatability

Besides the new HMI Uniqua, machines in the CUT X series are equipped with the new wire circuit. Thanks to the unique twin wire plate, the users can choose between Twin-technology (the main cut being faster with bigger wire, the small corners' finishing with thinner wire), longer autonomy (two identical wires' spools for unattended, longer autonomy) and surface care faster erosion (two wires with identical diameter but different coating, to optimize the speed of the main cut and reduce contamination in finishing passes).

GF Machining Solutions is unique in giving the operator the possibility to work with open or closed guides, thanks to a quick and simple system of interchangeable cartridges. The distance from the guide to the workpiece has been reduced to guarantee the highest accuracy.

New X-Technologies in GF Machining Solutions' database place an intense focus on high accuracy, high surface quality and high-speed results. The CUT X features all the latest functionalities of GF Machining Solutions' next generation of wire-cutting EDM machines, like ISPS.

FORM X 600 and AC-FORM EDM – Increased productivity

From its generator components to its HMI, mechanical design and automation, the FORM X 600 simplifies precision for highly technical processes involved in mold and component production. The machine's latest-generation Intelligent Speed Power Generator (ISPG) reduces electrode wear by up to 50% for significant savings in electrode costs. Fewer electrodes also mean fewer electrode changes, which translates to shorter cycle times and reduced downtime.

With the Accura-C high-performance axis to absorb very high moments of inertia during machining, an onboard Renishaw optical probe for dimensional measurements and iQ technology for low-wear EDM with reduced electrode consumption, the FORM X 600 paves the way for new mastery of die and component production.

The FORM X 600 delivers superior mechanical stability and precision across the life of the machine, thanks to its short C-axis construction and oversize cast iron frame for accuracy uncompromised by either part weight or dielectric volume. The machine's robust construction absorbs all machining forces, maintaining the gap between workpiece and electrode for added precision.

Linear glass scales on the machine eliminate classical errors such as inversion-induced play, expansion and wear effects. Simultaneously, a dual-loop positioning system reduces the need for periodic maintenance and calibration.

During EMO Milano, the machine is equipped with AC-FORM SW V 2.0.0, with unique technologies like new iGap, Dark surfaces and large cavities. The machine will integrate the process monitor eTracking and connectivity with OPC-UA. GF Machining Solutions paired the FORM X 600 with System 3R automation (the new WPT 1+) for automatic workpiece and electrode loading and unloading. The system lets users quickly and precisely preset electrodes and parts while the machine continues to work, thus minimizing machine idle time, shortening overall job lead times, increasing productivity and achieving a faster machine ROI.



The easy-to-use HMI Uniqua is available on the AgieCharmilles CUT X 350.

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Profile of GF Machining Solutions

GF Machining Solutions is the world's leading provider of machine tools, diverse technical solutions and services to manufacturers of precision molds and tooling and of tight-tolerance, precision-machined components. The key segments we serve include the aerospace, automotive, medical, energy, information and communications technology (ICT) and electronics industries. Our extensive portfolio ranges from Electrical Discharge Machining (EDM) solutions, three- and five-axis Milling machines and Spindles, 3D Laser texturing machines, Additive Manufacturing and machines for Laser micromachining to solutions for Tooling, Automation, Software and Digitalization—all backed by unrivaled Customer Services and support. GF Machining Solutions is a globally acting Division of the Georg Fischer Group (Switzerland) and maintains a presence at 50 locations worldwide. Its 3,192 employees generated sales of CHF 725 million in 2020. More information can be found at www.gfms.com.

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