Joint Press release

Press

by Siemens and Ingersoll Machine Tools

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Siemens and Ingersoll Machine Tools expanding Digital Enterprise partnership

- **Robotic fiber placement and 3D printing enable disruptive breakthroughs in today's manufacturing processes thanks to the advantages promised by Industry 4.0, the Digital Twin, higher robotic intelligence and complex motion control.**

Siemens and Ingersoll Machine Tools have expanded their decade-long partnership to support the Rockford, IL-based machine tool company of Camozzi Group on its digital journey of creating digital twins of its products and expanding into new markets. Based upon extensive experience in heavy machine tool building, Siemens cutting-edge technologies in hardware complement Ingersoll Machine Tools' successful journey into the new market of additive manufacturing and have pushed the boundaries for industrial robots for the aerospace market with its entry-level robotic platforms MasterPrint Robotic™ and MasterPrint Continuous Filament™.

For example, Ingersoll developed the mammoth 3D printer MasterPrint™, the world's largest device that prints with thermoplastics. The MasterPrint at the University of Maine — included in the Guinness Book of World Records — is able to 3D-print objects up to 100 feet long, 20 feet wide and 10 feet tall. It is designed mainly to make tools for the aerospace, space and marine industry. MasterPrint™ cuts cost and streamlines the manufacturing process.

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Large parts are printed and then machined to final their shape with the same machine. Manufacturing costs can be reduced by 75% and lead times shortened from months to days.

“As a key supplier of high-tech manufacturing equipment to all the major players of the aerospace industry, Ingersoll has strategic technology goals that push CNC products capabilities and performance beyond their OEMs’ intentions, conception and scope in term of accuracy, reliability, ease of integration and seamless programming experience. Ingersoll has found a CNC and software partner in Siemens who is willing to develop and encompass these advanced capabilities into their products and to enable Ingersoll to achieve its strategic goals and service the needs of our customers by shortening their time-to-market and increasing their profitability”, said Piergiorgio Assandri, Business Director, Ingersoll Machine Tools.

“Ingersoll Machine Tools’ ambitious plans for becoming a leading digital enterprise in the machine tool market are impressive. Their successful additive manufacturing and industrial robot products are a proof point for this. Ingersoll Machine Tools’ entrepreneurial spirit and innovative approach has pushed us to the limits, what our technology is capable of and inspired us to go even further”, said Rajas Sukthankar, Vice-President of Siemens Digital Industries Motion Control Business (US).

Ingersoll Machine Tools is using cutting-edge CNC automation hardware and software from Siemens to transform their business for the digital age. With the Siemens Virtual NC Kernel (VNCK), the company was able embed the real CNC kernel into a virtual machine, allowing Ingersoll Machine Tools to completely emulate real machine tool control and directly import the commissioning archive of the actual machine. That helped Ingersoll Machine Tools to save time with faster commissioning and to get the machine to their customers faster. From an end-

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customer perspective, users will be able to simulate the manufacturing of their product and shorten their time-to-market while increasing their production quality.

“Composite production processes such as the increasingly popular robotic applications can have quite complex machine motions and tight manufacturing tolerances, as well as the ever present need to reduce production times. Having a virtual version of the CNC kernel directly integrated within the programming and simulation software environment allows a customer to more reliably validate their production processes and timing before physically running anything on the machine.” said John Dreher, Software Engineering Manager, Ingersoll Machine Tools.

To handle the complex machining applications, Ingersoll Machine Tools chose the modular, scalable and open Sinumerik 840D sl CNC system from Siemens, which is considered to be the control of choice in high-end machining segments like aerospace. High CNC machining performance, along with flexibility and openness, represent the basis for almost every machine tool concept.

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Engineers from aerospace and other industries with large workpieces come to Ingersoll Machine Tools to work together on breakthroughs in additive and subtractive manufacturing.

Ingersoll Machine Tools implements the benefits that digitalization promises. After pushing the boundaries of large-format robot-assisted fiber placement and 3D printing, expectations are now on groundbreaking innovations throughout the process of part production.

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Run MyRobot is a key function of the Siemens Sinumerik 840D sl CNC and enables precise control of the robots at Ingersoll.

This press release as well as press pictures are available at https://sie.ag/2I0XlGn

For further information on Siemens Additive Manufacturing Summit @ Formnext Connect please visit: www.siemens.com/press/formnext2020

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Siemens Digital Industries (DI) is an innovation leader in automation and digitalization. Closely collaborating with partners and customers, DI drives the digital transformation in the process and discrete industries. With its Digital Enterprise portfolio, DI provides companies of all sizes with an end-to-end set of products, solutions and services to integrate and digitalize the entire value chain. Optimized for the specific needs of each industry, DI's unique portfolio supports customers to achieve greater productivity and flexibility. DI is constantly adding innovations to its portfolio to integrate cutting-edge future technologies. Siemens Digital Industries has its global headquarters in Nuremberg, Germany, and has around 75,000 employees internationally.

Siemens AG (Berlin and Munich) (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 170 years. Active around the world, the company focuses on intelligent infrastructure for buildings and distributed energy systems and on automation and digitalization in the process and manufacturing industries. Siemens brings together the digital and physical worlds to benefit customers and society. Through Mobility, a leading supplier of intelligent mobility solutions for rail and road transport, Siemens is helping to shape the world market for passenger and freight services. Via its majority stake in the publicly listed company Siemens Healthineers, Siemens is also a world-leading supplier of medical technology and digital health services. In addition, Siemens holds a minority stake in Siemens Energy, a global leader in the transmission and generation of electrical power that has been listed on the stock exchange since September 28, 2020.
In fiscal 2019, which ended on September 30, 2019, the Siemens Group generated revenue of €58.5 billion and net income of €5.6 billion. As of September 30, 2019, the company had around 295,000 employees worldwide on the basis of continuing operations. Further information is available on the Internet at www.siemens.com.

Ingersoll Machine Tools Inc. is a leader in advanced manufacturing processes and a global supplier of additive and subtractive machine tools for the aerospace, defense, energy and all heavy industrial sectors. The Ingersoll product lineup includes MasterMill™, PowerMill™ and SuperProfiler™ for accurate, reliable, high-speed milling and trimming of large, complex-geometry parts made of aluminum, titanium and hard metals; Mongoose™ and Mongoose Hybrid™, for the composite manufacturing of aircrafts', rockets' and vessels' structures; MasterPrint™, the largest existing thermoplastic 3D printer, capable to produce extra-large, hollow, parts in a single piece for the aerospace and the marine sectors. Ingersoll runs these very same machines at its Development Center to manufacture key-components for many aerospace and defense programs. Together with Innse-Berardi (Lombardy, Italy), Ingersoll is part of the Camozzi Machine Tools division of the Camozzi Group. With 30 subsidiaries in 75 countries, 2600 employees, 5 operating divisions and 18 production sites, the Camozzi Group is a global leader in the supply of components and systems for industrial automation and operates in other strategic sectors: Automation, Manufacturing, Digitalization and Textile Machinery.

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