

CI AND ORNL ADVANCING LARGE-PART ADDITIVE MANUFACTURING

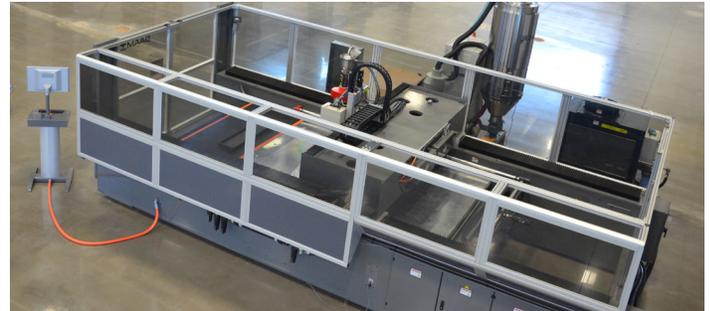
March 2014 Press Release

Partnership formed to accelerate development of new 3D printing system for polymer parts 10 times larger than currently producible.

Cincinnati Incorporated and the Department of Energy's Oak Ridge National Laboratory (ORNL) have signed a partnership agreement to develop a new large-scale additive manufacturing system capable of printing polymer components up to 10 times larger than currently producible, and at speeds 200 to 500 times faster than existing additive machines. The cooperative research and development agreement – signed at ORNL's Manufacturing Demonstration Facility in Oak Ridge, TN – aims to introduce significant new capabilities to the U.S. machine tool sector, which supplies manufacturing technology to a wide range of industries including automotive, aerospace, appliance and robotics. A prototype of the large-scale additive machine is in development using the chassis and drives of CINCINNATI's gantry-style laser cutting system as the base, with plans to incorporate a high-speed cutting tool, pellet feed mechanism and control software for additional capability.

CINCINNATI's experience in designing, making and controlling large-scale manufacturing systems, as well as its long working relationship with ORNL, led to the partnership. "As one of the oldest U.S. machine tool makers, with continuous operation since 1898, we view this as an opportunity to start a new chapter in our history," said Andrew Jamison, CEO Cincinnati Incorporated. "Over the years, we've supplied more than 40 metal working machine tools to Oak Ridge and its subcontractors. Now, working together, we intend to lead the world in big-area additive manufacturing for prototyping and production."

Cincinnati Incorporated was the first laser cutting system manufacturer to use high-speed linear-motor axis drives, developed in-house, with accelerations exceeding 2.0G and head positioning speeds of up to 10,000 in./min. The proprietary linear motor drives deliver positioning accuracy of ± 0.001 in. per axis, with work envelopes up to 8 ft. x 20 ft. (2.5 m x 6 m). "We have



the largest installed base of high-speed laser cutting systems, so this machine platform has been field tested and proven to be virtually trouble free," added Jamison.

The partnership supports the Energy Department's "Clean Energy Manufacturing" initiative to increase the efficiency of U.S. manufacturing and continue the development of innovative technologies. "The agreement with Cincinnati Incorporated exemplifies ORNL's strong commitment to working with industry to move our innovations into real-world applications," said ORNL Director Thom Mason. "These partnerships come with the potential for significant energy and economic impacts."

About ORNL

ORNL is managed by UT-Battelle for the Department of Energy's Office of Science. DOE's Office of Science is the single largest supporter of basic research in the physical sciences in the United States, and is working to address some of the most pressing challenges of our time. For more information, please visit <http://science.energy.gov>.

About Cincinnati Incorporated

Cincinnati Incorporated is a global technology leader in manufacturing press brakes, shears and laser cutting systems for metal fabricating. In addition, CINCINNATI powdered metal compacting presses are the most advanced additive process used for high volume production metal parts. PM presses cost-effectively make high volume production parts that make cars lighter and more efficient.