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Economic Development



Partnership Ushers in New Age of Manufacturing

By Dan O'Brien | January 25, 2017

LEETONIA, Ohio — A large 3-D printer acquired by Youngstown State University and operated through a partnership with Humtown Products Inc. and America Makes is redirecting the course of manufacturing in the metals casting industry, officials say.

“Today is really the dawn of a new day for manufacturing in the Mahoning Valley,” Brett Conner said Tuesday. “This is just a catalyst.”

Conner is director of advanced manufacturing workforce initiatives at YSU.

Conner, YSU President Jim Tressel and Humtown President Mark Lamoncha joined more than 100 guests at Agile Castings Solutions, a subsidiary of Humtown, at its new building in World Trade Park here to cut the ceremonial ribbon and [unveil the new printer](#).

Humtown is leasing the building in the park, while YSU brought in the new printer — a one-ton, S-Max industrial production printer estimated to cost \$1 million. The printer, made possible from an Ohio Third Frontier grant awarded to YSU and America Makes — can create, through additive manufacturing, large, complex sand core molds used in metals casting. “We’re going to bring this technology here, have the opportunity for small, medium and large manufacturers to leverage this technology and expand in northeastern Ohio,” Conner said.



It is the only printer of its kind in the state, and Conner said there is room in the building for one more. “This is a very large printer,” he said, noting the build parameters measure six feet in length, three feet in width and about two feet in depth. “Technologies like this are used to make prototype engine components, such as an engine block for an automobile.”

Conner said this project exemplifies how new technology is transforming a manufacturing process thousands of years old: “We’re using a new process to create those molds to save jobs, create jobs and develop economic growth for this region and across the state of Ohio.”

Humtown Products manufactures sand molds used in the metals-casting process. The traditional method of making these molds is to first create a pattern – essentially a model of the part. Then, sand mixed with resin is packed around the pattern, leaving an imprint of the component. Once the sand core is formed, the metal forms the part as it’s poured in.

Lamoncha said this method is used for high-volume jobs that require reuse of the same pattern. However, some of these patterns are costly and prone to wear, while it’s expensive and time consuming to develop tooling that might be used for just a limited production run.

The new S-Max 3-D printer resolves this issue said his son, Brandon Lamoncha, Humtown’s sales manager. “This requires no tooling,” he said.

Instead, the printer reads a digital file and a nozzle distributes the mixture of sand and resin inside the large device and builds the mold layer-by-layer. “Right off the bat, we’re able to save tens of thousands of dollars in hard tooling,” he said.

Moreover, should the design need to be modified, all an engineer needs do is adapt the electronic file, he says. There is no need to create an entirely new tool for the part. “It opens up all kinds of opportunities,” the younger Lamoncha said. “We’re seeing lead times go from months to weeks.”

Major corporations that manufacture proprietary products use Humtown’s sand molds, the elder Lamoncha said, and could benefit from the new 3-D printer. Automotive companies, for example, often have to revise their original designs of specific prototypes. Using the conventional method, this could take 12 weeks or more because it would require an entirely new tool. 3-D printing, however, allows a new prototype to be reprinted and cast within seven days. “It greatly reduces cost and accelerates the product-to-market time,” he said.

Beyond its commercial use, the new printing lab serves as a classroom for YSU students engaged in additive manufacturing studies.



“I’ve been doing research in additive manufacturing – specifically in casting,” said Ethan Altomare, a senior at YSU who majors in mechanical engineering. “I’ve had the ability and use of the S-Max.”

Altomare has personally cast products as part of his research projects. “I’ve learned a lot,” he said. “And additive manufacturing will become more involved in the casting process.”

Tressel praised the partnerships forged by private companies such as Humtown, YSU, the Youngstown Business Incubator and America Makes as integral to future innovation in the Mahoning Valley: “If we’re going to be successful in the future, there’s going to have to be great collaboration between government, higher education, industry and all of the other partners.”

Lamoncha said collaboration involving America Makes, YSU and other universities such as Northern Iowa University, helped make this project happen in Leetonia. “The foundry industry needs newer technology for us to be competitive in America again,” he stated. Scott Deutsch, director of communications for Youngstown-based America Makes – the first of former President Barack Obama’s advanced manufacturing hubs – said this type of equipment helps both research and development and advances in production technology.

“It’s this kind of activity that really moves manufacturing forward,” he said.

PREVIOUS:

[YSU, Humtown, America Makes Unveil 3-D Printer](#)

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