3D Systems Delivering on Prototyping to Production Promise – Highlighting Customer Applications at AMUG 2018

- Customer use cases prove real-world benefits such as: 40% reduction in injection molding cycle times, more than 90% cost savings, and 30% increase in production rate compared to other available solutions
- Chuck Hull, inventor of 3D printing, leads general session on impact of high speed digital molding demonstrated with customer use case

ROCK HILL, South Carolina, April 2, 2018 – Next week in St. Louis, 3D Systems and its customers will participate in the 30th annual Additive Manufacturing Users Group (AMUG) Conference to share strategies and workflows for 3D printing solutions to make manufacturing more efficient, responsive, and cost effective. Manufacturers can begin with 3D Systems’ affordable, industrial 3D printing solutions and grow into the company’s full production factory solutions for plastics and metals.

In November 2017, the company announced advancements in its production solutions for plastics – including Figure 4™ - and Metals; investment casting; and new materials. 3D Systems has been working with customers in these categories to help them implement innovative solutions that are making unprecedented impact on their business, including reductions in cost and cycle times as well as improved productivity.
3D Systems believes additive manufacturing solution suppliers must offer a comprehensive, consultative, and phased, approach to help customers move from rapid prototyping into full production with additive manufacturing solutions. The company’s extensive portfolio includes services, materials, software, and technology and addresses each phase of the additive manufacturing workflow – supporting customers regardless of where they fall within the additive manufacturing maturity model. 3D Systems’ solutions span rapid prototyping to fully integrated additive manufacturing for complex processes enabling mass customization, improved productivity, and supply chain efficiencies.

“When you look at the 3D Systems eco-system, we place the customer at the center of everything we do,” said Vyomesh Joshi, president and chief executive officer, 3D Systems. “The ‘customer-first’ mindset drives us to design solutions to meet our customers’ needs, including durability, productivity, repeatability, and effective total cost of operation. We integrate services, materials, software, and technology into an end-to-end solution that redefines processes and ultimately benefits their business.”

The AMUG Conference is billed as being “by users for users” and includes a plethora of presentations throughout the week, which demonstrate how companies across a variety of industries are integrating 3D printing into their workflow, and the benefits they are realizing. 3D Systems is hosting a program of speakers to highlight how its solutions are transforming mainstream manufacturing practices. Of special note are presentations by Chuck Hull – inventor of stereolithography and co-founder and chief technology officer of 3D Systems - as well as by University of Dayton Research Institute (UDRI), B&J Specialty, and Mueller AMS covering high speed digital molding, conformal cooling, and investment casting using additive manufacturing solutions, respectively.

**AMUG General Session: Manufacturing Redefined - Figure 4™ in the Real World**

The 3D Systems experience at AMUG 2018 will feature the new Figure 4™ additive production platform, which accelerates and simplifies the fabrication of plastic parts with high speed digital molding, while matching the accuracy, reliability, and repeatability of traditional injection molding. Figure 4’s ultra-fast print technology combined with production-grade materials enables up to 15x throughput improvements versus competitive offerings, at up to 20 percent lower cost than current manufacturing processes.
In partnership with 3D Systems and select aerospace OEMs, University of Dayton Research Institute (UDRI) is leveraging Figure 4 to develop agile programs to meet supply needs for aviation components. UDRI is testing material and technical barriers with an eye towards delivering Figure 4 capability as a solution for just-in-time inventory control for small polymer parts.

Figure 4 was invented by 3D Systems’ co-founder and Chief Technology Officer, Chuck Hull, who will present his vision for 3D printing in manufacturing in this keynote presentation. Mr. Hull will be accompanied by his colleagues Scott Turner and Steve Hanna as well as Dr. Timothy H. Osborn from UDRI.

**AMUG Session: Changing the Injection Molding Equation with Conformal Cooling and Metal 3D Printing**

In the plastics molding industry, cooling lines and circuits are the last thing added to the design of a metal part mold. This means the designer is often constrained by limited space and looming deadlines to route an efficient water line circuit – often resulting in inconsistent cooling. This can lead to several part-failing conditions such as warping, bad sink marks, and long molding cycle times, among others. Due to the processes and tools available, conventional manufacturing methods limit the ability of mold makers to optimally cool their molds.

B&J Specialty Inc. - a tool and die shop in Indiana - invested in a 3D Systems ProX® DMP 300 metal 3D printer and complementary mold design and additive manufacturing software (Cimatron® and 3DXpert™, respectively), to achieve an end-to-end design and manufacturing solution. Jarod Rauch (B&J Specialty) will lead this session in conjunction with David Lindemann (3D Systems) to discuss the strategies employed and advantages achieved as a result, including 40% reduction in cycle times, 30% production rate increase, improved molded part quality and increased longevity and performance of the tooling itself.

**AMUG Session: Investment Casting Overhaul: Updating Speed, Cost and Integration of 3D Printed Patterns**

Although 3D printed patterns have been used in investment casting for more than 25 years, upwards of 98% of all use has been for prototyping and very low volume production applications. Printed patterns have seen limited acceptance for production use for a number of reasons: they are too expensive, they cannot be produced fast enough for production purposes, and the additional steps required in the casting process are disruptive to the foundry process. However, if
3D printed patterns were competitive with molded wax patterns, the market would expand by an order of magnitude.

3D Systems is driving developments with its investment casting solutions – QuickCast® SLA patterns and MJP printed wax patterns - to dispel these perceived shortcomings. These projects are already helping customers achieve advancements to make 3D printing investment casting patterns in 90% less time at 92% lower cost, and easier to integrate into the casting process. Tom Mueller – founder of Mueller Additive Manufacturing Solutions – will lead this session and discuss progress made in these projects.

Grow with 3D Systems at AMUG 2018
3D Systems is a Diamond Sponsor at AMUG 2018. The company is offering a full program of educational sessions during the conference in Diamond Suite D1 located in St. Louis Union Station. Here, AMUG attendees can also engage with company experts to see and learn more about:

- Figure 4 solution portfolio with demonstrations of Figure 4 Modular and Figure 4 Standalone,
- entry-level, industrial 3D printing with the FabPro™ 1000 solution,
- a full portfolio of metal 3D printing solutions from standalone to the factory floor,
- rapid prototyping and production applications in plastic 3D printing,
- a vast range of new materials and their industry applications,
- the benefits of On Demand Manufacturing outsourcing services,
- and how 3D Systems’ software solutions help users address critical workflow issues.

Forward-Looking Statements
Certain statements made in this release that are not statements of historical or current facts are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause the actual results, performance or achievements of the company to be materially different from historical results or from any future results or projections expressed or implied by such forward-looking statements. In many cases, forward looking statements can be identified by terms such as "believes," "belief," "expects," "may," "will," "estimates," "intends," "anticipates" or "plans" or the negative of these terms or other comparable terminology. Forward-looking statements are based upon management’s beliefs, assumptions and current expectations and may include comments as to the company’s beliefs and expectations as to
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About 3D Systems
3D Systems provides comprehensive 3D products and services, including 3D printers, print materials, on demand manufacturing services and digital design tools. Its ecosystem supports advanced applications from the product design shop to the factory floor to the operating room. 3D Systems’ precision healthcare capabilities include simulation, Virtual Surgical Planning, and printing of medical and dental devices as well as patient-specific surgical instruments. As the originator of 3D printing and a shaper of future 3D solutions, 3D Systems has spent its 30-year history enabling professionals and companies to optimize their designs, transform their workflows, bring innovative products to market and drive new business models. More information on the company is available at www.3dsystems.com.