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Siemens introduces Additive Manufacturing Process Simulation solution to improve 3D printing accuracy

- **New additive manufacturing process simulation helps predict distortion and shrinkage during the 3D printing process and helps avoid these issues by automatically generating a compensated model**
- **Simcenter 3D solution for additive manufacturing process simulation is fully integrated within NX software for a streamlined feedback loop with no data translation required**
- **Siemens' integrated digital innovation platform allows simulation data to feed the digital thread, informing each step of the industrialized additive manufacturing process**

Siemens announced today a new [Additive Manufacturing](#) (AM) Process Simulation solution for predicting distortion during 3D printing. The product is fully integrated into Siemens' end-to-end [Additive Manufacturing](#) solution, which assists manufacturers in designing and printing useful parts at scale. Building on Siemens' comprehensive digital innovation platform and the Simcenter™ portfolio, the AM Process Simulation solution uses a digital twin to simulate the build process prior to printing, anticipating distortion within the printing process and automatically generating the corrected geometry to compensate for these distortions. This simulation is paramount for constructing a 'first time right' print, and necessary for achieving the efficiencies required of a fully industrialized additive manufacturing process.

"Using the Simcenter 3D AM Process Simulation solution at toolcraft will allow us to complete our additive manufacturing workflow," said Christoph Hauck, Managing

Director, MBFZ toolcraft GmbH. “Through real-world testing, we have gained confidence that the Siemens AM Process Simulation solution will assist us in ensuring quality output from our print process.”

When metal parts are 3D printed, the method used to fuse the layers of the print typically involves heat. As the layers build up, the residual heat can cause parts to warp inside the printer, causing various problems, from structural issues within the part itself to print stoppage. Issues such as these cause many prints to fail, and make getting a “first-time-right” print very difficult. Simulation of the printing process can help to alleviate many of these problems.

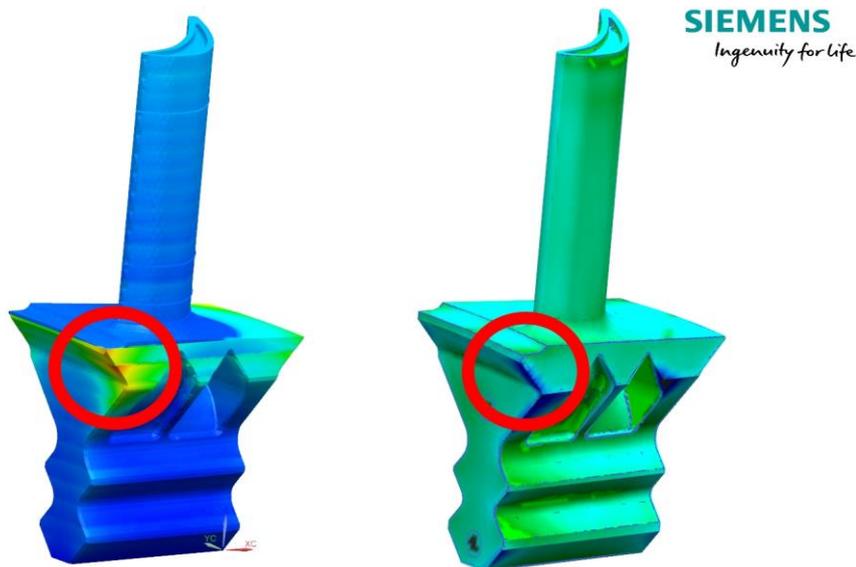
Siemens’ new process simulation product is integrated into the Powder Bed Fusion Process chain in the Siemens PLM Software Additive Manufacturing portfolio and is used to predict distortion for metal printing. The product provides a guided workflow to the user that allows for the assessment of distortions, the prediction of recoater collisions, prediction of areas of overheating, and other important feedback about the print process. The AM Process Simulation solution offers the ability to iterate on a solution between the design and build tray setup steps of the workflow, and the simulation step. This closed feedback loop is possible due to the tightly integrated nature of the Siemens digital innovation platform. The simulation data created feeds into the digital thread of information which informs each step of the printing process. This digital backbone enables the system to develop pre-compensated models and, more importantly, to feed those seamlessly back into the model design and manufacturing processes without additional data translation. This high level of integration is what customers need today in order to be successful in industrializing additive manufacturing.

“This solution is the latest addition to our integrated additive manufacturing platform, which is helping customers industrialize additive manufacturing by designing and printing useful parts at scale,” said Jan Leuridan, senior vice president for Simulation and Test Solutions at Siemens PLM Software. “By using a combination of empirical and computational methods we can increase the accuracy of the simulation process, feeding the digital twin and helping customers better predict their real-world print results. We have proven this over months of real-world testing with some selected first adopter companies. Providing corrected geometry and closed loop feedback can ultimately allow our customers to get better results from their additive

manufacturing processes, helping to achieve that first-time-right print and realize innovation with this technology.”

The AM Process Simulation solution is expected to be available in January 2019, as part of the latest NX™ software and Simcenter 3D software. For more information about producing quality parts with industrial additive manufacturing software, please visit: www.siemens.com/plm/additivemanufacturing.

Siemens PLM Software, a business unit of the Siemens Digital Factory Division, is a leading global provider of software solutions to drive the digital transformation of industry, creating new opportunities for manufacturers to realize innovation. With headquarters in Plano, Texas, and over 140,000 customers worldwide, Siemens PLM Software works with companies of all sizes to transform the way ideas come to life, the way products are realized, and the way products and assets in operation are used and understood. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.



With underlying technology like XFEM analysis, the Simcenter 3D AM Process Simulation tool shows how the predicted distortion on the left is confirmed by the comparison of the real-world part to the original CAD data on the right.

This press release and a press picture are available at

www.siemens.com/press/PR2018110068DFEN

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