The Importance of Designing for Additive Manufacturing

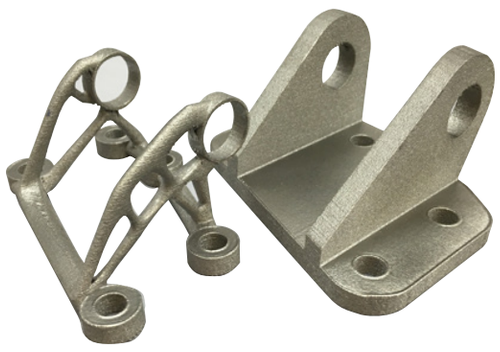
Optimizing a Revolutionary Technology for Improved Product Performance

What is possible when designers are free from the constraints of conventional manufacturing?

- LIGHTWEIGHT COMPONENTS
- MINIMIZED MANUFACTURING CYCLE TIME
- CONSOLIDATED PARTS
- FUNCTIONALLY GRADED STRUCTURES
- COMPLEX GEOMETRIES
- MULTI-MATERIAL PARTS
- CUSTOMIZED STRUCTURES

Additive manufacturing (AM) technology has progressed to the point where functional parts can—and are—being built for end use. Aerospace and medical device are a few industries leading the way.

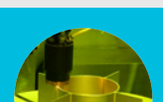
This bracket, designed for aerospace application, is 68% lighter than its traditionally manufactured predecessor



Over 6,000 3D printed spine implants have been used in surgery since 2013*

Although the technology has evolved, design methods and guidelines for AM have not. The majority of parts being manufactured through traditional processes today are not optimized to take full advantage of the benefits that AM technologies can offer.

New design tools must be developed with these AM processes in mind:

- POWDER BED FUSION 
- MATERIAL JETTING 
- SHEET LAMINATION 
- MATERIAL EXTRUSION 
- VAT PHOTOPOLYMERIZATION 
- DIRECTED ENERGY DEPOSITION 
- BINDER JETTING 

Design rules for AM must account for:

- SELECTED AM PROCESSES
- MATERIAL PROPERTIES
- DIMENSIONAL ACCURACY
- NEW GEOMETRIES
- ORGANIC STRUCTURES
- POST PROCESSING
- POST-PROCESS INSPECTION

AM offers exciting new opportunities, but without design for additive manufacturing, a lot of its potential is just that—*potential*.

By leveraging the people, processes, and technology available at EWI and Buffalo Manufacturing Works, manufacturers can be sure they are maximizing the benefits of their additive manufacturing resources.

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*http://www.prnewswire.com/news-releases/4web-medical-announces-launch-of-3d-printed-posterior-spine-truss-system-300159449.html