



Quickparts®

Aerospace and Defense Parts Manufacturing and Prototyping

Cutting-edge materials and process development to suit the direct digital manufacturing needs of the aerospace and defense industry



Focused on Scalable Production Opportunities

3D Systems' expanding range of parts, printers and production systems is enabling global leaders in the aerospace and defense industries to take advantage of the latest cost-effective solutions and services to solve their design and manufacturing needs in a lean, tool-less and inventory-efficient manner. With our recent advancements in materials and build capabilities, we can improve overall efficiencies in meaningful and measurable ways, producing results that were previously unattainable through traditional manufacturing methods.

Why Choose 3D Systems' Quickparts?

- AS 9100C certified
- ISO 9001-2008 certified
- ITAR registered
- 5 different levels of inspection available
- Inspection reports available with parts
- Patented Conformal Lattice Structures (CLS™)
- High-temperature lightweight carbon-filled materials
- High-temperature PEEK material
- Additive manufacturing leader aerospace/defense industry
- Development to production solutions
- Direct part manufacturing
- Largest production capacity
- Newest machines and technologies
- Cutting edge materials and process development
- Built to your specifications for durability and functionality
- Finishing and assembly including full kitting services

www.3dsystems.com/quickparts

MANUFACTURING THE FUTURE



3DSYSTEMS



Development to Production

Advancements in free-form design techniques and new developments in sintering materials, coatings and processing techniques have provided innovative rapid manufacturing solutions of high-durability parts for air, ground and undersea applications. These discoveries are providing the foundation for our rapid growth as a leading supplier in the aerospace and defense sector.

Benefits of Using Rapid Manufacturing

Manufacturing finished parts direct from digital input is a breakthrough technological advancement. Still in its early stages, rapid manufacturing is coming into increasingly widespread use in specialized technology applications where limited quantities of durable precision components are needed.

- Parts are produced directly from your 3D CAD file resulting in the most precise representation of your designs available
- Elimination of costly and time-consuming process of tool making
- Increase in speed and flexibility in deployment of finished systems
- Freedom from traditional manufacturing processes
- Flexibility in design changes throughout development
- No wasted inventory of obsolete parts
- Reduction in part weight
- Less lag time for expensive and time-consuming tool changes



Reduce Cost and Improve Quality



Conformal Lattice Structures (CLS™)

3D Systems' Quickparts Solutions offers the innovative Conformal Lattice Structures (CLS) build style, an additive manufacturing process for the creation of components using laser sintering.

Especially valuable to the aerospace and defense industries as a design engineering tool, CLS allows parts to be built with a very lightweight lattice structure that is incredibly strong. Components developed through CLS are production-ready, allowing a prototype to seamlessly evolve into the final product. CLS effortlessly allows for faster part development and the elimination of costly time-consuming tooling.

Benefits of CLS Technology

- Lightweight, multi-functional material
- High strength-to-weight ratio improvements over solid wall construction techniques.
- CLS produces consistent results with the alignment of unit cells along force directions
- Conforms to the natural organic geometry surface and aligns to the load plane
- Produces predictable testing and performance behavior
- Direct digital manufacturing eliminates the need for tooling
- Reinforcement of contoured shapes
- Performance-based design optimization allows for predictable load and stress patterns
- Improved mechanical performance of designed structures
- Optimization of structures for vibration dampening, noise attenuation, impact absorption
- Improved manufacturing controls for a consistent and repeatable fabrication process
- Fast time-to-market product development cycles

Creating Custom Metal Parts with Direct Metal Printing (DMP)

Direct Metal Printing (DMP) is a 3D printing technology developed to build metal material in layers instead of removing it in different steps, as in traditional machining. A high-precision laser is directed to metal powder particles in order to selectively build up thin, subsequent horizontal metal layers. The laser quickly pinpoints and fully melts the metal powder particles, so that the new material properly attaches to the previous layer, without glue or binder liquid.

The powerful, high-intensity fiber laser guarantees that the built metal parts exhibit a dense and homogenous material structure. CAD directly drives the machine without requiring any programming, clamping or tooling. Direct Metal Printing is capable of simultaneously producing metal parts of different shapes in quantities of one up to 100,000 pieces. This layered approach allows DMP printers to produce even the most complex parts, including parts with recesses, ribs, cavities and internal features.

Direct Metal Printing is an ideal technology for aerospace and defense applications. It allows for the production of small and extremely complex shapes with no need for tooling, and it permits dramatically different part design than conventional processes like machining, stamping or die casting will allow. In addition, DMP can reduce part count and weight significantly, enable faster turnaround time, and meet exact specifications with a wide variety of high-grade materials.

DMP Advantages

- Speed and accuracy
- Fine feature detail even on complex parts
- Prototype through high-volume production in one process
- No tooling required
- Variety of metals available including stainless, maraging tool steel, titanium, aluminum and superalloys like Inconel
- Improved part functionality through freedom in design
- Process-controlled production





Quickparts®

Aerospace and Defense Parts Manufacturing and Prototyping



Inspection Services

- AS9100C ensured and certified quality systems
- Full breadth of testing and inspection services
- Coordinate measuring
- Instron pull test (tensile strength)
- Critical dimensions inspected to go/no-go
- Inspection of small features
- Reports available with parts

5 different levels of inspection:

1. 100% inspection, all parts
2. 6-10 critical points, all parts
3. X,Y, Z
4. Form and fit
5. Customer defined inspection



Finishing and Assembly Services

- Plating, EMI shielding, Insets
- Certified full assemblies
- Kitting
- Nutsert installation & certification



3D Systems Corporation

Quickparts Solutions

2475 Big Oak Road
Langhorne, PA 19047 USA

Toll Free: +1 888.778.6657
Telephone: +1 215.757.9611
Fax: +1 215.757.9784

www.3dsystems.com/quickparts

© 2014 by 3D Systems Inc. All rights reserved. Specifications subject to change without notice. CLS is a trademark and Quickparts, 3D Systems and the 3D Systems logo are registered trademarks of 3D Systems, Inc.