Medical Prototype Development Laboratory
US Army Medical Materiel Development Activity–
Fort Detrick, MD

Additive Manufacturing Systems

Stratasys F170 Fused Deposition Modeling
[Build Envelope 10"x10"x10"]
ABS, ASA, PLA, Polycarbonate, TPU Elastomer, etc.

Alpha Additive MKII-C20 Fused Deposition Modeling
[Build Envelope 20"x20"x20"]
Utilizes open-source printing software with little to no restrictions on material suppliers

Form 3B+ Low Force Stereolithography (LFS)™
[Build Envelope 5.7"x5.7"x7.6"]
Compatible with 40+ materials including biocompatible materials. Parts can be sterilized.
Resolution (xy) of 0.001 inch. Layers 0.001-0.012 inches.

Other Advanced Manufacturing & Supporting Equipment

- *Computer Numerical Control (CNC) 5-axis Machining Center*
- *CNC Routers, Mills and Lathes*
- *Heat treat furnace*
- Waterjet cutting machine with a cutting envelope of 4'7" x 4'7"
- Laser Engraving
- Precision Sheet Metal Fabrication
- Metal inert gas (MIG) & Tungsten inert gas (TIG) welding

Engineering, Fabrication and Design Services

- *Systems engineering and integration*
- *Computer-aided design (CAD) and Computer-aided manufacturing (CAM)*
- *Technical Data Package development*

Focus

The Medical Prototype Development Laboratory (MPDL) collaborates with various organizations within the DoD and the commercial medical community to provide innovative, useful, and relevant medical equipment and ancillary services.

Applications

- *Proof of concept and design for customers, including unique and patentable inventions*
- *Prototyping and fabrication of parts and assemblies*
- *Manufacture custom tooling, fixtures, patterns, molds*
- *Create functional 3D printed parts*
- *Print low volume production parts*
- *Manufacture complex geometries*
- *System interfacing and integration*
- *Rapid prototyping to reduce design-production cycle time*
- *Harden and ruggedize commercial off-the-shelf (COTS) components, equipment, and products for use in an operational environment*
- *Innovative research and test support*
- *Production of failed components and sub-components that cannot be repaired traditionally or acquired due to obsolescence or delays, lowering O&S costs*
- *Repair of worn and/or damaged components*

Test Support via co-located Medical Research and Development Command Test Branch

- *Environmental Test and Evaluation in accordance with MIL-STD-810*
- *Custom-Tailored Testing*
- *Performance Verification Testing*

Benefit to the Warfighter

- *Inexpensive Design Validation*
- *Fast Build Time of Full-Scale Mockups*
- *Assembly Modeling for Form, Fit, and Function*
- *Reduced logistical burden, BIG Army & locally*
- *Increased force effectiveness and reduce operations, support, maintenance, and liability costs*
- *Improved Testing Capabilities*
- *Optimized R&D / Systems Engineering*
- Speeds the development and commercialization of DoD-relevant biomedical inventions
- Supports innovative medical research

The MPDL takes pride in the innovative design and quality workmanship that has produced numerous products and several U.S. patents.

Precision Machining

Additive Manufacturing / 3D Printing

Transition Partners

Various Commercial Entities