WELDING

The Fabrication Cell's weld shop has capabilities for manual and semi-automatic welding and is capable of structural welding fabrication and non-destructive testing of welds and base materials. The weld shop offers assistance in the practical approach to design of weldments, evaluation of welding procedures and conducting procedure qualification. The welding material thickness ranges from 0.030" to an unlimited maximum thickness. Materials can be cut up to a maximum thickness of 6" for carbon steel. The types of materials welded and/or cut are carbon and alloy steel, stainless steel, aluminum, copper and copper alloys, and titanium.

Welding and Cutting processes used are: Manual shielded metal arc, Manual and automatic gas tungsten arc spot welding, Manual tungsten inert gas welding, Metallic inert gas welding, Resistance spot welding, Manual oxy-acetylene flame cutting, brazing and welding, Plasma cutting up to 5/8", Manual carbon arc gouging and Plastic Welding.

TENT SHOP TEAM

The Tent Shop Team fabricates tentage prototypes and supporting fabric accessories. The team designs and fabricates command posts, advanced solar covers, low profile/reduced signature individual surveillance shelters and other custom tent and cover designs. The team reviews tent and fabric cover drawing packages for accuracy or prior to release for acquisition purposes.

SEAM SEALING

The Tent Shop Team possesses heat sealing equipment for joining coated fabric panels and making moisture proof and CB panels.

TENT AND TENT ACCESSORY SMALL RUN PRODUCTION

The Tent Shop Team has the capability to produce limited quantities of items needed in the field or to replenish stock or satisfy reset. The team can build or refurbish tents and accessories such as passageways, insulated water bag containers, and shower and laundry transition endwalls and bootwalls.

RDECOM

DESIGN, ENGINEERING & FABRICATION TEAM (DEFT)

US ARMY NSRDEC
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DESIGN, ENGINEERING & FABRICATION TEAM (DEFT)

The Design Engineering & Fabrication Team (DEFT) provides CAD design, finite element analysis, test design, data acquisition strategies, Instron® testing, rapid prototyping, mechanical prototyping and integration, tent & fabric prototyping, and mechanical fabrication/machine shop capabilities. The team possesses state-of-the-art CNC machining equipment, sewing and seam sealing equipment and experienced personnel to produce high quality prototypes, integrated systems and production runs of aerial delivery, tent and fabric covers, field and food service equipment as well as custom shelter integrations and refurbishments. DEFT fosters strategic partnerships with vendors who provide additional capabilities such as anodizing, CARC painting, powder coating, hardening, annealing, and plastic injection molding.

ENGINEERING CELL

RAPID PROTOTYPING

The Engineering Cell has the ability to produce rapid prototypes directly from CAD drawings, create or design a model from an existing item or design a model to meet the customer's specifications.

LOAD TESTING

The Engineering Cell has an Instron® Model 5889 Load Frame with a 130,000 Lb capacity in tension or compression. Applications include proof testing, ultimate load testing, and failure analysis. Custom tests can be set up for customers to measure many failure variables. Systems tested have included airdrop systems and materials, structural components for shelters, and individual soldier equipment.

CUSTOM TEST DESIGN & SETUP

The Engineering Cell has multiple sensor types to measure temperature, pressure, humidity, force, light emission and fluid flow. Additional test controls include power supply control and switching. Example uses include Microclimate Cooling, Inflatable Shelters, and Lighting.

Additional Testing Services/Equipment Available:

- Environmental Chambers (high or low temperature conditioning)
- Bose® Dynamic Test System
- Ballistic Eyewear Test System

Engineering Services:

- Computer Aided Design (Solid Modeling) with SolidWorks®
- Finite Element Analysis for solution of Structural and/or Thermal problems with ANSYS®.
- Engineering Analysis with Computational Tools to include MATLAB® EXCEL® and custom software written with LabView® or Labwindows/CVI®.

FABRICATION CELL (A.K.A. "MACHINE SHOP")

The Cell is comprised of Engineering Technicians and tradesmen capable of fabricating and assembling a wide variety of systems and equipment ranging from specialty metal components for airdrop applications to plastic water tanks used for waste water collection to complicated Shelter integration projects from containerized kitchens and kitchen components to Command Post Shelters, including lighting, power, and communication wiring. The "shop" also specializes in refurbishing equipment damaged or degraded in the field or equipment returning for modernization and upgrades.

MACHINING

The Fabrication Cell's machine shop fabricates prototypes, models, equipment, or end items with metal, wood, plastic and/or composite materials using the latest Computer Numerically Controlled (CNC) machining and cutting equipment. Mastercam® computer aided manufacturing software is used to ensure repeatability and produce tight tolerances to meet customer's needs.

WATER JET CUTTING

The Fabrication Cell's machine shop possesses a Flow Corp. water jet cutting system with a cutting platform of 5'×10'. The system has the capability to make complex cuts in virtually all materials up to 6" in thickness, e.g. composites, metals, stone and ceramics. The system cuts materials by driving water mixed with abrasive garnet through a small nozzle at 60,000 psi.

SHEET METAL

The Fabrication Cell has the capability to make anything from a simple panel to a complex stainless steel mobile kitchen using a variety of sheet metal material types and thicknesses from lightweight aluminum, mild steel, and alloy steel, to highly corrosion resistant stainless steel and other sophisticated sheet metals. The Cell possesses a 225-ton computerized press brake, can cut up to 3/8" steel with 4 foot manual or 10' computerized power shear, has the capability to roll steel up to a 1/4" thick, perform notching and punching up to 1/4" steel, and perform all types of soldering and riveting.

LASER ETCHING

The Fabrication Cell possesses a laser etcher capable of etching designs into wood, acrylic, plastic, Delrin® and other materials.

WOOD & PLASTICS

The Fabrication Cell's wood and plastic shop provides customers with a wide variety of prototype and modeling capabilities. Wood and Plastic Capabilities include: Wood patterns and models, thermoformed plastic fabrication up to 30"×36", scale models of end items or equipment, thermoformed mold making in epoxy, and silicone rubber or urethane elastomers.