National Aeronautics and
Space Administration

Fabrication

Johnson Space Center (JSC) fabrication facilities provide the resources, materials, and labor necessary to produce quality flight, ground support, and prototype hardware. JSC offers experience and expertise in precision machining, sheet metal, welding, cleaning, hydrostatic testing, coatings, soft goods, metal finishing, models and plastics, and assembly.

Services Provided

- Flight and unique hardware fabrication
  - Specialize in new and one-of-a-kind hardware
  - Fabrication direct from model or print
- Composite manufacturing
  - Advanced composite materials, such as graphite or boron, in construction of advanced space structures
- Precision machining and R&D
  - Manual and CNC lathes and mills
  - Capacities from micro to large 3- and 5- axis milling
- Welding
  - GTAW, GMAW, SMAW, silver brazing, and friction stir welding
- Precision sheet metal fabrication
- Softgoods fabrication
  - Expandable structures
  - Softgoods for EVA hardware and tools
  - MMOD ballistic debris shields
- Metal finishing and surface preparation
- Models and plastics
- Precision cleaning (Class 50 – 1000)
- Electronic hardware manufacturing – printed wiring boards and assemblies

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Fabrication Capabilities

Lathes

- X, Y, and Z travel up to 22″ x 6″ x 40″

Milling

- 3-, 4-, and 5-axis milling machines
- X, Y, and Z travel up to 64″ x 40″ x 32″

EDM

- 2-wire and 1 RAM EDM
- X, Y, and Z travel up to 31″ x 21″ x 19″

Additive Manufacturing

Build fully dense structures directly from 3D CAD model

- Rapid alloy screening
- Composite research
- Rapid fabrication

Electronics Fabrication

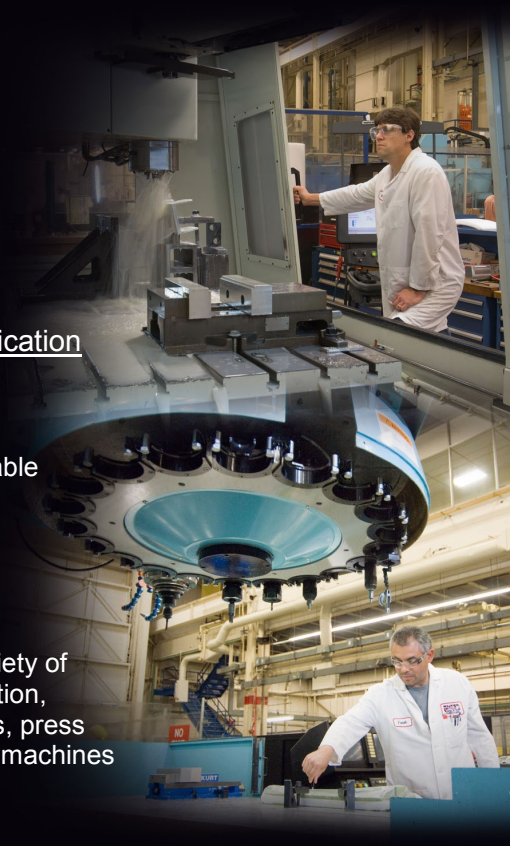
- Printed wiring board and assembly fabrication
- Vacuum deposition parylene conformal coating
- Soldering, crimping, and staking
- Prototype microwave circuit board fabrication

Welding

- Certification in accordance with AWS B2.1
- MIG, TIG, pulse MIG, and stick welding
- Qualifications for GTAW, GMAW, SMAW, and silver brazing
- Orbital tube welding

Friction Stir Welding

- 5 axes, 7 degrees of freedom
- 25″ x 40″ x 80″ work envelope
- High strength, low residual stress welds
- Dissimilar metals joining
- Ferrous and nonferrous metals



Composites Manufacturing

Capability to develop advanced composite materials application, such as graphite, boron, and numerous plastic media type materials, in the construction of advanced space structures

Softgoods and Inflatables Fabrication

- Multilayer insulation
- MMOD ballistic debris shields
- Inflatable habitats and expandable structures
- Thermal covers and containers

Metal Finishing

Capabilities include passivation, pickling, color anodizing, alodine coating, chemical concentration testing, paints, lacquers, and lubricants

Sheet Metal Fabrication

Sheet Metal Shop with a wide variety of equipment for sheet metal fabrication, including manual and CNC shears, press brakes, and high speed punching machines

Precision Cleaning

Capability to precision clean hardware, components, and aircraft parts to Class 1000 precision level

Nondestructive Testing

- Real-time, digital, and film x-ray
- Automated ultrasonic (conventional and phased array)
- Fluorescent penetrant, magnetic particle, and eddy current testing
- Infrared thermography

Product Verification

Provide quality inspection expertise, including

- CMM operators
- Dimensional inspection
- Softgoods specialists

We have developed customer-friendly agreements to streamline business relationships and are eager to share our unique facilities and expertise with new customers. We invite your inquiries regarding application or adaptation of our capabilities to satisfy your special requirements. Briefings on general or specific subjects of mutual interest can be arranged at JSC or at your business site.

Facility Testing Information
http://jsceng.nasa.gov

Point of Contact
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