

# ON-SITE FABRICATION

Full-Service Facilities



The Space Dynamics Laboratory (SDL) offers full-service fabrication facilities on site, including a comprehensive machine shop and laboratories for optical, mechanical, and electrical system design and assembly. SDL also houses ISO 5 cleanrooms with full contamination control services, high-bay integration areas, environmental test facilities, and calibration and characterization facilities.

SDL's on-site precision fabrication services provide these key benefits:

- Shorter turnaround time
- Lower cost
- Increased collaboration between engineers, designers & fabrication/AI&T specialists

## MECHANICAL FABRICATION

SDL's in-house machine shop offers 12,255 ft<sup>2</sup> of modern fabrication equipment. All hardware not procured from selected vendors is fabricated on site.

### FEATURES

- Computer numeric control (CNC) machine capability
- Computer-aided precision machining (CAM)
- State-of-the-art 3D milling machines
- 5th axis machining capabilities
- Electrical discharge machining (EDM)
- Vast in-house materials inventory to meet immediate requests
- Two coordinate measuring machines (CMMs) for precision measurements in three dimensions of mechanical & optical assemblies (one housed in a ISO 5 [Class 100] cleanroom)

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### ELECTRONICS ASSEMBLY & TEST

SDL engineers have been building and modeling flight electronics since 1959. The focus of all efforts at SDL's Electronics Assembly Laboratory (EAL) is to provide high reliability, quality, and innovation from prototype to flight or deployment.

#### FEATURES

- One-of-a-kind printed circuit boards
- Small production runs of high-reliability boards
- NASA-certified trainers on staff
- Staff trained to NASA & IPC workmanship standards in:
  - Hand soldering
  - Surface mount technology (SMT) soldering
  - Cable & harness development
  - Electrostatic discharge (ESD) prevention practices
  - Conformal coating (including IPC rework capabilities)
- Lead-free production of fine pitch & ball grid array components



### 3D PRINTING

3D printing is an additive manufacturing process in which layers of plastic resin are deposited on a precision-driven tray. SDL uses 3D printing for conceptualization, prototyping, and end-item products.

#### FEATURES

- Lower cost & no material waste; an economical alternative to subtractive manufacturing for expensive or complex parts
- Faster option than subtractive manufacturing in most cases
  - Less setup time
  - Ability to construct parts unattended
- Ability to create parts in ABS, ASA, GF30-PP, igus® iglidur®, nPOWER™ (PPS), Nylon 645, PACF (Carbon Fiber Filled Nylon), PCABS, PEKK, TECH-G™, TPU
- Optimized resolution (=finish) & density (=strength) for each application
- Three-extruder print head, allowing multiple colors to be printed at once
- Multiple material colors available
- Part sanding & painting for enhanced presentation quality
- Constructed parts fit within a 24" x 13" x 20" volume (larger parts are divided into portions that fit within this measurement & then bonded together)
- Expanded design possibilities; access to cutting tools is no longer a limitation

