The Electronics Assembly Laboratory (EAL) at the Space Dynamics Laboratory (SDL) offers assembly of one-of-a-kind printed circuit boards, small production runs of high-reliability boards, and a variety of electronics products and services delivered to the most demanding quality standards. Engineers at SDL have been building and modeling flight electronics since 1959. During this time, the EAL has performed space-qualified electronics design and fabrication, functional and environmental testing, and software development for projects including the Wide-field Infrared Survey Explorer (WISE), Spatial Infrared Imaging Telescope (SPIRIT III), Sounding of the Atmosphere using Broadband Emission Radiometry (SABER), and hundreds of other programs.

SDL also performs printed circuit board design and layout, field-programmable gate array (FPGA) programming in VHDL, and embedded software/driver development and updates for intelligence, surveillance, and reconnaissance (ISR) applications. The EAL has built boards for military applications, such as the Advanced Threat Detection Processor (ATDP), EyePod, Sky Lynx, and the Advanced Reconnaissance Compression Hardware (ARCH).

ONSITE LABORATORY

The EAL is located at SDL headquarters in a research complex near the Utah State University campus in North Logan, Utah. This location provides SDL the following primary benefits:

1) **Quick response and turn-around.** Laboratory personnel are able to work directly with engineers and can quickly respond to any necessary changes in design or board construction. This can include assembly, testing support, rework, repair, conformal coating, and modification of Printing Wiring Assemblies (PWA).

2) **Certified personnel.** The EAL provides in-house IPC (Institute for Interconnecting and Packaging Electronic Circuits) and Level B NASA-certified trainers. The EAL’s team of technical professionals is trained to NASA workmanship standards. EAL employees are experienced, highly skilled and NASA 8739 certified in conformal coating, crimp cable and harness assembly, ESD (electrostatic discharge) prevention practices. Training also includes IPC SMT, hand soldering, and rework capabilities. In addition, all EAL staff are trained as operators/inspectors.
CAPABILITIES
The EAL specializes in PC board surface mount technology (SMT) and thru-hole assembly, lead forming, conformal coating and staking, and cable/harness assembly and inspection. The EAL also provides lead-free production of fine pitch and ball grid array, and bottom termination components (BTCs), including column grid arrays (CGA).

HIGHLIGHTS OF SDL'S EAL INCLUDE THE FOLLOWING:
• ESD-protected environment
• Automatic pick and place machine
• Semiautomatic pick and place machine
• Lead and lead-free solder R&D vapor phase reflow ovens
• Convection rework stations
• X-ray and optical BGA inspection equipment
• Nitrogen generation and universal nitrogen purge cabinets for EEE parts storage/inventory
• Air-vac wave solder stations
• Stereomicroscope's including CCD camera and printer
• JBC hand soldering stations
• Adherence to NASA-STD-8739.1,4
• Trained to IPC- J-STD-001ES
• Conformal coat and cutting equipment
• Conformal coat and staking clean room

QUALITY ASSURANCE
SDL's overall quality system is registered to the ISO9001:2008 standard. Under these guiding principles, the EAL is dedicated to providing high reliability, overall quality and innovation from prototype to flight or deployment, with a focus on producing products on time and at cost to meet customer requirements.

FACILITIES
The EAL specializes in the assembly of high quality standard boards. The EAL is experienced with Column Grid Array assemblies up to 1752 columns, BGAs, and BTCs. The lab also boasts high quality Surface Mount Technology (SMT) assembly and produces low-volume SMT boards. In addition, the EAL manufactures cable and harness assemblies and performs high potential testing.

EQUIPMENT INCLUDES:
• Stencil printers
• Mycronic My200 automatic pick and place machine
• ESSEMTEC semi-automatic pick and place machine
• Vapor phase reflow oven RD2
• Metcal APR 5000XL and Scorpion rework equipment
• Unit Design ABC 2500 board cleaner
• JBC solder/rework equipment
• Glenbrook X-ray and Metcal optical BGA inspection equipment
• Air-vac BCBRM15 selective solder
• Plato solder pots SP-500
• Leica stereomicroscopes
• ZT-1 PCB preheater
• JBC preheater
• Thermometer fluke
• Tenny Jr. environmental chamber for bake out
• Lead straightener and co-planarity tool
• Desiccator cabinets (nitrogen cabinets)
• Cirrus 3500 cable pull tester
• Lab humidification (humidifier)
• ZT-6 air fountain
• Ultrasonic stencil cleaner
• Lead forming equipment