

Battel Engineering

10020 North 58th Street

Scottsdale, AZ 85253

Phone: 480-991-9747

Fax: 480-991-9748

bateng@earthlink.net

www.battel-engineering.com

BE/00093/456W October 2010

Battel Engineering provides design consulting and engineering support services for universities, government agencies, and aerospace companies associated with the development of high-reliability space instruments, avionic components and spacecraft systems. Areas of specialization:

Management Consulting - 31 years experience engaged in the management of complex space projects at both universities and aerospace companies. Range of expertise includes the technical organization and management of projects, preparation of Work Breakdown Structures, quality assurance and documentation program implementation, project scheduling and planning, and the preparation or evaluation of cost and technical proposals.

Electronic Design - 33 years experience designing and developing high-reliability precision analog electronics including low-voltage and high-voltage power supplies. More than 100 different power supply designs with over 400 units built and 200 units successfully flown for NASA and the Department of Defense.

System Engineering - Extensive systems engineering and project engineering experience in the development of space instrumentation and spacecraft systems. Instruments developed include ion and electron spectrometers, mass spectrometers, emission control systems, gas chromatograph systems, x-ray imagers, photometers, UV detectors, solar telescopes and extreme-ultraviolet telescopes.

Technology Support - Expertise in high voltage systems, electric-field control methods, mechanical and ceramics manufacturing, electronic packaging, electronic hybrids, RF MMIC's, EMC, PC layout, magnetics design and manufacturing, harness and interconnect design, space qualified materials, radiation effects, cleaning processes, contamination control, environmental testing, and the selection and screening of high-reliability electronic parts.

Laboratory Testing - Fully equipped electronic laboratory for development and testing of precision high performance analog instrumentation including high voltage and low voltage power systems. Other capabilities include component burn-in, thermal testing and EMC testing.

System Review – Technical and management review panel participation including Red Team, Tiger Team, Independent Review Team, Standing Review Board and Failure Review Board work for NASA, University and Industrial clients.