Advanced Cooling Technologies, Inc.
Booth Space: 26
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www.1-act.com

ACT specializes in advanced thermal technology development and custom thermal product design and fabrication. Heat pipes and two-phase heat transfer loops are particular areas of expertise. Current ACT customers are in aerospace, military, commercial and government R&D sectors. A few example applications in these sectors includes electronics cooling, satellite thermal control, and power systems thermal management. Our products are currently supplied to customers in ten different countries.

Within our office, laboratory and manufacturing spaces we are capable of performing complex design, analysis, manufacture and testing work including CFD, FEA, 3-D solid modeling, and hardware manufacturing and testing facilities to carry out the work in the proposed project.

ACT’s quality system is certified to ISO 9001:2000 for terrestrial related industries and AS9100-B for the aerospace industry.

Aeroflex Colorado Springs
Booth Space: 29
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Aeroflex Colorado Springs is a supplier of integrated circuits and custom circuit card assemblies. We supply a broad range of standard products for HiRel applications including our new UT699 LEON 3FT Microprocessor and SpaceWire 4-Port Router, logic, FPGAs, memories, serial communication interfaces for MIL-STD-1553 (databus and transceivers), microcontrollers and an LVDS and SpaceWire family of products. Our RadHard Digital and Mixed-Signal ASICs handle design complexities up to 3,000,000 usable gates, offers advanced technologies down to 0.25um and are RadHard to 1 Mega rad. Aeroflex offers Circuit Card Assembly capabilities, which consists of full assembly, test and coat in a high mix/low to medium volume operation.

Aeroflex Motion Control
Booth Space: 27
Karl Anderson
350 Kennedy Drive
Hauppauge, NY 11788
Aeroflex Motion Controls offers a wide range of capabilities in the design and manufacture of components and systems for the space market. Our products include rotary and linear actuators, brushless DC motors, gimbals, scanners and electronic controllers. Wherever precision, power and packaging goals need to be manufactured in a design-to-cost environment, Aeroflex is globally competitive.

Aeroflex has been providing motion control products since the early 1940's. Aeroflex entered the motor business in the early 1950's to fulfill internal needs for higher performance motors for gimbaled applications. Aeroflex provides stepper (both hybrid and permanent magnet), brushless, full and limited-angle torquers, arc segment, zero-cogging, solenoid and voice coil motors.

Precision gimbals for pointing and tracking, stabilized platforms and pedestals are a core of the Aeroflex Motion Control division. Coupled with our electronic motion controllers and adaptive software, Aeroflex can provide a complete turn-key multi-axis system to meet your requirements.

**Aeroflex Plainview**
**Booth Space: 25**
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Aeroflex Plainview is a manufacturer of advanced microelectronic Multi-Chip Modules (MCMs) for airborne, space, shipboard, ground based avionics. Our full breadth of space related products include our new line of Voltage Regulators and Analog Muxes, high speed low power PWM controller, Motor Driver, Resolver-to-Digital converter, and Transceivers

Our latest product release is a Battery Electronics Unit (BEU), a Li-Ion battery balancer and cell telemetry electronics unit. It performs autonomous cell balancing, high cell limit indication and low cell limit indication. A 1553 bus is used for individual cell telemetry and commands including closure of a cell bypass relay in the eventuality of a cell failure, and connecting the battery's reconditioning load. The BEU system has fully redundant telemetry, control and balance functions.

Aeroflex also offers a variety of Broadband, RF and Microwave products for aerospace and space applications.

**Aerostar International, Inc.**
Booth Space: 10
Deb Husby
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www.aerostar.com

Reliable proving platforms for your satellite program are what Aerostar International has been manufacturing for over 60 years. We are world leader in the design and fabrication of high altitude balloons for high altitude operations, low and high altitude airships and tethered aerostats. Strategic partnerships with the foremost scientific research facilities allow us to expand our expertise allowing us to manufacture applications which accomplish our customer’s goals.

High altitude balloons, airships and tethered aerostats are used for validation of your equipment prior to deployment. Some of our products fly at altitudes higher than aircraft can fly and lower than a satellites orbit, enabling long duration flights lasting from hours to days. Scientific data collection, communications and intelligence gathering all are accomplished on balloons. Our high altitude research balloons carry payloads from a few pounds to up 6000 pounds and can reach altitudes up to 45 kilometers. Our products can successfully fly your payloads and our flight crews provide successful operations.

Air Force Research Laboratory, Space Vehicles Directorate
Booth Space: 44
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With headquarters at Kirtland Air Force Base, N.M. and an additional research facility at Hanscom Air Force Base, Mass., the Space Vehicles Directorate develops and transitions space technologies for more effective, more affordable warfighter missions. The directorate also leverages commercial, civil and other government resources that ensure America's defense advantage. Primary focus areas include: radiation hardened electronics; space power; space structures and control; space based sensing; space environmental effects; autonomous maneuvering; and balloon and satellite flight experiments.

Air Force Research Laboratory, University Nanosat
Booth Space: 51T
Abbie Stewart
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Kirtland AFB, NM 87117
The University Nanosat Program is a joint program between the Air Force Research Laboratory's Space Vehicles Directorate (AFRL/RV), the Air Force Office of Scientific Research (AFOSR), and the American Institute of Aeronautics and Astronautics (AIAA). The objectives of the program are to educate and train the future workforce through a two-year national student satellite design and fabrication competition and to enable small satellite research and development (R&D), payload development, integration and flight test. Each two-year cycle takes the universities through three hands-on training classes and six design reviews. The two-year cycle culminates in a Flight Competition Review where one university's satellite is chosen to continue through flight I&T, launch and on-orbit activities. The program is currently in the Nanosat-6 competition.

**Aitech Defense Systems, Inc.**  
**Booth Space: 40**  
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Aitech is a leading supplier of radiation tolerant and radiation hardened computer systems optimized for harsh environments. The product offering includes off-the-shelf cards, powered enclosures, subsystems and hardware integration services for defense and space applications. Aitech promotes open architecture in standard industry and military-specified form factors such as VME, CompactPCI and PCI Mezzanine Card (PMC). Celebrating it's 25th Anniversary this year, Aitech has a long and impressive track record delivering superior cost-performance, reliability, and time-to-market benefits to our worldwide customers in launch vehicle, missiles, satellites and human space flight applications. With full real-time operating systems' compatibility across various pedigrees of our off-the-shelf products, Aitech has the solution you are looking to field in high altitude, near space, LEO, MEO, GEO, interplanetary and deep space environments.

**Andrews Space**  
**Booth Space: 72**  
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Andrews Space, Inc. is a privately held business founded in 1999 to be a catalyst in the commercialization and development of space. Andrews is an AS9100B certified company and a best value integrator of aerospace systems, developer of advanced aerospace products and technologies, and provider of innovative solutions and technical services. Our four lines of business are: Integrated Systems, Subsystems & Components, Advanced Technologies and Technical Services.

**ATK**  
**Booth Spaces: 63, 65, & 67**  
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ATK is a world leader in the manufacturing of small satellites and large satellite subsystems, hypersonic engines, and rocket motors for spacecraft launch and orbit transfer—programs critical to bettering our understanding of both earth and space. ATK has approximately 17,000 employees and annual revenue in excess of $4.5 billion.

**Ball Aerospace & Technologies Corp.**  
**Booth Space: 69**  
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Ball Aerospace develops and manufactures spacecraft, advanced instruments and sensors, components, data exploitation systems and RF solutions for strategic, tactical and scientific applications in support of the DoD, NASA and other U.S. government and commercial entities. Ball Aerospace’s culture and capabilities foster the agility to innovate, strength to deliver.

**Boeing**  
**Booth Space: 32**  
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Nearly a century of expertise and continuing innovation make Boeing the leader in the aerospace and defense industry. Boeing combines global resources and a spirit of innovation to provide
best-of-industry, network-enabled solutions to military, government and commercial customers around the world.

From battle-proven aircraft to space systems and beyond, Boeing is the world’s leading space and defense business and the world's largest and most versatile manufacturer of military aircraft. Boeing also is the world’s largest satellite manufacturer, an emerging leader in support systems and services, and a leading global supplier of human space exploration systems and services.

**Broad Reach Engineering**  
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Broad Reach Engineering is a leading provider of modern Rad-Hard, and Rad-Tolerant high performance, high reliability miniature avionics and real time software. Our new GPS receivers are called ‘Pyxis’ are tri-frequency L1/L2/L5/(E5a) compatible with Galileo. These GNSS receivers are designed to work in LEO, GEO & HEO orbits, and available to perform radio occultations for atmospheric soundings. Our new 400MIP class PowerPC Rad-Hard processor is nearing completion with commercial prototypes available now. Most of our avionics are designed for 3U cPCI compatible digital interface cards, processor boards, DSPs, solid state memory, motor controllers, power control and peripheral cards with common interfaces, as well as specialized I/O for unique payload requirements. Our goal is to facilitate the success of scientists and experimentalists through high performance avionics and embedded software systems that directly improve the mission and scientific bottom line.

**Busek Co. Inc.**  
**Booth Space:  80**  
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Electric propulsion systems are Busek’s core business. We are the leading source for Hall thruster and micropropulsion technologies. Our principal products include: Hall effect thrusters (200W to 20kW), colloid thrusters, micro-pulsed plasma thrusters, thermionic cathodes and carbon nanotube field emission cathodes. We also provide customized power electronic systems and depending on customer requirements can deliver fully integrated propulsion systems. Other advanced devices under development at Busek include micro-ion engines, micro-resistojets and air-breathing Hall thrusters. Busek also has extensive vacuum test chambers equipped with...
state-of-the-art diagnostic, performance measuring and plume instrumentation to support thruster development and customer sponsored testing.

Busek’s propulsion products have flight heritage. Our 200W Hall effect thruster was successfully operated for one year on-orbit during the TacSat-2 mission. Our micro-PPT and continues to operate successfully on FalconSat-3, and our colloid thruster has been delivered to JPL for integration on the NASA/ESA ST-7 LISA Pathfinder satellite.

**CDA Intersorp**  
**Booth Space: 59**  
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CDA InterCorp’s Controllable Drive Actuators, Eddy Current Dampers, and complementary Rotary Transducers are being utilized in many performance critical applications for aerospace customers. CDA’s standard modular design concept, with off-the-shelf-technology, provides high reliability aerospace-heritage components with unparalleled performance per unit volume. Every module within CDA’s product line is an established, qualified component. A new application can derive the benefit of custom performance with qualified modular hardware. While critical internal materials and processes are standard, the external mounting configurations and winding characteristics can readily be tailored to satisfy specific system performance and mechanical interface requirements. Most of our current applications are mission critical and some are even flight safety critical. CDA actuators were selected to deploy the corrective optics on the Hubble Space Telescope and have been selected for use on numerous applications on NASA’s James Webb Space Telescope.

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Clyde Space is a leading supplier of small and micro spacecraft systems. Our core activities include the design and production of high performance power subsystems, lithium polymer batteries and high efficiency solar panels for small and miniature satellites. We are also active in the development of Attitude Control and Determination Systems and are developing advanced
nanosatellite platforms based on the ‘CubeSat’ standard in conjunction with other leading academic and commercial organisations around the World.

The team at Clyde Space has extensive experience in the design and production of systems for small satellite missions and our off-the-shelf, heritage products range from our CubeSat power system for 1kg spacecraft up to our rad-hard SmallGEO power system for ESA/NASA type programmes up to 5kW. Our combined experience in over 40 space programmes enables us to support missions at all levels, from conceptual design, development, integration, through to analysis of data from on-orbit operations.

**Colorado Satellite Services**  
**Booth Spaces: 47 & 48**  
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EyasSat™ (patent pending) is a modular, working satellite for the classroom. Colorado Satellite Services markets the EyasSat and works with universities all over the world to give their students hands-on experience with reusable, low-cost hardware that is carefully designed to mimic the subsystems of flying spacecraft. The included EyasSat curriculum material gives students at any level the chance to touch and feel power, communications, data handling, ADCS, and experiment modules without fear of damaging space-rated components. The U.S. Air Force uses EyasSat to help their satellite operations personnel gain a practical understanding of the spacecraft they work with every day. The CSS engineering team has a half dozen spacecraft on orbit to its credit, and has used this experience to bring satellite technology into the classroom. Stop by and see how you can use EyasSat semester after semester to give your students the practical experience that cements their theoretical knowledge.

**Comtech AeroAstro**  
**Booth Spaces: 73 & 75**  
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www.AeroAstro.com

Comtech AeroAstro’s (CAA) 20-year heritage is one of engineering innovation, simplicity of design, reliability, and rapid space-readiness well above the industry standard. Specializing in micro and nanosatellites and related technologies, CAA’s experience spans a range of capabilities.

CAA has developed and launched a variety of highly capable spacecraft platforms less than 200kg, including STPSat-1 on the first ESPA launch in March 2007 and STPSat-2 delivered in
December 2008. Our spacecraft and components incorporate modular architectures and plug-n-play technologies in an efficient, agile, and highly responsive design and integration environment.

Leveraging our experience with space-based communications, we developed a cost-effective low-data-rate communications system. The Sensor Enabled Notification System (SENS) transmits data over the Globalstar Satellite Network using specialized appliqués, designed and built by CAA, to allow reception of the simplex data transmissions. SENS is now operational throughout the United States, Canada, Mexico, Australia, the Middle East, Asia, and South America.

**Design Net Engineering**  
**Booth Space: 14**  
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Design Net Engineering specializes in the design, development and manufacture of custom electronics and associated software for aerospace instrumentation and avionics. Our systems design approach with supporting disciplines including FMECA, Structural, Radiation, and Thermal analyses, consistently meets the demanding life cycle needs of customers. Our instrumentation and electronics designs supported NASA missions such as the Floating Potential Probe (ISS), FUSE (APL), COS (GSFC Hubble), LTMPF (JPL), NPP (GSFC) as well as DoD programs such as PnPSat.

DNet’s core strengths in instrumentation and the supporting avionics hardware and high reliability software are coupled with an exceptional record for meeting aggressive schedules. Our internal “R & D” programs support the DoD responsive space initiative, specifically the Operationally Responsive Space program resulting in highly modular and configurable Plug and Play architectures that reduce cost and increase reliability.

Design Net is also very active within the rideshare community having developed substantial enabling technologies and flight hardware.

**Goodrich ISR Systems**  
**Booth Space: 79**  
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Goodrich ISR Systems is a leading supplier of mission critical hardware for various launch vehicles, such as Atlas, Delta, and Titan, as well as missile defense programs and spacecraft platforms. Products such as flight computers, command & control, telemetry, up link decoders, data acquisition, encryption, thrust vector control, stage separation control, flight termination and bus monitoring systems are engineered and produced by ISR Systems in Albuquerque. Our 50 years of experience in the development of rugged, man-rated and miniature avionics qualifies Goodrich ISR Systems as the supplier of choice for your Launch Vehicle, Missile and Spacecraft system requirements.

Instarsat, LLC  
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Instarsat is an innovative space technology company that is developing a new generation of small and medium class satellites for commercial, civil, and military markets.

To address the emerging demand for more cost-effective space systems, Instarsat’s focus is on providing high performance satellites and sub systems that encompass breakthrough improvements in quality and reliability.

Because of our unique product development program, Instarsat brings to the space marketplace value-driven space systems with proven heritage that meet the needs and exceed the expectations of a broad range of customer mission requirements and key stakeholders.

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ISIS – Innovative Solutions In Space is a company fully dedicated to small satellites. We provide a range of products and services for micro- and nano-satellite developers. The R&D activities of ISIS focus on microsatellite platform technology and include TM/TC systems, software defined radio, highly integrated sensor suites, micro-electronics, inflatable technologies, and lightweight structural parts.
ISIS also acts as a launch broker for spacecraft up to 150 kilograms and aims to provide piggyback launch opportunities twice per year for small clusters of nano-satellites. Furthermore, ISIS provides related services and products such as acceptance testing and launch adaptors. The company currently supports the CubeSat community with launch opportunities and off-the-shelf products such as a CubeSat structure, VHF/UHF transceiver and Ground Station. These products are available through the company web shop www.cubesatshop.com. Custom solutions can be provided as well by our engineers in close cooperation with the customer.

**L-3 Telemetry-West**  
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L-3 Communications is a prime contractor in Command, Control and Communications, Intelligence, Surveillance and Reconnaissance (C³ISR), Government Services, Aircraft Modernization and Maintenance (AM&M) and has the broadest base of Specialized Products in the industry. L-3 is also a major provider of homeland defense products and services for a variety of emerging markets.

**LaBarge, Inc.**  
**Booth Space: 43**  
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LaBarge, Inc. is a leader in precision electronics manufacturing for a diverse customer base. LaBarge-built high-reliability hardware and systems support critical functions where durability and peak performance are vital, including military aircraft, radar systems, satellites and satellite launch vehicles, and industrial applications.

LaBarge provides customers with sophisticated electronic and electromechanical products through turnkey electronics manufacturing services. The company’s broad-based capabilities include high-reliability cables and interconnect systems, printed circuit cards, box-level assemblies, custom enclosures and electromechanical assemblies, backed by design and engineering support, program management, flexible manufacturing and testing.

Lockheed Martin Space Systems  
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Lockheed Martin has designed, built and launched over 150 small satellites, 100 percent of which have met or exceeded their design life. With a broad inventory of standardized and fully qualified components, and an established supply chain, Lockheed Martin can quickly field reliable systems, for any mission need. Leveraging a 50 year heritage, Lockheed Martin is actively maturing small satellite technologies to eliminate cost, schedule and weight drivers and improve satellite performance.

Built on experience, powered by innovation, Lockheed Martin provides a wide range of capabilities to meet any customer mission focus - large, small, micro or nano.

MDA  
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MDA is an information systems and products company. Alliance Spacesystems (an MDA company) is a leading supplier of space robotics, mechanisms, and structures, notably the robot arms on the Mars Exploration Rovers and Phoenix Mars Lander.

This powerful combination puts MDA at the forefront of small and conventional satellite missions, ground systems, airborne surveillance, defence applications and training, and is a leading provider of mechanical systems engineering, custom design and fabrication in composites structures, space robotics and mechanisms, and mechanical analyses for systems operating in extreme environments.

A premier systems integrator, MDA delivers turnkey solutions that are the foundation of effective decision making. MDA delivers innovation and long-term thinking through its advanced solutions for interplanetary spacecraft, remote sensing and communications satellite missions, and terrestrial applications.
The company annually generates revenues in excess of C$1 billion and employs over 3,200 people in Canada, the USA, and the UK.

**Microcosm Astronautics Books**

**Booth Space: 4**

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Our unique bookstore carries a huge selection of astronautics books, over 300 titles! These include our world renowned *Space Mission Analysis and Design* and *Reducing Space Mission Cost*. We pride ourselves on supplying the space industry with high quality books at very low prices, and providing our professional assistance in finding the right book for your astronautical needs. It's easy to order on-line, by phone, or by email or visit us from 8am-5pm PST, Monday through Thursday at our near-to-LAX location. Our goal is to make access to our books and services incomparable. We also have wholesale prices for retailers and institutes of higher learning.

**Microsat Systems Canada, Inc.**

**Booth Space: 77**

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Microsat Systems Canada Inc. (MSCI) is a space engineering company whose products include microsatellites, attitude control systems, and their components. At the level of complete microsatellite systems, MSCI is Prime Contractor for CSA’s highly-successful MOST space astronomy microsatellite operational since June 30, 2003. MSCI is also Prime Contractor for the next Canadian microsatellite, NEOSat for space surveillance. Our Multi Mission Microsatellite Bus is the baseline microsatellite standard for the Canadian Space Agency. At the subsystem level, MSCI provides ACS engineering and design services to satellite manufacturers world-wide, specializing in high-performance, 3-axis stabilized attitude control systems and subsystems for micro and small satellites. At the component level, MSCI’s specialty is low-cost, high-performance ACS products. Two models of the MSCI MicroWheel™ Reaction Wheel (0.2 and 1.0 Nms) are available (many are flying and many more have been delivered including NPSAT, MDA-DSE, STP-SIV, XSAT, Egyptsat, Proba-2, QuickSat, MS-28).

**Miltec, A Ducommun Company**

**Booth Space: 36**
Ducommun/Miltec provides a full range of services and products to support the development, integration, test, and manufacture of missile and space systems, aircraft, and related products.

Moog CSA Engineering
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Moog CSA Engineering provides products in vibration suppression and precision motion control including launch load attenuation systems, secondary payload adapters, ground test equipment, vibration generators, hexapod positioners, flight motion simulators, finite element analysis, vibration damping, control systems and dynamic testing. Our SoftRide launch load alleviation systems reduce vibration and shock loads on whole satellites. The EELV Secondary Payload Adapter (ESPA) Ring is part of the LCROSS mission to the moon and allows up to six secondary payloads to be launched with a larger primary on Atlas V or Delta IV.

Moog Inc. has evolved from a producer of components to an integrator of systems, as a result of our commitments to mission success and comprehensive project management. Within the space market, we provide integrated systems and components for satellite propulsion and mechanisms, space-rated electronics and actuation systems for both launch and human-rated space vehicles, and flight controls for tourist-class space vehicles.

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Today, NEA is recognized as an innovative company specializing in the design, development, qualification and production of non-explosive Separation Mechanisms, Battery Cell Bypass Switches, Electrical Interconnect Devices and Non-pyrotechnic Valves for the Space and Defense industries. Throughout the past several years NEA has grown to become a proven

NEA has successfully addressed a need expressed in recent years by both the National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA) to find a preferred alternative to the traditional explosive actuator. NEA satisfied NASA’s objective by developing reliable, fast-acting, sure release, low shock output, non-explosive Separation Mechanisms with redundant release features.

**Operationally Responsive Space**

**Booth Space: 6**
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The Operationally Responsive Space Office is working with the broader space enterprise to provide assured space power focused on the timely satisfaction of Joint Force Commanders’ needs. The overarching objective of the Office is to address emerging, persistent, and/or unanticipated needs through timely augmentation, reconstitution, and exploitation of space force enhancement, space control, and space support capabilities.

The ORS Office is implementing a rapid innovation process using a Modular Open Systems Architecture (MOSA) to facilitate rapid acquisition, integration, test, deployment, and operations of space assets into the current space architecture in operationally relevant timelines. The ORS Office focuses on material (spacecraft, launch, range, payloads) and non-material solutions (business model, acquisition, policy, industrial base, training, command and control, tasking, exploitation, processing, & dissemination, concept of operations), and collaborates with national and international agencies to leverage existing investments and develop long-term partnerships.

**Orbital Sciences Corp.**

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Orbital Sciences Corporation is a leading manufacturer of smaller spacecraft, launch vehicles, and human spaceflight systems. Orbital supplies low Earth orbit (LEO) spacecraft, geosynchronous Earth orbit (GEO) satellites, and planetary spacecraft for Earth and space science, communications, national security, remote-sensing, and technology demonstration missions. Orbital also develops and manufactures launch vehicles for boosting small-
medium-class satellites into low-Earth orbit, and missile defense interceptor and target launch vehicles. Orbital is designing and building the Launch Abort System for NASA's Orion Crew Exploration Vehicle, Abort Test Boosters for validating the system, and is partnering with NASA to develop the Commercial Orbital Transportation Services system for the International Space Station. Orbital provides a wide range of space-related technical services, including specialized analytical, engineering and production services. Since 1982, Orbital has developed, built and delivered 690 satellites, launch vehicles and other space systems. Nearly 200 additional systems are under contract through 2015.

**Planetary Systems Corporation**  
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Planetary Systems Corporation (PSC) provides lightweight, cost-effective and test verified separation systems for the aerospace industry.

The Lightband separation systems enable payload deployment and missile staging at lower cost with less shock than any system available today. PSC has invested over two million dollars and over eight years of R&D to develop the Lightband. PSC is entirely US-owned and operated, with all products designed, developed, built and tested at a single location the Washington DC area.

**PnP Innovations**  
**Booth Space: 16**  
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PnP Innovations provides the hardware components and software modules to enable users to rapidly develop modular Plug and Play (PnP) satellites.

Our modular PnP is based upon research and standards originated by the Air Force Research Laboratory (AFRL). A modular approach to designing and building satellites offers a considerable cost and assembly time advantage when compared to traditional satellite architectures. This design and build approach is a key technology to rapidly deployable tactical satellites. The enabling components to support PnP satellites can be found in the SPA Component Catalog, which includes individual PnP satellite support devices (such as reaction wheels, torque rods, magnetometers, etc), PnP structural panels containing embedded power &
data routers on which devices may be mounted, and flight software modules consisting of core support elements and autonomy agents that can run on networked PnP processors.

**Pumpkin, Inc.**  
**Booth Space: 74**  
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CubeSat Kit inquiries: info@cubesatkit.com  

Pumpkin is a leading provider of bus assemblies compatible with the P-POD, as well as the leading supplier of components in the CubeSat format. Pumpkin Space Systems business unit provides spacecraft busses that build on the space-proven and widely adopted CubeSat Kit™ architecture.

The MISC 1 Miniature Imaging SpaceCraft and the MISC 2 payload carrier provide mission-ready solutions for government and industry via a COTS Pumpkin bus. While MISC provides a standard bus for any variety of payloads, multiple options are available as to choice of C&DH processor, deployable panel configurations, and other system specifications tailored to your requirements.

In 2009 Pumpkin added to the extensive line of components that provide a thoroughly engineered foundation upon which to design your nanosatellite.

**Raytheon**  
**Booth Space: 87**  
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Missile Systems  
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Raytheon Company is a space systems provider with global space sales ranking number five in 2006. The combined strength of Missile Systems, Space and Airborne Systems, Network Centric Systems, Intelligence and Information Systems, Integrated Defense Systems and the Raytheon Technical Services Company provides a vast array of innovative full system solutions for the space community including the emerging Operationally Responsive Space and growing Space Control markets.
Raytheon offers leading technologies in areas including satellite command and control, mission and resource management, end-to-end information and network management, modeling and simulation, systems engineering, producibility and space sensors.

Other areas of expertise include space packaging and quality, radar and communication technologies, directed energy, plug-and-play designs, networking technologies, missile/space vehicle and avionics design, mission assurance and manufacturing.

Raytheon's focus on low-cost, versatile products and programs allows our customers to expand the envelope of space capabilities.

**Reagan Test Site- Kwajalein**

Booth Space: 18
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Email: jack.mccreary@smdc.army.mil
www.smdc.army.mil/rts.html

"WORLD CLASS" RANGE...... Space Missile Defense Commands (SMDC) Reagan Test Site (RTS) has a successful Space Launch history as well as Missile Defense Interceptor operations. The immeasurable value of RTS is based on its proven responsiveness, geographical equatorial location, state-of-the-art instrumentation, deep space operations, multiple launch facilities, and extensive flexibility for complex test scenarios.

SpaceX has chosen RTS for the Falcon 1 test and operations. With four launches from the Omelek Space Launch Complex, SpaceX successfully placed a payload into orbit demonstrating RTS's ability to provide responsive cost effective support.

Launch sites allow for flight trajectories in virtually all azimuths for LEO and Geo synchronous orbits with minimal safety and environmental constraints. Range Distributed Operations will allow you to view and receive your mission data from the Range Operations Control Center (ROCC) located in Huntsville, Alabama (FY10).

**Redefine Technologies, Inc.**

Booth Space: 62
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Redefine Technologies, Inc. specializes in embedded programming, reconfigurable avionics, and advanced systems design for space and ground applications. At the forefront of our value-adding
services, we offer a customizable service called Self-Manifest SM Suite. Self-Manifest SM uses the Testbed for Responsive Experiments and Demonstrations in Space (TREADS) satellite bus, designed for NASA, to launch your newest technology (software, PCB or component) into various orbits as the primary payload. You will increase your TRL and perform the science/tactical experiments you want, with minimal integration and launch cost overhead. We have developed a near-100% mission survivability approach to your payloads, an ability to remotely “pre-integrate” your device, and the programming/hardware expertise acquired from five satellite programs over the past eight years. Our innovative R&D endeavors keep our tools on the leading edge - we're continually "spinning technology into future resources™.”

Routes AstroEngineering  
Booth Space: 9  
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ROUTES ASTROENGINEERING designs and manufactures scientific instruments and payload/bus equipment; including solar panels, power control and distribution units (PCDUs), and spacecraft solid-state mass memory products. Established in 1988, Routes has developed equipment for suborbital rocket payloads, LEO satellites, Space Shuttle, and International Space Station. Our clients and partners include Government, commercial aerospace companies, and academic institutions.

We have developed optical scientific instruments that operate in the UV, visible, and IR wavelengths, and are used for astronomy, atmospheric, auroral, and life/physical sciences research. We have developed RF instruments that probe the magnetosphere.

Our payload & bus products include space solar panels that offer state-of-the-art performance, PCDUs for smallsats and microsats, and on-board data storage units that offer Terabit capacity using non-volatile FLASH technology.

Our facility is fully qualified for space manufacturing with compliance to ISO 9001-2000 and NASA certified assemblers.

ROUTES ASTROENGINEERING, developing space instruments and subsystems: From Concept to Flight.

RT Logic  
Booth Space: 11  
Steve Williams  
1215 Academy Ridge View  
Colorado Springs, CA 80921
RT Logic will demonstrate its T400CS Channel Simulator that enables comprehensive RF/IF testing of ground and flight communication systems and components without actual flights. The instrument adds precise signal propagation effects to user- or T400CS-generated signals, including smooth phase-continuous Doppler shift (carrier and signal), range delay, range attenuation, fading and noise.

An advanced signal generator produces test and interference signals in many modulation formats. A sophisticated spectrum/interference analyzer displays modulation type, data rate, C/No, BER, Eb/No and C/I along with advanced carrier-under-carrier analysis.

The instrument is controlled locally or remotely by GUI, TCP/IP connections from user-written software, from pre-created profiles, and through Analytical Graphics, Inc.’s STK software.

The T400CS is used for laboratory test, classroom/lab demonstration and instruction, and on-air work with on-station satellites.

Also demonstrated is RT Logic’s satID Signal Geolocation System that uses satellites to pinpoint the location of planned, unintentional and interference transmissions, along with unauthorized users.

**RUAG Aerospace**
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RUAG Aerospace became a larger but still independent supplier of highly qualified space equipment during 2008 by acquisition of Saab Space and its subsidiary Austrian Aerospace. The new constellation has expertise in Command & Data Handling Systems, Computers, Signal processing, Scientific Instruments, Structures, Mechanisms, Microwave Electronics, Antennas, MLI, GSE. RA is a leading supplier of adapters and separation systems for launchers offering modular designs with low-shock separation system technology and multiple spacecraft launch solutions. RA computer systems and signal processing know-how contributes to a large number of scientific, earth observation and navigation missions. RA mechanisms are used in hold down, release and pointing functions. RA slip rings transfer power and electrical signals through rotary joints. RA family of wide coverage antennas offer 30 years experience and with frequencies from L- to Ka-band.

**Satellite Services Ltd**
Satellite Services Ltd. designs and manufactures on-board sub-systems for high reliability smallsat applications. Products include Attitude Sensors and Actuators and TM/TC units. Where Satellite Services do not have their own products, they have a number of agency agreements and can therefore supply a wide variety of sub-systems as a one-stop-shop. If required, designs can be adapted to meet the specifications required. Satellite Services also invests in research and development and licensing of new designs to meet the continually evolving small satellite mission requirements.

Satellite Services has an extensive network of partners and sub-contractors across the globe, which enables the company to offer products in a highly cost efficient way. Satellite Services Ltd. is part of the multi-national SSBV Group. The parent company of The SSBV Group is based in The Netherlands with Satellite Services Ltd. based near London.

SEAKR Engineering, Inc.
Booth Space: 71
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SEAKR Engineering, Incorporated is a world-leading provider of advanced state-of-the-art electronic avionics for space and airborne applications. Since its inception in 1982, SEAKR has delivered over one hundred flight units. More than seventy of these units have launched and are operating per mission requirements. SEAKR’s leading edge space avionics includes layer III IP routers and modems as well as software-defined radios, high-performance payload processors, modular command and data handling systems, and solid state recorders. SEAKR has a reputation for high-level performance and reliability in severe environments. SEAKR is a small business proud to serve its customers and country.

For more information about this and other SEAKR products, please contact Dave Jungkind at SEAKR Engineering, Incorporated, 6221 South Racine Circle; Centennial, CO. 80111-6427, 303.790.8499, or email at dave.jungkind@seakr.com and visit our Web Site at www.seakr.com.
Sierra Nevada Corporation
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www.sncorp.com

Sierra Nevada Corporation’s (SNC) Space Systems Business area provides small high-performance spacecraft, space structures and components, hybrid rocket propulsion systems, power systems, advanced miniaturized avionics, lightweight composite structures and space vehicle systems to defense, civil government, and corporate customers.

SNC’s Space Systems Business area was established in 2009 from our subsidiary MicroSat Systems and the acquisition of SpaceDev.

Sinclair Interplanetary
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Sinclair Interplanetary has supplied sensors and actuators to satellite programs ranging in scope from large commercial constellations to small university missions. Qualified off-the-shelf products include reaction wheels, digital sun sensors and magnetic torque rods. Custom avionics such as power supplies, actuator drives and C&DH components are available on extremely aggressive schedules.

In 2009 we have finally moved out of the underground lab and now have windows, daylight, and an expanded staff! So whether you are getting ready to start phase A of your satellite project, or you are in a last-minute panic as the launch looms, Sinclair Interplanetary can lend a hand. Please take a moment to visit the booth, say 'hello,' and see if we can solve your problems.

Southwest Research Institute
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Southwest Research Institute (SwRI) was founded in 1947 as a public service scientific corporation to provide contract R&D to both industrial and government clients. The Institute provides extraordinarily technical capabilities through 11 technical operating divisions, with approximately 3300 staff members and gross annual revenue of $380 million.

SwRI's Department of Space Systems has a long and distinguished track record of producing high quality, high reliability spacecraft computers for NASA, DoD, ESA, and commercial space missions. Since the first SC-1 spaceflight computer was developed in 1979, SwRI has developed hardware for over 50 space flight missions without a single on-orbit failure. The track record of the last 26 years is a product of a strong commitment to support the current and future needs of the space community. SwRI is recognized as one of the leaders in space instrument design and development, command and data handling (C&DH) systems and mission management.

**Space Dynamics Laboratory**  
**Booth Spaces: 38 & 39**  
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Celebrating 50 years as a leading university-affiliated research and engineering laboratory, the Space Dynamics Laboratory (SDL) develops innovative solutions for scientific and defense remote sensing challenges. SDL’s expertise includes space, air and ground-based IR, visible, UV, and hyperspectral sensors, small-satellite technologies, concept validation studies and demonstrations, and solutions for all stages of intelligence, surveillance, and reconnaissance operations – from data acquisition to end-user data exploitation. SDL’s products include a family of miniaturized spacecraft systems and components such as the Digital Imaging Space Camera (DISC), a compact modular avionics system (MODAS), and the PEARL CubeSat platform. SDL is also developing CubeSat technologies to fill capabilities gaps in attitude control and processing performance required for high-value science missions. Headquartered in North Logan, Utah, SDL also has facilities in Albuquerque, NM; Bedford, MA; Huntsville, AL; Colorado Springs, CO; Los Angeles, CA; Houston, TX; and Washington, DC, and employs over 400 professional and technical personnel.

**Space Electronics LLC**  
**Booth Space: 8**  
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Space Electronics is the world leader in high precision aerospace mass properties measurement. Our vertical-axis satellite spin balance machines utilize spherical gas bearings and two-plane force technology to provide product of inertia (POI), moment of inertia (MOI) and center of gravity (CG) measurement in a single setup. Now celebrating our 50th year, we have sold more MOI and CG instruments than any other manufacturer. With our unique technology and constant innovation, we offer the highest measurement accuracy achievable. Space Electronics is the inventor of the force restoration concept of CG measurement, the inverted torsion pendulum method of measuring MOI and the Gimbal Balance machine. In addition to providing extraordinarily accurate and reliable instruments, we support our customers with high quality services such as NIST Traceable Measurement and Balancing, Instrument Rental, Fixture design, Training Seminars, and Consulting.

**Space Micro Inc**
**Booth Space: 70**
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Space Micro Inc. is a pioneer in providing radiation hardened by design solutions for advanced electronic systems and microelectronics. Space Micro offers best-in-class Radiation Hardened products for size, weight and power utilization.

RH single board computers in the Proton™ Series include the Proton200k™, which performs at levels up to 900MFLOPS or 4,000 MIPS while using only 5-7W of power at an SEU rate of <1E-4/day using Space Micro’s patented TTMR™ (Time Triple Modular Redundancy) technology. The Proton 300k is a Reconfigurable Computer using reprogrammable FPGAs. The Proton400k™ offers 3,600 MIPS SEU corrected performance with a 64-bit Dual-Core PowerPC processor and VxWorks RTOS (a lower power 32-bit version is also available).

RH Communications products include Space Micro’s uSGLSTM and uSTDNTM transponders and uKATM transmitter. SGLS/USB and Digital Transponders are under development.

RH components include a 4GB Flash module and a 2.5Gbps Forward Error Correction IC with a known path to 10Gbps.

**SpaceX**
**Booth Space: 35 & 37**
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SpaceX is developing a family of launch vehicles intended to increase the reliability and reduce the cost of both manned and unmanned space transportation, ultimately by a factor of ten. With its Falcon line of launch vehicles, SpaceX offers light, medium and heavy lift capabilities to deliver spacecraft into any inclination and altitude, from low Earth orbit to geosynchronous orbit to planetary missions.

Falcon 1, ideally suited for small satellite missions, is the world’s lowest cost per flight to orbit of a production rocket. On September 28, 2008, Falcon 1 became the first privately developed liquid fuel rocket to orbit the Earth.

In addition, NASA recently selected SpaceX’s Falcon 9 launch vehicle and Dragon spacecraft for the ISS Cargo Resupply Services (CRS) contract award. The contract includes 12 flights between 2010 and 2015, representing a guaranteed minimum of 20,000 kg to be carried to the ISS.

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 Booth Space: 34
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STAR-Dundee Ltd specialises in supporting users and developers of SpaceWire, a standard for data communications onboard satellites and spacecraft. SpaceWire has emerged as one of the main spacecraft data-handling networks since official publication in January 2003. It is now being used on many ESA, NASA and JAXA spacecraft and by research organisations and space industry across the world. SpaceWire's speed, simplicity, flexibility and interoperability have contributed to its growing popularity, something which staff at STAR-Dundee have been instrumental in for more than 15 years.

STAR-Dundee produces a wide range of equipment to enable the development, simulation and testing of SpaceWire networks and devices.

STAR-Dundee also provides first-class and acclaimed technical support to SpaceWire developers, making available over 40 person-years experience in SpaceWire technology which includes authorship of the SpaceWire standard. STAR-Dundee has been developing and producing SpaceWire equipment for more than five years, and has customers in over 20 countries.

Surrey Satellite Technology
 Booth Spaces: 13 & 15

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Surrey Satellite Technology (SST) specializes in the design, manufacture and in-orbit operation of small satellites, providing turnkey solutions to meet customer needs within short timescales and tight budgets. As of March 2009, SST had launched 32 small satellites for international customers, including ESA, NASA, USAF, the US Department of Energy LANL, and commercial customers across the globe. SST employs 300 staff across four locations in the UK and the US. Current projects include LEO, GEO and interplanetary missions, all of which exploit the company’s expertise in providing cost-effective technologies and techniques. Nine satellites are currently under construction at SST’s facilities in the UK, with two satellites scheduled for launch late spring.

Thermacore, Inc.
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Thermacore, Inc. is a global, advanced thermal management technology and manufacturing company. Founded in 1970, Thermacore specializes in the custom design, development, and manufacturing of highly engineered, high performance thermal management solutions. Thermacore’s thermal management solutions can be found at both the system and component levels for a variety of OEM applications across a diversified set of global markets that includes Military/Aerospace, Computer, Communication, Energy Conversion, Medical, Transportation, Test Equipment, and Automotive. With over 39 years of experience in the design, development, and manufacturing of passive two-phase and active pumped liquid thermal management systems, Thermacore brings unparalleled engineering design expertise and thermal solution performance, quality, and reliability to these markets. Thermacore employs more than 175 employees at 2 facilities located in the United States (Lancaster, Pennsylvania) and the United Kingdom (Ashington, Northumberland). Both facilities are ISO 9001 and ISO 14001 certified, with AS 9100 certification pending.

Tiger Innovations, L.L.C.
Booth Space: 56
Rob Atkin
Suite 45
Tiger Innovations, L.L.C. is a well-qualified, high technology, small business with a broad range of experience in specialty software/computer architecture design and implementation. We have extensive experience with custom hardware, software, and communication protocol design and implementation. Our focus is on providing highly capable, low cost spacecraft avionics and ground support equipment ideally suited for small satellite missions.

Tiger Innovations avionics products include the Integrated Electronics Module, a low mass, low power avionics unit, with STPSat-1 flight heritage. Our RFX-400 provides a cost effective, extremely small form-factor UHF transceiver for spacecraft communication. It features very low power standby mode, digitally tunable frequency, and variable power output up to 8.1W. Applications include ground terminals, cubesat RF modules, and ground gateway stations.

Tiger Innovations Spacecraft Ground Support Products include a Spacecraft Control Box, SGLS Simulator, Two-Channel Frame Synchronizer, 16-channel Solar Array Simulator, and the StreamLINK Command and Telemetry Software.

**TriSept Corporation**
**Booth Space: 55**
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TriSept Corporation is a leading technical services provider for commercial and Government space satellite systems. It is a small business comprised of an elite group of industry and technology veterans possessing the broad-based space experience necessary to integrate the full space program lifecycle. TriSept’s three main areas of expertise, space systems, software engineering and security services provide the launch vehicle and satellite communities with program managers, systems engineers, technical consultants, software system architects and security specialists.

TriSept’s personnel have seasoned experience (average of over 25 years) in all aspects of mission integration. They have performed launch integration services for a wide variety of missions on fourteen different boosters at six different launch sites. TriSept has successfully integrated payloads ranging from over 22,000kgs to payloads under 5.5kgs (P-PODs), including dedicated primary missions to multi-payload missions to rideshare missions.
Universal Space Network, Inc.  
**Booth Space: 58**  
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Universal Space Network, Inc. (USN) provides satellite telemetry, tracking and communications services from a global network of remote ground stations called PrioraNet. PrioraNet offers worldwide satellite tracking, telemetry and control (TT&C) and data downlink services on a lease ‘by the pass’ basis. Customers gain access to PrioraNet services through Network Management Center (NMC) facilities in Pennsylvania, California and Sweden, which is owned by PrioraNet partner the Swedish Space Corporation. Through this single point of interface a subscriber gains access to satellite ground stations in strategically selected locations around the world.

University of Toronto – Space Flight Laboratory  
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The Space Flight Laboratory (SFL) is Canada’s premier microspace organization. SFL builds low-cost microsatellites and nanosatellites that continually push the performance envelope. Missions are typically developed with stringent attitude control and data requirements that are striking relative to the budget available. SFL must be innovative while adopting a highly focused approach to development in order to achieve costs as low as $1/100\text{th}$ the price of similar satellites developed elsewhere. SFL’s credits include: MOST, Canada’s first space telescope; CanX-2, a technology demonstrator and atmospheric science satellite; and NTS, a ship-tracking satellite developed in only six months and launched in the seventh. SFL arranges launches through its Nanosatellite Launch Service (NLS) and provides customizable separation systems called “XPODs” for those launches. As part of its complete end-to-end mission capabilities, SFL maintains a mission control center consisting of multiple ground stations. Come visit us to discuss your microspace mission needs today!

Vanguard Composites Group, Inc.  
**Booth Space: 86**  
Duane Krumweide,  
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San Diego, CA 92126
DR Technologies, Inc. and its Vanguard Composites Group subsidiary specialize in the application of advanced composites for spacecraft structures that need stiffness, precision and stability, as well as multi-functional applications such as electronic packaging and space power.

Vanguard specializes in spacecraft bus structures, antenna reflectors, dimensionally-stable optical benches for space telescopes and sensors, and multi-functional composite structures including lightweight thermal management electronics enclosures. Vanguard's capabilities include full engineering, with extensive capabilities in advanced composites design and analysis. We can work in a design-to-spec or build-to-print environment, to build, test, and deliver anything from simple composite components to challenging structural assemblies.

DR also has an emerging business in Space Power, Optical and Thermal products which includes advanced, low cost solar panels, high accuracy ultra-lightweight reflective optics, and thermal control radiators.

Ongoing SBIR efforts have developed these technologies for small spacecraft and special applications. This area features high performance advanced technology products such as standardized modular solar arrays, loop heat pipe radiator panels, infra-red and submillimeter mirrors, and solar concentrators.

**VCSFA/Mid-Atlantic Regional Spaceport**
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www.marspaceport.com

The Mid-Atlantic Regional Spaceport (MARS) is an FAA licensed, operational spaceport located at the NASA Wallops Flight Facility on the mid-Atlantic coast. MARS provides low cost access to mid-inclination orbits for small, medium and medium-heavy class ELVs, sub-orbital launchers, RLV launch and landing, and payload recovery. Its location provides unobstructed access to the ISS orbit and is the primary launch site for Taurus II ISS cargo re-supply services. MARS offers two FAA licensed launch pads, sub-orbital launch rails, vehicle/payload storage and processing facilities, horizontal vehicle assembly facility, hypergolic fueling facility, large capacity ELV liquid fueling facility, co-located airport, flexible mission support, and an accommodating schedule for commercial and government aerospace customers. The MARS facilities readily support the Pegasus, Minotaur, Taurus, and Taurus II family of LVs. Its unique location, capabilities, and cost advantages make it the test, demonstration, and operational launch site of choice for government, commercial, and academic missions.

Viasat, Inc.
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ViaSat Antenna Systems is a manufacturer of high-performance "RF to Bits" tracking antenna systems for the telemetry, data link, remote sensing, satellite TT&C, and satellite communications markets. Our products are available in both fixed and mobile configurations, and range in size from 1 meter to 13.56 meters in diameter.

Vulcan Wireless, Inc.
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A Proven Partner in Digital Communications.

Vulcan Wireless Inc. provides complete turn key wireless designs for our domestic and international customers. We provide comprehensive, cost effective, engineering services as well as product development. We enable our customers to smoothly transition from marketing concept to mass production. We enable our customers to meet the critical market window and aggressively support our customers scheduling needs.

Vulcan Wireless Inc. is focusing on advanced communications and software defined radios for the small satellite and nanosatellite applications.

Our designs are capable of operating in harsh space environments such as radiation, vibration, vacuum and thermal cycling. Our first space flight product, the MBT-R2, is a software defined radio and has been demonstrated on the AFRL/RV PnPSAT vehicle. The MBT-R2 is part of a complete turnkey UHF telemetry system including flight antenna, tracking ground terminal, AES encryption, and web based control of ground terminal.

Yardney Technical Products, Inc.
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Yardney Technical Products, a subsidiary of ENER-TEK International, is a technology driven corporation that focuses on specialty battery technology for research and product development in high performance niche markets. We are proud to be part of the only working power systems on Mars, and an integral part of battery systems on both the B2 Spirit Bomber and the Global Hawk UAV applications.

Since 1944 the corporation has distinguished itself in the design, development and manufacture of specialty battery technologies for aerospace, DOD and industrial/commercial applications. Specialty battery technologies include Silver-Zinc (Ag-Zn) and Lithium-ion (Li-ion), among others.

Yardney Technical Products is a Veteran owned small business with 100% of its operations within the United States. All batteries and cells are manufactured using American made components whenever possible. We are leading the industry in establishing domestic sources for the highly refined electrode materials required for Li-ion cell production.