

SNC[®]

Propulsion & Environmental Systems

SNC is committed to innovative and rapid development of propulsion systems for spacecraft and vehicle controls, orbital transfers and planetary landing/lift-off. We are dedicated to providing focused life support and thermal control solutions for launch and transfer vehicles as well as systems with minimal consumables for long-duration habitation and space travel. SNC is updating heritage processes for production of oxygen and water from lunar, asteroidal and Mars surface resources.

Don't Just Follow Your Dreams...CHASE THEM!®

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Propulsion & Environmental Systems

Sierra Nevada Corporation (SNC) provides propulsion and environmental control solutions for launch, transport, low-Earth orbit and extended planetary and long-duration applications in space.

Propulsion Systems

SNC's patented, low-cost and high performance VORTEX® engines use a swirling propellant flow system to cool the engine walls naturally and are well suited for spacecraft and vehicle guidance and control. VORTEX engines also work well as upper stage engines for launch vehicles, Earth and planetary orbit transfer, plus descent/ascent capabilities. With a wide range of propellant combinations, we can offer versatility to suit the specific mission needs. SNC is testing new VORTEX hybrid engines that are deep throttling, restartable and can be used for national security, in-space and planetary applications. Our rocket engine test facilities enable rapid design and test development to generate solutions on a very short timeline.

Core Products & Subsystems

- Spacecraft & vehicle propulsion (0.1 to 1,000 lbf thrust)
- Upper stage, orbital transfer & planetary descent/ascent engines (to 100,000 lbf thrust)
- VORTEX hybrid engines (solid fuel with liquid oxidizer); throttleable, restartable, storable
- Boost stage engines (in development)
- Advanced thrusters & engines for custom national security needs



Environmental Systems

SNC provides environmental and thermal control systems and components. Our capabilities include air revitalization and monitoring, water management, pressure control, thermal control and transport, lighting, food production and fire detection. SNC also provides advanced technologies for generating water from in situ resources, regolith and dust mitigation, liquid gas phase separation and payload development and operation. Solutions are available for short or long-duration missions. SNC brings a long heritage of environmental, lighting and thermal solutions from the VEGGIE and Advanced Plant Habitat systems to experience for cargo and crew programs.

Environmental Control & Life Support Systems

- Air revitalization & CO₂ removal, quality monitoring & control
- Atmospheric temperature, humidity & pressure control
- Water reclamation & processing, quality monitoring & control
- Food production
- Waste processing & management
- Environmental LED lighting

Bio Production Systems

- Controlled Bio Production systems
- Specialty culture & root support systems
- Efficient food production systems
- Specialty lighting systems
- Rodent & biological science systems



Current NASA Orbital Operations for Food Production & Bio-Production

SNC is sustaining NASA orbital operations with new, unique capabilities that can be integrated into our more conventional life support systems to improve long-duration space travel and habitation.

VEGGIE

SNC continues to push the boundaries for sustainable long-term missions by advancing plant growth in space. The vegetable production system (VEGGIE) was developed for NASA and is currently growing food on the International Space Station. This provides astronauts the opportunity to periodically enjoy various kinds of fresh lettuce and vegetables while also giving scientists key data about growing plants in space.

Advanced Plant Habitat

SNC is involved in the cutting-edge, automated "space garden," Advanced Plant Habitat (APH), currently on the International Space Station. Jointly designed by SNC and NASA engineers, APH has 180 sensors monitoring temperature, humidity, light levels, CO₂ levels and many more – critical to bioscience research.

Astro Garden® System

We are working on a larger and more advanced plant growth system with our Astro Garden, optimizing as much space, weight and power as possible.