



FACT SHEET



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Hamilton Sundstrand Space Systems

About HS Space Systems

Hamilton Sundstrand Space Systems is a world leader in designing and building space-qualified equipment. For almost 50 years, Space Systems has participated in every major NASA human spaceflight program. Hamilton Sundstrand Space Systems supplied the portable life support system for the space suits worn by Apollo astronauts Neil Armstrong and Buzz Aldrin when they walked on the moon in 1969 and furnished the environmental control system for the Lunar Module that served as a “lifeboat” for Apollo 13. Today, we provide NASA’s space suit, the Extravehicular Mobility Unit (EMU), and a broad array of mission critical systems for the Space Shuttle and International Space Station (ISS).

Hamilton Sundstrand Space Systems business unit is headquartered in Windsor Locks, Conn., USA, with additional sites in Illinois, Texas, Florida, Alabama and California. The business provides high performance integrated system solutions for harsh and challenging environments and continually seeks new applications for its advanced technologies in both civil and commercial space and military, undersea and homeland security defense sectors.

Products/Services include:

- Actuation
- Auxiliary power units
- Active thermal control systems
- Atmosphere monitoring
- Carbon dioxide removal
- Chemical, biological, radiological, and nuclear detection systems
- Electric power generation, management and distribution
- Energy storage
- Environmental control and life support systems
- Extravehicular Activity (EVA)
- Fuel cell power generation
- Fire detection and suppression
- Missile thrust vector control
- Oxygen generation
- Satellite remote sensing
- Space nuclear power generation
- Water generation and processing

Programs

Orion Multi-Purpose Crew Vehicle: Hamilton Sundstrand is developing the Environmental Control and Life Support (ECLS), Active Thermal Control, and Power Management and Distribution (PMAD) systems for the rechristened Orion, now NASA’s Multi-Purpose Crew Vehicle (MPCV), which will carry up to four astronauts beyond low earth orbit on space exploration missions lasting up to 21 days. Under contract to Lockheed Martin, we will



furnish a wide array of hardware and systems for the MPCV. Our ECLS systems include cabin air ventilation, sublimator, waste management system, fire detection and suppression, CO2 removal/humidity control, pressure control system, atmospheric monitoring and smoke detection, EVA O2 supply, and potable/cooling water storage. Our active thermal control system provides cooling for the MPCV and includes an ammonia boiler, accumulator, water pump, control valves, cold plates, and ammonia storage. Our PMAD systems include the station power transfer unit, power transient protection unit, power and data units, portable equipment panel, and auxiliary bus control unit.

OneEVA (Extravehicular Activity): The OneEVA Program consists of five industry team members led by Hamilton Sundstrand to support EVA and NASA's Extravehicular Mobility Unit (EMU) space suit. This integrated EVA program encompasses operational support, sustaining engineering, hardware enhancements, and mission planning and processing under NASA's EVA Space Operations Contract (ESOC). Under the ESOC contract, Hamilton Sundstrand will support on-orbit EVA operations for the International Space Station through 2020. The EMU is comprised of life support and spacesuit pressure garment hardware, associated software, and EVA tools. The EMU has accrued 2,300 hours of EVA over a 30-year period of performance.

International Space Station: Hamilton Sundstrand provides a number of systems and components for the International Space Station including those that manage electrical power and process ISS air, water, and waste streams. Systems include: water processor assembly, Sabatier reactor water generator, water pump package, common cabin air assembly, major constituent analyzer, Active Thermal Control Systems (ATCS) cold plates, valves, pump and control valve package, HEPA filter, cabin fan assembly, bacterial filter assembly, intermodule ventilation fan, oxygen generator assembly, avionics air assembly, ATCS heat exchangers, metal oxide regenerable CO2 removal, electric power control unit, and pump and flow control sub-assembly. We developed the electrical power system for the ISS from the solar arrays, the power management and distribution system, batteries, to the "outlets" providing power to ISS equipment. We are under contract to provide new Li-Ion storage batteries to replace the existing NiH2 batteries.

Space Shuttle: Hamilton Sundstrand provides a number of Space Shuttle systems including the Atmosphere Revitalization System, the Fuel Cells, Auxiliary Power Units, flight control surface actuation, and Active Thermal Control System. Specific hardware components include: ambient temperature catalytic oxidizer, regenerable CO2 removal system, waste collector subsystem, Freon coolant loop components, water spray boiler, Orbiter and Solid Rocket Booster auxiliary power units, rudder/speed brake actuators and power drive unit, body flap actuators and power drive unit, flash evaporator subsystem, cabin air fan assembly, heat exchangers, water pump packages, and avionics cooling assembly.

About Hamilton Sundstrand

With 2010 sales of \$5.6 billion, Hamilton Sundstrand is headquartered in Windsor Locks, Conn. Among the world's largest suppliers of technologically advanced aerospace and industrial products, the company designs, manufactures and services aerospace systems and provides integrated system solutions for commercial, regional, corporate and military aircraft. It also is a major supplier for international space programs.

Hamilton Sundstrand is a subsidiary of United Technologies Corporation (NYSE: UTX). Based in Hartford, Conn., UTC is a diversified company that provides high-technology products and services to the aerospace and building industries.

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