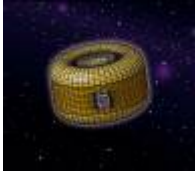


Aero Sekur inflatable structures – supporting the next stage of space exploration



*Planetary/Orbital
Habitats*



*Safe Payload
Landing*



Re-entry Systems



Space Agriculture

Combining design innovation with engineering capability, Aero Sekur is pioneering inflatable structures to support the next stage of space exploration. Established for over forty years, the company introduced a dedicated business unit in Y2K to provide a development facility for space applications. Using new generation materials and systems technologies, Aero Sekur's space division is developing inflatable structures that are supporting the future exploitation and exploration of space.

Aero Sekur initiatives include a range of inflatable planetary and orbital habitation structures designed for the space/planet surface environment. Across the company's product portfolio, benefits include significantly reduced payload size and weight along with increased damage tolerance. The company's development work includes planetary landing systems; planetary and orbital habitats; planetary sample capture/return and pioneering activity in the field of inflatable greenhouse structures for agrospace.

Commenting on the company's focus and expertise in flexible structures, Aero Sekur CEO Mark Butler said: "Over four decades, we have established expertise in the manufacture of safety systems and advanced flexible structures for the aerospace and defence markets. It was a natural progression to form a dedicated unit to support the next stage of space exploration.

"The company's pioneering work developing materials and structures to meet the challenges of space applications has been led by Aero Sekur's President, Silvio Rossignoli.

"Dott. Ing. Rossignoli is a rare combination of engineer and visionary who has identified the potential for the company in this market and who continues to be the inspiration behind new applications for inflatable space structures. As technical innovators, a strong team of highly qualified engineers is based at our 150,000 sq ft manufacturing and development facility located at Aprilia near Rome, Italy.

"Combining vision, expertise and state of the art hardware has led to the development of inflatable structures that are lightweight, flexible and stable - all of which are key prerequisites in supporting the future of space exploration."

Continued

Space Agriculture - Greenhouses:

Working with other leaders in the fields of agriculture and space engineering, greenhouses are under development by Aero Sekur for use in space or as part of planetary habitats. Agricultural technologies housed in inflatable habitat modules are under long term growth test in a bank of greenhouses at Tuscia University near Rome. The company's work is capturing global attention and a biennial Agrospace conference hosted by Aero Sekur attracts an international audience of industry experts.

Re-entry Systems – Sample Return/Emergency Rescue:

A re-entry module under development by Aero Sekur will support applications including returning samples to earth and use as a space lifeboat (SPacecrew Emergency Module - SPEM). Combining transonic parachute technology with a consumable, inflatable heat shield, the module provides safe and controlled atmospheric re-entry. A flexible, inflatable heat shield allows the capsule to slow down significantly as it crosses the upper layers of the atmosphere. As the module descends through the lower atmosphere, a parachute and deceleration system further reduces the landing speed. The inherent buoyancy of the module provides support during sea landings without additional flotation equipment.

Safe Payload Landing - ExoMars Vented Airbag System:

Aiding the next stage of space exploration, a vented airbag system from Aero Sekur is being produced as part of the ESA ExoMars programme. Designed to bring payloads including Mars probes safely to rest, the system ensures that orientation is maintained on uneven or sloping surfaces. The hexagonal torus comprises individual sections each incorporating a specially designed vent allowing controlled release of gas to absorb payload impact energy. Tests successfully completed at CIRA in Italy have confirmed Aero Sekur's success in accurately modeling gas flows and achieving flexible material deformation.

Planetary and Orbital Habitats – Inflatable IMOD Module:

Aero Sekur is addressing the space industry's need for low launch volume, low weight habitation systems. The company's advanced inflatable structures offer an alternative to conventional rigid structures with the added benefit of simple erection in space. With Thales Alenia Space Italia as prime contractor and materials design & application expertise provided by Aero Sekur, an inflatable IMOD module for ESA and an inflatable Flecs Module for ASI (Italian Space Agency) are being produced that will provide a flexible and lightweight alternative to aluminium solutions. Suitable for habitation and planetary applications, and set to be adopted in both the commercial and tourist space sectors, the lightweight non-rigid module design is attracting significant attention in the international aerospace arena.

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