ISAISEI CORPORATION

OXYGEN SPACE

INFLATABLE MODULES FOR LUNAR MISSIONS:
An Innovative Paradigm for Space Exploration

Start Breath

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Inflatable modules for lunar missions

This presentation explores the revolutionary potential of inflatable modules for lunar missions. We will analyze the tangible benefits of this innovative technology, the different types of inflatable modules suitable for lunar exploration, and the exciting applications that pave the way for the colonization of the Moon.

1 MODULAR SYSTEM

2 ADVANCED HI-TECH INTEGRATIONS

About Us

Founded in 2022, we are an innovative startup inspired by the future to create the present. We love technology and automation to simplify and improve the everyday experience.
Strongly linked to the environment, our solutions are eco-sustainable and we are committed to leaving the space cleaner.

A pioneering vision for the future

We want to be the first company in the world to develop intelligent housing systems that are already pre-assembled and transportable anywhere. The future will be space, our housing solutions will be the first to be used in terraforming projects. Per aspera ad astra.

INFLATABLE SOLUTION

Tangible Benefits of Inflatable Modules for Moon Missions

1 **Reduced Launch Costs:** Inflatable modules, with their lower mass and reduced volume compared to traditional rigid modules, can be transported to the Moon using smaller, less expensive rockets. This makes lunar missions more accessible, allowing greater participation from nations, private entities, and individuals, thereby democratizing space exploration and accelerating innovation.

2 **Increased Habitable Space and Structural Flexibility:** The inflatable nature of these modules provides significantly more habitable volume for the same mass compared to rigid modules. This results in more spacious and comfortable living areas for astronauts, enhancing their psychological well-being and productivity. The structural flexibility allows for adaptation to various needs and configurations, making them ideal for multiple scientific and habitation purposes.

3 **Quick Assembly and Deployment:** Inflatable modules can be assembled and deployed on the lunar surface much faster than traditional rigid modules, optimizing mission efficiency and productivity. Rapid deployment enables swift commencement of scientific activities and quick replacement or repair of damaged modules, ensuring continuous operation and astronaut safety.

Modular and Adaptable Inflatable Modules:

Versatile Lunar Applications

The modular and adaptable nature of inflatable modules makes them ideal for a wide range of lunar applications beyond basic habitation. Here are some examples:

Permanent Lunar Bases

Inflatable living modules can be assembled to form long-term lunar outposts, supporting continuous astronaut presence and scientific research. Their flexibility allows for expansion over time to accommodate growing personnel and new scientific discoveries.

Scientific Laboratories

Dedicated inflatable modules can be configured as laboratories for experiments in fields such as lunar geology, astronomy, and astrobiology. Their modular setup enables customized lab environments with the necessary equipment for specific research, leveraging the Moon's unique environment for groundbreaking discoveries.

Lunar Greenhouses

Inflatable greenhouse modules enable in-situ food cultivation, enhancing food self-sufficiency for astronauts and reducing dependency on Earth supplies. This capability supports longer lunar missions.

Our concept named:

MoonZero

Inflatable Outer Structure

Transport Box and Deployment Base

Life Support System

"Oxygen" Module Management Home Automation System

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TECHNICAL FEATURES

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The main distinguishing feature of the habitation modules is the double inflatable layer. The inflatable outer shell, compliant with NASA's technical specifications, is composed of layered materials such as Kevlar and Vectran to protect the modules from the hostile lunar environment. The inflatable inner shell is a technologically advanced membrane made of PVC or Polyurethane, with internal compartments and some basic furnishings (beds, tables, chairs, shelves, cabinets) that are also inflatable and integrated into the structure. Additionally, LED lighting, control system wiring, and monitoring sensors are integrated into the inflatable structure, ensuring efficient and safe management of the living environment.

Thanks to the implementation of Artificial Intelligence and the integrated voice assistant, combined with a dense network of advanced sensors, astronauts will be able to manage all internal functions and monitor all onboard systems in real time, understanding their operational status through direct voice interaction with Oxygen, our integrated management platform.
Additionally, the system is equipped with a remote monitoring module for Mission Control, ensuring continuous and secure supervision of operations.

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TECHNICAL FEATURES

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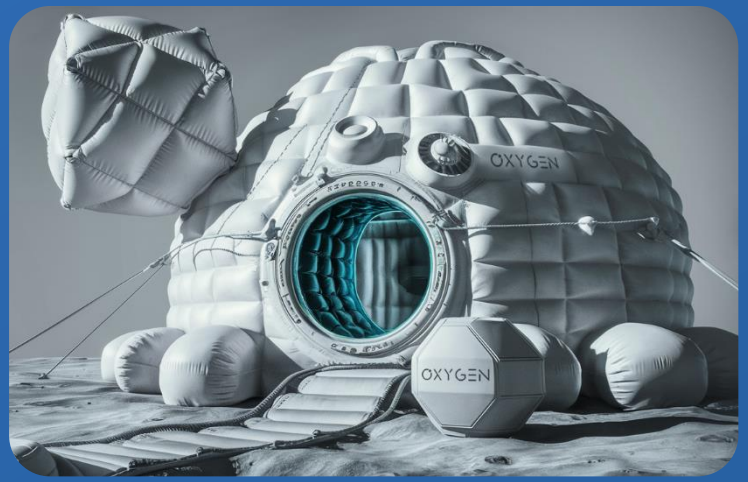
Integrated management system for controlling internal temperature and air quality, air recycling, internal pressure regulation, water management and recycling, and monitoring the crew's vital parameters.

Each habitation module will be folded and vacuum-packed to ensure maximum integrity during deployment. The container will be made of a special impact-resistant alloy with a dodecahedral shape. Once opened, the container will serve as a support base for the inflatable module, further protecting the lower part of the lunar module and isolating it from the regolith.



IoT A sensible choice of technology

Services

Remote Monitoring

1. STRUCTURE
2. LIGHTING
3. SAFETY AND SECURITY
4. COMFORT
5. LIFE SUPPORT

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Roadmap to Lunar Habitats:
Design, Testing, and Market Launch of the Inflatable Space Capsule
(2025-2030)

2025/2026 Design

Detailed study and design of the inflatable space capsule.

2027 Development and Prototype

Q1-Q4 2027 Development and creation of the first capsule prototype

2028 Testing and Marketing

Q1-Q2 2028 Initial laboratory testing on Earth, including simulations of lunar conditions.

Q3-Q4 2028 Orbital tests on the ISS to validate performance in a real space environment.

Q4 2028 Public auction in collaboration with Sotheby's to sell the first 4 lunar bed slots.

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2029 Training and Simulation

Q1-Q2 2029	Training and preparation course for the auction winners, preparing them for spaceflight.
Q3 2029	One-week experiment in the Atacama Desert, simulating life in the capsules as if on the Moon.
Q4 2029	Analysis of test results and potential improvements to the capsule's design and functionality.

2030 Go-to-Market and First Launch

Q1-Q2 2030	Finalization of the capsules based on test feedback.
Q3 2030	Preparations for the first lunar launch.
Q4 2030	Official go-to-market with the first launch of participants to the lunar surface.

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NEXT STEPS

Design & Tech to rest

Modular and Adaptable Inflatable Modules: **Versatile Applications for Space Exploration**

The **people** behind this presentation

Meet Our Team

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Sales Director

SIMONA VIGILE

Chief Legal Officer

MASSIMO MERENDA

Head of Research & Development

Meet Our

Financial Partners

MDC Investments & Asset Management

Institutional Partners

Università degli Studi di Padova

Università degli Studi Mediterranea di Reggio Calabria

CISAS G. Colombo

Partners and resources

Airen s.r.l.
Leading company, specialised in inflatable structures. They can boast the widest range of inflatables not designated for playing purposes.

HWA s.r.l.
It is a tech start-up and a spin-off from Università Mediterranea of Reggio Calabria, committed to research and development of technologies and IoT solutions.

Befreest s.r.l.
Innovative start-up that produces smart systems, aiming at the decrease the risks of aggressions from polluting agents in closed environments.

PMopenlab s.r.l.s.
Innovative start-up that creates innovative and sustainable projects of high technological value and Research&Development activities.


Doing old things
in a new way,
that is innovation
JOSEPH ALOIS SCHUMPETER

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