

TELESPAZIO TECHNOLOGY CONTEST
2023

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#T-TEC 2023 // THE WINNERS

Prototype

1° Prize

ESTESIA, SMART WATER MANAGEMENT FOR CLEAN ENERGY – EUR 10,000 + ACCELERATION PATH WITH SERAPHIM SPACE ACCELERATOR + SUSTAINABILITY MENTION

Category: Geoinformation Applications, Platforms and Digital Twins for a sustainable Earth

Team: Cristina Paola Mardones Correa (Autonomous University of Barcelona, Spain), Hussam Radwan (Adolfo Ibañez University, Chile), Arindam Ghosh (Barcelona Institute of Science and Technology, Spain)

Lithium is an essential element in batteries that are used in many applications and are the foundation for the economy of the future based on Cleantech. However, lithium extraction requires a lot of water. With the algorithm developed by ESTESIA, information from satellite images can be applied to use water more efficiently, reducing the risk of landslides near extraction sites and reducing waste. The proposed algorithm was designed for lithium mining, but it can be easily applied to any mining and extraction activity to make it more sustainable.

2° Prize

IDRA (INFLATABLE AND DEPLOYABLE ROBOTIC ARM) – EUR 6,000 + PRE-INCUBATOR PROGRAMME OFFERED BY LAZIO INNOVA

Category: In Orbit Servicing towards a Circular Economy in Space

Team: Pierpaolo Palmieri, Laura Salamina, Mario Troise, Matteo Gaidano (Politecnico di Torino University, Italy)

When designing any type of space vehicle, one of the first objectives engineers try to achieve is to reduce weight and volume. The aim of the IDRA project is to develop a robotic arm made of inflatable materials that can be deflated and folded when not in use, thus decreasing the arm's volume. At the same time, compared to traditional arms, IDRA guarantees greater mobility and range of action while still delivering lifting power comparable to that of traditional robotic arms.

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3° Prize

HYDROGEN PEROXIDE PROPULSION FOR SATELLITES – EUR 4,000 + PRE-INCUBATOR PROGRAMME OFFERED BY LAZIO INNOVA + SUSTAINABILITY MENTION

Category: Space Exploration and Extra-terrestrial Exploitation

Team: Francesca van Marion, Thomas Nagy Zambo, Mateusz Lentner, Jonathan Neeser (Delft University of Technology, Netherlands)

Currently most middle-sized satellites are powered by hydrazine motors, but this propellant is an environmental hazard and toxic to humans. The project of the Delft University team aims to use hydrogen peroxide to power the engines of satellites. Using this kind of fuel, which could also be useful on the moon, is not a new idea but has not been developed due to technical issues linked, for example, to the materials required to use and store the new propellant. The team aims to solve these problems by developing specific tanks and engines and also specific software.

Idea

1° Prize

DELUNERY (DEPLOYING EQUIPMENT FOR LUNAR UTILISATION AND NEW EXPLORATION RESEARCH YEARNING) – EUR 5,000 EURO + PRE-INCUBATOR PROGRAMME OFFERED BY LAZIO INNOVA

Category: Space Exploration and Extra-terrestrial Exploitation

Team: Giuseppe Negro, Francesco Giuseppe Aloisio, Nicole Fevola, Lorenzo Regalbuto, Alessandro Paone, Gabriele Monteforte, Marisa Sperandeo, Amelia Balestriere, Stefano Schiano, Dario Pappone, Antonio Evangelista, Vincenzo Signoriello (Federico II University of Naples, Italy)

Placing small satellites such as cubesats into orbit around Earth is now a routine operation. DELUNERY aims to make it just as easy to place satellites in orbit around the moon through an automatic transport system that can move from the satellite's surface to the space stations orbiting round it. Reusable, sustainable and based on circular economy principles, DELUNERY is designed for commercial enterprises that want to place a satellite of their own in orbit around the moon easily and at limited cost.

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Test-It Award

SUNCUBES

Category: Prototype

Theme: In Orbit Servicing towards a Circular Economy in Space

Team: Alberto Chiozzi, Federico Ognibene, Tommaso Aresi, Angelo Lannutti, Davide Russo (Politecnico di Milano University – Italy)

In 2022 SunCubes came third in the fourth edition of #T-TeC. After a year's work to fine tune the design and make it commercially viable, the team of students (who in the meantime had launched a start-up) participated in the contest. Thanks to funding from Leonardo and the technical support of Telespazio, the team had the opportunity to field test their project, which aims to supply electricity to orbiting satellites using solutions that can be already applied on Earth.

Special Mentions

Leosstar- AN INNOVATIVE SST PLAYER ON THE MARKET

Category: Idea

Theme: Space Domain Awareness for the Protection of Space and Ground Infrastructures

Team: Lorenzo Dionigi, Federico Guerinoni (Politecnico di Milano University, Italy)

HYPERDART

Category: Idea

Theme: Space Exploration and Extra-terrestrial Exploitation

Team: Lorenzo Beggio, Mattia Gabriele Bertolini, Alessandro Castelvetti, Alberto Chiozzi, Luca Colombo (Politecnico di Milano University, Italy)

CUPID

Category: Idea

Theme: In Orbit Servicing towards a Circular Economy in Space

Team: Bahar Karahan, Leon Habermalz, Paul Jannik Haufe (University of Stuttgart, Germany)