***Exploring the Solar System with Cubesats:***

***New Missions from Argotec***

In recent years, there has been a growing interest in using small satellites, particularly CubeSats, for deep space exploration. Despite some setbacks, it is now possible to envision challenging missions for studying the solar system using these platforms. Argotec, in collaboration with the European Space Agency (ESA) and the Italian Space Agency (ASI), is working on two new science missions aimed at studying the Moon and space weather.

The Lunar Meteoroid Impact Observer (LUMIO) mission, led by Politecnico di Milano, is designed to refine our understanding of the lunar meteoroid environment and demonstrate CubeSat technologies in the lunar environment. LUMIO will be equipped with an optical payload that will detect impact flashes of meteoroids. The mission will be carried out in an Earth-Moon L2 HALO orbit, allowing for continuous observations of the lunar surface. The data collected by LUMIO will contribute to the development of models for the lunar meteoroid environment and inform future lunar exploration missions.

The HEliospheric pioNeer for sOlar and interplanetary threats defeNce (HENON) mission is a pathfinder mission that will explore the Distant Retrograde Orbit (DRO) for space weather operations and science. HENON aims to provide real-time monitoring of the deep space environment beyond L1, providing alerts for solar energetic particle events and geoeffective interplanetary perturbations. The mission will also contribute to our understanding of heliophysics through the collection of scientific data.

Both missions will be equipped with advanced technologies for deep space, including rad-hard avionics systems, and will be deployed on the 12U Hawk platform.

These missions represent a significant step forward in terms of ambition for science missions using small satellites. Both missions will push the boundaries of what is currently possible with CubeSat technology, and will be important milestones for the utilization of small satellites in deep space exploration. Furthermore, the missions will provide valuable data that will inform future lunar exploration missions and enhance our understanding of space weather and heliophysics.