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PRESS NOTE

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Leonardo-Finmeccanica: the role in the LISA Pathfinder mission

The LISA (Laser Interferometer Space Antenna) Pathfinder mission officially kicked off on 3 December 2015 with the launch from the Kourou base in French Guyana. Conceived by ESA (European Space Agency) with the fundamental contribution of ASI (Italian Space Agency), in cooperation with the National Institute of Nuclear Physics and the University of Trento, it has a very ambitious task: to pave the way for the construction of an actual space observatory of gravitational waves, which should be fully accomplished with the launch of the e-Lisa mission.
In fact, the probe is located at about 1.5 million kilometres away from the Earth and contains two masses in free fall, screened from external forces, whose trajectory is only established by the local gravitational field. A laser interferometer measures their movement with unprecedented accuracy, in order to test the technologies that study gravitational waves.

Leonardo-Finmeccanica has a primary role in the mission.

Specifically, thanks to the cold-gas propulsion system developed by Leonardo, ESA is able to control the orientation and position in space of the probe with clusters of micro-thrusters able to make infinitesimal corrections, so as to simulate a condition of total absence of any disturbances. The digital attitude sensors – Smart Sun Sensor (SSS), also developed by Leonardo – were used during launch, transfer and operations in orbit, while the photovoltaic panel, with its 900 W power and 28% efficiency –almost 50% more than a terrestrial solar panel – powers the probe's systems.

Thales Alenia Space – a joint venture between Thales and Leonardo – has supplied equipment for both the on-board and ground segments to Airbus Defence and Space, prime contractor of the satellite. Specifically, the company has made the transponder for X band Telemetry, Trajectography and Command (TT&C), which acts as the sole interface between the probe and the ground station, and has taken care of simulation and testing of power supply systems.

Telespazio (joint venture between Leonardo and Thales) has also contributed to the programme. The company supports the launch services in Kourou, supplies software systems for the launcher and for the mission's ground segment and supports ESOC in space operations.