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Leonardo-Finmeccanica: the role in the JUNO mission

JUNO (JUperiter Near-polar Orbiter) is the second mission of NASA's New Frontiers programme, the aim of which is to study Jupiter's origin and evolution.

On 4th July, after a five-year voyage Juno spacecraft has reached Jupiter and successfully entered its orbit. The probe will study the gravitational and magnetic fields of the gaseous planet, explore its atmosphere, measure its plentiful water and seek to determine the planet's internal structure, looking for evidence of a solid core.

To achieve its ambitious objectives, the mission will use a suite of scientific instruments.

At JUNO's core will be the JIRAM spectrometer (Jovian InfraRed Auroral Mapper), funded by the Italian Space Agency (ASI), made by Leonardo-Finmeccanica at Campi Bisenzio and operated under the scientific responsibility of the Institute for Astrophysics and Space Planetology (IAPS) of INAF.

The instrument, which makes it possible to simultaneously acquire spectral images and information by using a double focal plane, plays an essential role in the mission as it allows Jupiter to be observed close-up to understand its formation, evolution and structure. Specifically, the spectrometer will survey the upper layers of the atmosphere, it will be able to detect the possible presence of methane, water vapour, ammonia and phosphine, and will provide images of the auroras.

The other Italian component of JUNO is KaT (Ka-Band Translator), funded by ASI and developed by Thales Alenia Space (joint venture between Thales and Leonardo) with support from the scientific team of "La Sapienza" University of Rome. The KaT instrument will perform radio-science experiments able to supply information on the planet's internal composition and on Jupiter's gravitational field.

Leonardo's role in this important space mission is therefore a key one, once again. The company has also supplied the Autonomous Star Tracker attitude sensor (also made at Campi Bisenzio), which guided JUNO in its nearly 3-billion-kilometre journey to Jupiter's orbit, from which it will continue supplying information on the probe's position, allowing it to always keep to the pre-set course.