

Leonardo's role in BepiColombo mission

BepiColombo is the very first European mission dedicated to the exploration of Mercury, a project resulting from the collaboration between European Space Agency - ESA and Japanese Space Agency - JAXA. The mission, one of the most ambitious among those scheduled by ESA, aims at a detailed study of the planet Mercury and the environment that surrounds it, through the use of two separate probes that will operate independently once into Mercury's orbit. In particular a probe will carry instruments to study the surface and internal composition of the planet; the other spacecraft will transport tools for the study of Mercury's magnetosphere.

Leonardo Group is deeply involved in the mission.

Thales Alenia Space coordinated an industrial group of 35 European companies, developed the telecommunications, thermal control and electric power distribution systems, along with integration and testing of the MPO (Mercury Planetary Orbiter), the MTM (Mercury Transfer Module) and the complete satellite until completion of the launch campaign. Thales Alenia Space also supplied the Deep Space Transponder (DST) in X- and Ka-band, the radiofrequency distribution assembly, the onboard computer, the mass memory and the high-gain antenna, a 1.1-meter steerable dish used for satellite-ground communications, as well as for the mission's radio science experiment.

Leonardo is the industrial Prime Contractor for the SIMBIO-SYS instrument (Spectrometers and Imagers for MPO BepiColombo Integrated Observatory SYStem), a key contribution to the mission provided by the Italian Space Agency. SIMBIO-SYS is composed of three channels: a high-resolution camera for a detailed study of Mercury's geology, a stereocamera for a 3D reconstruction of the entire surface and a hyperspectral room dedicated to the study of the surface composition.

On its remarkable journey, BepiColombo will be guided through Space by its Autonomous Star-Tracker attitude sensor, designed and manufactured by Leonardo in Italy, which measures the orientation of the satellite at every moment, providing the on-board computer with the information required for staying on the predefined route.

Telespazio, through its subsidiary Telespazio VEGA Deutschland, has developed key ground segment systems for the mission - such as the Mission Planning System, the Operational simulator and the mission-dedicated Information and Communication Infrastructure - and is involved in mission operations of BepiColombo, ranging from ground station operations, spacecraft operations and flight dynamics.