

**Solar Orbiter's journey to reveal new secrets of the Sun.**

*Among the Italian contributions on board the probe, the Data Processing Unit of the Solar Wind Plasma Analyser (SWA) to which Planetek Italia collaborated.*

Everything is ready in Cape Canaveral, Florida, for the launch of the Solar Orbiter probe, scheduled for Sunday, February 9, 2020 at 11.15 pm (in Italy it will be 05.15 am of Monday 10 February).

Planetek Italia was invited to attend the launch day in Florida, as part of the SWA DPU team who worked on the Solar Wind Plasma Analyzer (SWA), one of the ten instruments on board the probe.

Planetek Italia is an Italian company member of the DTA - Apulian Aerospace District, which has been operating in the field of Earth observation and exploration of the universe for 25 years, has contributed to several satellite missions in recent years. In addition to the Solar Orbiter, the company has already collaborated on the Cosmo-SkyMed, Cosmo-SkyMed Second Generation and PRISMA missions, to name the most important.

“*Since 1994, we have been dealing with satellite remote sensing data and applications, developing solutions close to users' needs and at the same time developing space systems and software for ground and on-board satellite systems. With the Solar Orbiter mission, we are once again "on board satellites" and can be said we are one of the few companies at international level to have skills on the entire value chain of this sector*", declares Giovanni Sylos Labini, CEO of Planetek Italia.

“*Having contributed to the development of software components today on board a probe that will operate so close to the Sun and so far from Earth, make us feel very proud, but also filled with a sense of responsibility. The Solar Orbiter mission will collect precious and useful data for understanding our solar system and improving our lives*", says Cristoforo Abbattista, Head of SpaceStream SBU of Planetek Italia.

**The Launch Day**

The launch of the Solar Orbiter, scheduled for Sunday, February 9, 2020 at 11.15 pm (Monday, 10 February, 05.15 am CET, in Europe). After about an hour from launch, after completing the procedure for detachment from the launcher, the probe will begin to send the first signals to the ESA ESOC (European Space Operations Center) headquarters in Darmstadt in Germany, and will start the operations to begin its journey near the Sun.

To watch the launch live, [the ESA Web TV channel](http://www.esa.int/ESA_Multimedia/ESA_Web_TV) is available.

**The Solar Orbiter mission**

Solar Orbiter is satellite mission, part of the [ESA's Science Program Cosmic Vision 2015-2025](http://sci.esa.int/cosmic-vision/), designed to explore the inner regions of the sun and the heliosphere from a near-sun orbit. It will address big questions in Solar System science to help us understand how the Sun creates and controls the heliosphere, how it influences Space Weather and its effect on the Earth. Solar Orbiter will have a highly elliptic orbit – between 1.2 AU at aphelion and 0.28 AU at perihelion (closer than Mercury; the Earth is 1 UA). Solar Orbiter is an ESA-led mission with strong NASA participation. There will be ten instruments on board, eight of which will be provided by Principal Investigators through national funding by ESA Member States. The Italian Space Agency and INAF lead the Italian contribution.

**The Solar Wind Plasma Analyser**

The Solar Orbiter is composed of ten experiments designed to observe the surface of the Sun and study the changes that occur in the solar wind. Among the instruments, the Solar Wind Plasma Analyzer (SWA) suite aims to provide solar plasma measurements with high resolution to establish a link between the wind and the strongly magnetized solar atmosphere.

The algorithms for calculating the characteristics of the plasma measured by the instruments were implemented by Planetek Italia in the software of the Data Processing Unit (DPU), the calculation unit of the suite on board the probe.

The SWA suite is composed of 4 instruments for the analysis of particles with different energy: two are dedicated to electrons (EAS - Electron Analyzer Sensor), one to protons and alpha particles (PAS - Proton Analyzer Sensor) and finally one to partially particles ionized solar wind (HIS -Heavy Ion Sensor).

The four instruments will separately measure the 3D distribution functions of the speed of the mentioned particles by determining the density, speed, temperature and heat flow of the wind.

One of the main tasks of the on-board scientific software is the calculation of the moments of the distributions of the particles sampled by PAS and EA, in the phase space, which requires a large percentage of the DPU resources, and has been optimized by Planetek to allow maximum production of scientific data by SWA, so as to have all the most important scientific information even in critical situations related to the limited availability of memory and transmission bandwidth to Earth.

**The Apulian Aerospace District contribution**

The Italian participation in SWA is led by the Italian Co-PI (Co-Principal Investigator): Roberto Bruno of the INAF Institute of Space Astrophysics and Planetology (Rome), who has the scientific responsibility of the Data Processing Unit.

The commissioned group of companies includes TSD, a Campania-based company, and three Apulians: SITAEL, LEONARDO (Taranto office) and Planetek Italia.

Planetek's activities within the project focused on the EGSE (Electrical Ground Support Equipment) software and on-board scientific software, which provides for the calculation of moments and data compression.

**Planetek Italia in Space: PRISMA, Cosmo SG and STRIVING**

In 2019, Planetek Italia also collaborated on other important satellite missions.

To mention the latest: the Italian hyper-spectral mission PRISMA, launched a few months ago and in operation since February 2020, and the radar mission Cosmo-SkyMed Second Generation. In these missions Planetek has developed software components for the processing of scientific data in the ground segments. While STRIVING's maiden mission, a validation service in orbit of space components, is nearing launch.

**More info:**

* News, facts and resources on ESA Solar Orbiter Website
* The Italian contribution to the mission on [ASI Website](https://www.asi.it/esplorazione/sistema-solare/solar-orbiter/)
* Planetek Italia projects and [activities in the Space sector](https://www.planetek.it/soluzioni/applicazioni/space_missions)

**Media Contacts**

Antonio Buonavoglia

Tel. +39 0809644200

buonavoglia@planetek.it