

PRESS RELEASE

The Proba-3 program takes an important step in the integration of its two satellites

- ✓ SENER Aeroespacial, together with Airbus Defence and Space and QinetiQ, culminate new relevant milestones in the development and integration of the two satellites (Occulter and Coronagraph) that make up this mission.
- ✓ Simultaneously, SENER Aeroespacial has integrated the mission's main payload, the coronagraph instrument, in the high-stability Optical Bench Assembly (OBA) developed by the company.
- ✓ SENER Aeroespacial is coordinating this new scientific and technological demonstration mission, which will revolutionize the conception and configuration of future scientific satellites.
- ✓ This is the first time that a Spanish company, SENER Aeroespacial, has led the full development of a European Space Agency mission.

Madrid (Spain), January 18th, 2022.- The [Proba-3](#) program, spearheaded by [SENER Aeroespacial](#), the project's prime contractor for the [European Space Agency](#) (ESA), has accomplished several relevant milestones in the integration of the two satellites that will, for the first time, demonstrate a high-precision formation flight in space.

In the future, spacecraft formation flying technology will be used to replace bulky structures (such as telescopes) with small independent platforms, which are easier to launch into space and can be combined to form large assemblies that work as a single entity, while achieving equivalent performance.

In parallel, Proba-3 will perform scientific observations taking images of the Sun's corona by means of a coronagraph instrument, placed in one of the spacecraft. Formation flying technology entails placing one of the two satellites in front of the instrument's lens, thus blocking out the sun's disk and creating an artificial eclipse in flight.

For SENER Aeroespacial, Proba-3 marks a technical milestone, since it is the first time that a Spanish company has led the full development (i.e., is responsible for the entire flight and ground system) of a European Space Agency mission.

The project has made an important step ahead with the start of the integration of the flight equipment, after the delivery of the platforms of the two satellites by [Airbus Defence and Space](#). In this program, Airbus manufactures and integrates the platforms of both satellites. The first one, called Coronagraph Spacecraft (CSC), contains the main instrument (coronagraph), whereas the second satellite, called Occulter Spacecraft (CSO), carries an occulting disk that cover the sun's disk as seen from the other satellite. Airbus delivered the structure of both satellites already integrated with the propulsion system, harness and the thermal control system. This platform integration was carried out at the company's facilities in Madrid (Spain).

The two satellites are now at the [QinetiQ](#) facility in Kruikebeke (Belgium). For this program, QinetiQ is leading the activities to develop the avionics system, integrate all the electronic units within the platform, perform overall system verification and prepare the operations. The first flight equipment are already being installed on the OSC, and the integration of the CSC is expected to start early 2022, as this last unit was received in mid-December.

Further information:

At the same time, SENER Aeroespacial has completed the activities related to the design, manufacturing and testing of the high-stability Optical Bench Assembly (OBA) of the Coronagraph spacecraft. The bench has been assembled in SENER Aeroespacial facility in Bilbao (Spain). The last step has been the integration of the coronagraph instrument, the cornerstone of Proba-3 scientific mission, developed by a consortium led by CSL. Such integration of the payload in the OBA has been realized by a joint team of CSL and SENER Aeroespacial employees, making use of the CSL facilities in Liege (Belgium). The bench and instrument are now at QinetiQ, ready to be integrated into the CSC.

Once the integration work is complete, an intensive testing campaign will begin prior to the launch planned for 2023.

Proba-3, first precision formation flying mission

Proba-3 is the world's first high-precision formation flying mission in space. The two satellites will stay 150 m apart, forming a large rigid virtual structure, with a relative accuracy between them on the order of millimeters and arcseconds. They will be used to validate the technology needed for precision formation flying.

Formation flying will be a key technique for future space science missions. Among other things, it will be used to develop large telescopes whose main elements (such as lenses and detectors) need to be located far away from one another while at the same time holding their relative positions and distances with a high degree of accuracy and stability. This technology will bypass the need to resort to heavy and bulky deployable structures, which may not fit in current launchers or, at best, would make them extremely expensive to put into orbit and operate.

Scientific study of the Sun

In addition to the demonstration mission, Proba-3 will conduct a scientific study of the Sun's corona. To do this, the two satellites will create a 150-m long coronagraph that will be able to study the Sun's corona closer to the surface than ever before. The satellites will make up what is called a coronagraph with an external occulter, such that one of the satellites prevents sunlight from directly reaching the camera on the instrument mounted on the other, leaving only the Sun's corona visible. This will be done fully autonomously, with no intervention from the ground to actively control the formation, creating an artificial six-hour eclipse over the second satellite every day.

Next phases of Proba-3

The manufacturing, integration and verification phase is already underway and is progressing at a good pace, the goal being to launch Proba-3 in 2023. Following the usual launch and early orbit phase (LEOP), an orbital verification phase will take place that will last for several months before the system is handed over to ESA, which will operate it for the remainder of the mission life, which is expected to last a total of two and a half years.

SENER Aeroespacial is leading the Proba-3 mission, for which it is fully responsible, in close collaboration with an industrial team consisting of QinetiQ, Airbus Defence and Space in Spain, GMV Space and Defence and Spacebel, which encompasses a broad industrial consortium of more than 32 companies from 14 different countries. This is the first time that a Spanish company has led the full development (i.e., is responsible for the entire flight and ground system) of a European Space Agency mission.

Proba-3 is part of ESA's General Support Technology Programme (GSTP), and Spain's participation was made possible thanks to the support of the CDTI (Center for Technological and Industrial Development).

Further information:

Videos of the Proba-3 mission at: <https://www.youtube.com/watch?v=pvuSXAxyrJc&t=106s> (from SENER Aeroespacial) / <https://www.youtube.com/watch?v=zWRIkek4q3o> (from ESA).

About SENER Aeroespacial

SENER Aeroespacial has been a leading supplier of high-performance aerospace systems for Space, Defense and Science for more than 50 years, developing its own high added-value technology products.

In Space, it supplies electromechanical, guidance-navigation-control (CNG/AOCS), communications and optical systems, and it is involved in the main programs of the ESA and NASA space agencies (including Euclid, Meteosat Third Generation, Solar Orbiter, JUICE, Proba-3, Hubble, Galileo, Rosetta, Gaia, Herschel and Planck, IXV, BepiColombo and Mars 2020) and the European Southern Observatory (ESO). In the commercial space market, it is a world leader in supplying telemetry, tracking and command (TTC) antennas, and it regularly supplies all types of antennas and passive and active RF devices to leading international communications satellite manufacturers, as well as to the so-called New Space programs.

SENER Aeroespacial is a company of the SENER engineering and technology group, founded in 1956, which employs 2,350 professionals on five continents.



About Airbus

Airbus pioneers sustainable aerospace for a safe and united world. The Company constantly innovates to provide efficient and technologically-advanced solutions in aerospace, defence, and connected services. In commercial aircraft, Airbus offers modern and fuel-efficient airliners and associated services. Airbus is also a European leader in defence and security and one of the world's leading space businesses. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions and services worldwide.

About QinetiQ

QinetiQ is a global integrated space, defence, and security company focused on mission-led innovation for customers around the world. We are 6000 people creating new ways of protecting what matters most; testing technologies, systems, and processes to make sure they work as expected; and enabling customers to deploy new and enhanced-existing capabilities with the assurance they will deliver the outcomes required.

From our sites in Belgium and the UK, QinetiQ's space team enables the most demanding space missions. We are constantly breaking new ground in the application of cutting-edge technology and delivering pioneering solutions to push the boundaries of space.

Further information:

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