

PRESS RELEASE

ESA selects SENER's clamping mechanism as part of the solution to combat the space debris problem

Madrid (Spain), April 26, 2018 - The clamping mechanism designed by the engineering and technology group [SENER](#) for the B1 phase of the [e.Deorbit](#) mission is part of the solution developed by the consortium selected by the European Space Agency (ESA), and led by Airbus, to combat the space debris problem.

Year after year, the traffic orbiting the Earth is increasing, whilst space debris poses an ever greater threat for satellites and crews of space vehicles. ESA wants to combat this problem, and therefore as part of the "Clean Space" initiative it is organizing the e.Deorbit mission with the objective of removing the inactive Envisat satellite. This is the heaviest civil unmanned satellite in space; it weighs as much as 8.2 tonnes, and together with the solar panel it is more than 25 meters long.

The e.Deorbit mission is a major technological challenge owing to the size and unknown rotation of Envisat. This is the reason why ESA and national agencies have been conducting numerous research and development projects. In 2016-2017 work was conducted by two competing international consortia headed by OHB and Airbus in parallel. The ESA has now selected for the next stage of the mission, the one headed by Airbus that includes SENER.

The chosen solution consist of a so-called chaser satellite that will capture Envisat by using a robotic arm. The robotic arm will perform grappling operation on Envisat and, following detumbling operation, SENER's clamping mechanism will fix on the Envisat's Launch Adapter Ring. Subsequently, engines will be activated and satellites will be directed to the Earth's atmosphere where they will partially burn up and their remains will fall into the Pacific Ocean.

SENER's clamping mechanism has to ensure a high level of rigidity of the connection with Envisat, in order to resist the considerable forces acting on the device during manoeuvres, and great precision, since the mechanism must capture the inactive satellite by the ring that used to connect it to the launch rocket.

Mechanisms are one of SENER's specialties in Space, where the company has [more than 50 years](#) of activity and is a key player. To date, SENER has successfully handed more than 275 systems and equipment for satellites and space vehicles for space agencies in the US (NASA), Europe (ESA), Japan (JAXA) and Russia (Roscosmos). SENER is one of the leading companies in the European Space Agency's science programs through its engineering contributions; SENER has taken part in more than half of these missions.

About space debris

It is estimated that tens of thousands of objects with dimensions greater than 10 cm are orbiting the Earth, and they could put the safety of space missions, including manned ones, at risk. There is much more smaller-sized debris. The largest objects are mainly inactive satellites and upper stages of launch rockets. Space agencies have only recently decided to deal with the problem of orbiting debris. For example, all new ESA satellites have to be equipped with systems facilitating

Further information:



deorbitation of objects or sending them off to a “graveyard orbit”. However, the most serious problem is posed by objects launched above the Earth in the past.

About SENER

SENER is a private engineering and technology business group founded in 1956. Its aim is to offer its clients the most advanced technological solutions and to achieve international recognition based on its independence and commitment to innovation and quality. SENER has almost 2,500 professionals across its centres in Algeria, Argentina, Brazil, South Korea, Chile, China, Colombia, the United Arab Emirates, Spain, the United States, Morocco, Mexico, Poland, Portugal, the United Kingdom and South Africa. The group's operating revenue exceeded 910 million Euros (2016 data).

SENER brings together its own Engineering and Construction activities with industrial holdings in companies working in the field of Energy & Environment. In the field of Engineering and Construction, SENER has become a leading company worldwide in the fields of Aerospace; Infrastructure and Transport; Renewables, Power, Oil & Gas; and Marine.

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