



AlSat satellite transmits from space

30 June 2014

Right on schedule, at 06:19 CEST on 30 June 2014, the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) AlSat satellite journeyed into space aboard the PSLV-C23 launcher that departed from the Satish Dhawan Space Centre at Sriharikota, in India. The 14-kilogram satellite, with which DLR researchers will receive signals from ships, was injected into orbit at an altitude of 660 kilometres according to plan, 1113.7 seconds after lift-off. At 09:30 CEST, the first signal from the satellite reached the control room at the DLR Institute of Space Systems.

"We know that the spacecraft is alive, and it is sending us data about his health," said Falk Nohka from the AlSat team. The first signal was a call sign, which included some basic information and was sent to Earth in Morse code. This beacon was not only heard in Bremen, but also by hobbyists from around the world. "We have been receiving reports from Brazil to the Netherlands about it." During the first flight over Bremen, the DLR researchers had six minutes of contact with the satellite at 11:05 CEST. One and a half hours later, they were able to keep contact with and download data from AlSat for seven minutes.

Once it has been established that the satellite has survived the mechanical loads it experienced during the launch and its orientation has stabilised, the DLR researchers will send the command to deploy the four-meter-long helical antenna. From that moment onwards the team will receive Automatic Identification System (AIS) signals from ships and will be able to determine their precise location. Although existing commercial satellites already receive AIS signals, in congested waters such as the German Bight or around ports such as Singapore, the number of signals exceeds the capacity of these satellites with their non-directional antennas. Thanks to its helical antenna the AlSat satellite receives signals from a focused area with a diameter of only 750 kilometres. DLR's ground-based receiving stations will provide comparative data to measure the performance of AlSat. The antenna was developed jointly by the DLR Institute of Space Systems and the DLR Institute of Composite Structures and Adaptive Systems. The satellite and receiver were developed, built and tested at the DLR Institute of Space Systems. "We hope that AlSat, with this novel antenna, will prove to be a good alternative to the existing satellites and in high-traffic areas," said Project Manager Jörg Behrens.

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Launch of the AISat satellite



On 30 June 2014, the German Aerospace Center (DLR) AISat satellite was carried into space on board an Indian launcher. AISat will receive Automatic Identification System (AIS) signals from ships and determine their precise location.

Credit: ISRO.

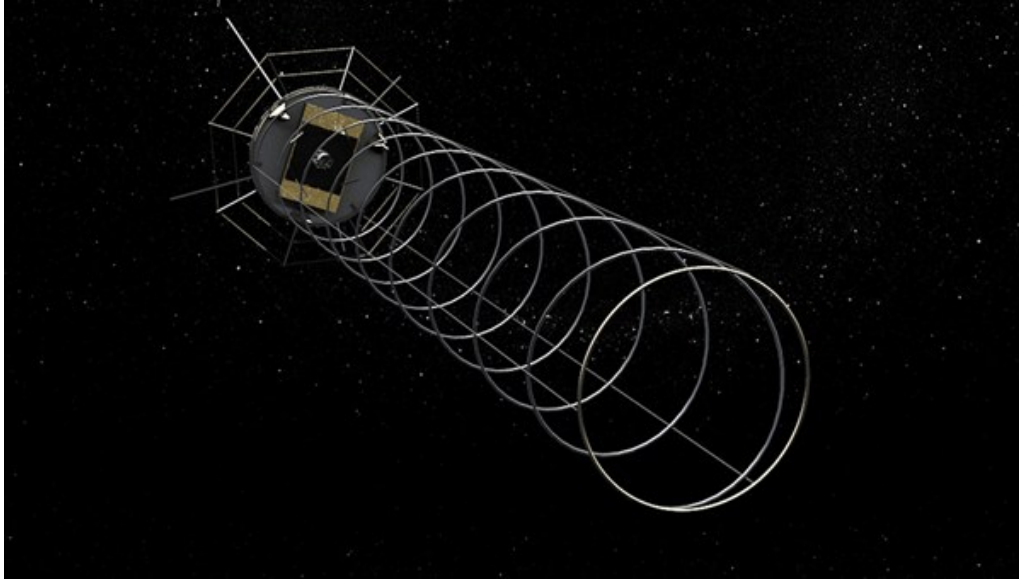
An antenna for ship detection



Until now, satellites equipped with non-directional antennas have monitored maritime traffic, and the individual signals cannot easily be distinguished in areas with large numbers of vessels. For the AISat satellite, the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) has developed a four-metre-long helical antenna and a satellite receiver. The spacecraft will be controlled and operated by the DLR Institute of Space Systems in Bremen.

Credit: DLR (CC-BY 3.0).

Ship detection from space: AISat



In the future, the satellite AISat will use its 4-metre helix antenna to receive ship signals from the numerous vessels travelling along busy routes.

Credit: DLR (CC-BY 3.0).

'Listening' with a helical antenna



Signals from ships will be received by the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) AISat satellite, using a four-metre-long helical antenna.

Credit: DLR (CC-BY 3.0).

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