OHB and ESA sealing Arctic Weather Satellite mission

European Space Agency selected OHB Sweden as prime contractor

Kista, 9th of March, 2021. OHB Sweden AB, a subsidiary of the space and technology group OHB SE, and the European Space Agency ESA, today signed a contract appointing OHB Sweden as the prime contractor for the development of the Arctic Weather Satellite (AWS) Programme. The contract includes the development of the satellite (including the instrument), the development of the ground segment and also the preparation activities for the AWS constellation. The AWS is a part of the ESA's Earth Watch programme. The AWS consists of a single satellite which is the proto-flight model of a possible future constellation of AWS satellites. The satellite is equipped with a payload specifically designed to provide global measurements of the atmosphere to enhance weather predictions (in particular over the Arctic). The mission has received funding at the ESA ministerial conference (Space19+). The signed contract has a total value of 32.5 million euros.

Mission Background

The overall requirements for Arctic Weather Satellite (AWS) Mission are to provide global measurements of the atmosphere to be used as part of Numerical Weather Prediction (NWP) and in Nowcasting (NWC). These measurements will also support climate research and applications. The main AWS measurements are humidity and temperature sounding of the atmosphere.

While the polar regions are well served by polar-orbiting satellites, the suitability of meteorological geostationary observations is limited by geometric constraints. In particular, atmospheric water vapour can change rapidly and would benefit greatly from more frequent observations. The revisit time requirements, identified by end-users can only be met with a constellation of satellites. Therefore, a constellation of polar-orbiting satellites providing passive microwave soundings of the atmosphere with frequent revisit times over the polar regions is proposed to address these issues.

AWS has a single Payload (cross-track scanning microwave radiometer) and the overall satellite design is significantly smaller compared to the existing polar-orbiting meteorological satellites. Streamlined Satellite and Payload design together with continuous manufacturing line production would enable affordable AWS satellite constellation.

The AWS Ground Segment includes a highly innovative Digital Beam Forming Network (DBFN) (Thales Alenia Space) in Svalbard, allowing several satellite to be tracked simultaneously from a single antenna array electronically without any moving parts. This technology is critical for the possible constellation phase of AWS to support the low latency needs of the constellation.

"…the AWS mission greatly benefits our increasing dependence
on reliable weather predictions in the Arctic and globally…"
Fredrik Sjöberg (deputy MD OHB Sweden)

The AWS (Proto-Flight Model) satellite launch is planned in 2024 and the AWS constellation implementation could start immediately after.

Industrial consortium

The industrial team led by OHB Sweden consists of three core-members. **OHB Sweden** as mission prime, platform provider and system integrator, **Omnisys instruments AB** as Instrument prime and **Thales Alenia Space** as Ground Segment (incl. operations) prime. The entire AWS industrial team includes 31 companies (including 14 SME's) from 12 different countries.

OHB Sweden

OHB Sweden with its extensive experience of over three decades in the design, development and testing of low-cost small satellite missions will use its successful heritage InnoSat platform, demonstrating a cost-effective "new-space" approach within this program. The InnoSat platform will be slightly upgraded in such a way that it meets the possible constellation needs, serving as a versatile and flexible platform suitable for all constellation orbits.

"…that is the third mission relying on our Innosat platform.
With this contract, OHB Sweden's InnoSat platform proves its
newspace character suitable for a cost-effective and reliable AWS constellation and beyond…"
Benoit Mathieu (MD OHB Sweden)

Information

Fredrik Sjöberg
Deputy Managing Director OHB Sweden
Head of Business development & Sales
fredrik.sjoberg@ohb-sweden.se

Picture by OHB Sweden ©