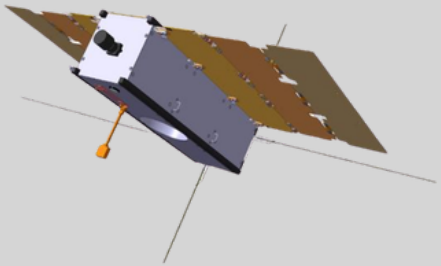
Instituto Nacional de Técnica Aeroespacial

TECHNOLOGICAL OFFER

Satellites in formation for more efficient space missions



MARKET NEED

- Agile environmental monitoring.
- Technological sovereignty: In-orbit demonstration and validation of new instruments and technologies, bypassing the long lead times of conventional missions.
- Secure communications: Deployment of infrastructures for quantum key distribution (QKD).
- Space democratization: Rapid and reliable access to Earth observation data for governmental and commercial users.

CONTACT

Knowledge Transfer Office

otc@inta.es
91 520 11 53
www.inta.es

STAGE OF DEVELOPEMENT

- **Operativo**: El primer clúster (**ANSER_WQ**) está en órbita desde octubre de 2023.
- **En fase de lanzamiento**: La misión **ANSER_AT** tiene previsto su lanzamiento en 2028.
- **En desarrollo**: Diseño avanzado de **Q-ANSER** para pruebas de comunicación cuántica.

ANSER PROJECT

The Spanish National Institute for Aerospace Technology (INTA) has led the development of the ANSER project (Advanced Nanosatellites for Earth Observation and Research), based on groups of small satellites. Its goal is to carry out space missions following high European quality standards and to be part of the new space sector model, known as New Space.

ANSER uses a distributed architecture in which multiple nanosatellites (CubeSats) work together to perform tasks that previously required a single large and expensive satellite.

The most innovative aspect of this technology is that the satellites fly in formation using passive aerodynamic methods. Instead of engines, they use deployable panels to adjust their relative positions. By leveraging atmospheric drag in low Earth orbits (below 1000 km), they can move in a controlled way. Precise control of the group's geometry is essential to maintain coordination for observation and communication missions.

ADVANTAGES

- Operational resilience: Ability to quickly replace failed units without compromising the overall mission.
- Cost efficiency: Affordable access to space through the use of CubeSat platforms (3U, 6U, and 16U).
- Innovative passive flight: Precise formation control without the need for chemical or electric thrusters.
- Flexibility: Architecture adaptable to various payloads and scientific objectives.
- Regulatory compliance: Development according to the ECSS quality standards of the European Space Agency (ESA).