



COMMERCIAL AND GOVERNMENT SATELLITES MEXSAT



DESCRIPTION & PURPOSE

The Mexsat program is an end-to-end satellite communications system that provides 3G+ communications services to terminals across multiple platforms. The system consists of three satellites, two ground sites, associated network operations systems and reference user terminals. Mexsat is México's next generation telecommunications system.

CUSTOMER

Boeing's support to México dates back to 1985 when Boeing provided two Boeing 376 satellites, Morelos-1 and Morelos-2. Both were retired after exceeding the contract design life. The Solidaridad-1 and Solidaridad-2 satellites, launched in 1993 and 1994, respectively, provided C-, Ku- and L-band satellite telecommunications services. Solidaridad-1 and Solidaridad-2, both Boeing 601HP satellites, were retired after meeting their contracted service life. Satmex-5, a Boeing 601HP satellite launched in 1998, was renamed Eutelsat 115 in May 2014 after Eutelsat acquired Satmex. Eutelsat 115 provided C- and Ku-band fixed satellite services and was retired in 2016.

The Mexsat contract called for Boeing to design and deliver a complete end-to-end turnkey system consisting of: two Boeing 702HP geomobile satellites; a GEOSat-2 satellite from Orbital Sciences Corporation for fixed satellite services; two ground stations; and ground-based beam-forming and communications network equipment that tie into the government, private and public terrestrial networks. Boeing also delivered reference user terminals, which are used for testing and validation of the system.



México named the three satellites: Bicentenario, to commemorate the anniversary of México's independence from Spain; Centenario, in honor of the 100th anniversary of the Mexican Revolution; and Morelos-3, to continue the naming tradition of the first Mexican satellite system. The satellites operate over México and its patrimonial seas, including the Gulf of Mexico and the Pacific Ocean. Under a contract with Boeing, Orbital Sciences Corporation manufactured Bicentenario, a fixed system satellite that launched aboard an Ariane 5 rocket on December 19, 2012. Bicentenario is in service and operated by Mexico's technical agency Telecomm. The Centenario and Morelos-3 satellites are Boeing 702HP geomobile satellites. Centenario, which was completed in 2013, was lost due to a Proton launch vehicle failure. Morelos-3, completed in 2014, was intended to serve as the back-up satellite in the system, but due to the Proton incident, it now serves as the primary satellite and launched in 2015. The 702HP satellite supplies 14 kilowatts of power through 5-panel solar array wings using high-efficiency ultra triple junction gallium arsenide solar cells. It also carries a 22-meter L-band reflector that enables connectivity to handheld terminals, complemented by a 2-meter Ku-band antenna. The Boeing-built Morelos-3 is designed for a 15-year service life.

GENERAL CHARACTERISTICS

Representing a fourth generation of Boeing satellites to serve México, the Mexsat system joined the country's current satellite fleet offering mobile satellite services and fixed satellite services to support national security, civil and humanitarian efforts. The Mexsat system provides disaster relief, emergency services, telemedicine, rural education, and government agency operations, including offering telecommunications access for the Mexican people living in remote parts of the country.

702 BACKGROUND

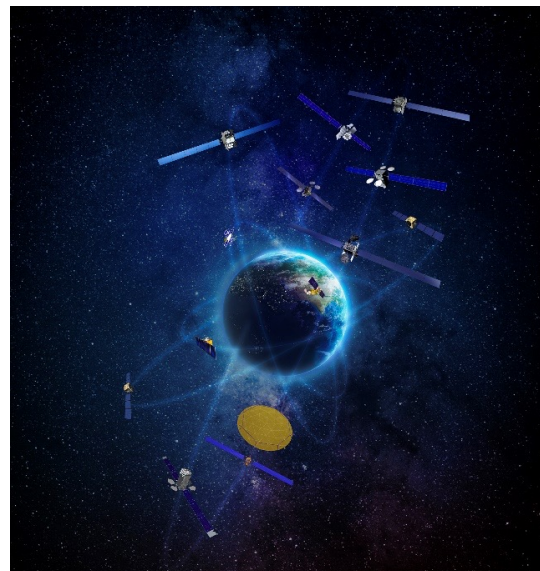
The scalable, flexible 702 product line is an orbit-proven platform that cost-efficiently serves a wide range of commercial and government customers. Boeing introduced the 702 spacecraft family in 1995, and today more than two dozen are on orbit, with almost a dozen more currently in production. The 702 family product line offers flexible designs supporting payload power levels from 3 to 25 kilowatts, meeting the needs of customers seeking satellites in wide power ranges.

FLEXIBLE SATELLITES FOR GOVERNMENT AND COMMERCIAL OPERATORS

Boeing builds adaptable satellites to meet changing business cases and fulfill even the most demanding missions. We're well into our sixth decade of providing advanced space and communications systems for military, commercial and scientific uses.

Boeing satellites reliably deliver digital communications, mobile communications, broadband internet connectivity, streaming entertainment, and direct-to-home entertainment around the world.

We continue to invest in and create a continuum of products across all orbits to give customers tiered options based on size, weight and power, to deliver the capability they need to their end-users.



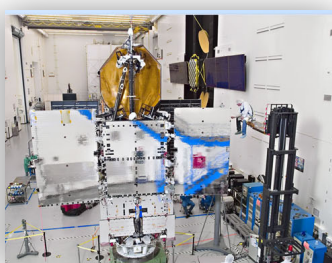
Artist rendering of Boeing satellites operating across all orbits

MISSION ASSURANCE

Boeing's satellite systems business is located in El Segundo, Calif. The world's first geosynchronous communications satellite, Syncom, was built there by Boeing and launched in 1963. Since then, Boeing has delivered more than 300 satellites to more than 50 customers in more than 20 countries, and continues to design and build government and commercial satellites in its factory in El Segundo.



Exterior of Boeing Satellite Factory



High Bay



Thermal Vacuum



Payload Integration & Test

STRONGER TOGETHER

In addition to Boeing's space capabilities, Spectrolab and Millennium are also a part of the Boeing team. Click on the company logos to learn more!



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