

Special Skills, Resources and Equipment

SATCOM Technologies' skill in producing welded steel structures far surpasses the standards set by the American Welding Society for structures consisting of A36/A572 mild steel to the highly sophisticated welding required for INVAR36 structures used in sophisticated scientific projects.

INVAR36, a nickel-iron alloy notable for its uniquely low-coefficient of thermal expansion, was used extensively in production of the radio telescopes produced for the Atacama Large Millimeter/submillimeter Array (ALMA). Wortham is one of the few facilities throughout the world equipped with the specialized welding equipment and skill required to build with INVAR36.

Steel fabrication of today's scientific structures requires the highest precision in assembly – sometimes to one one-thousandth of an inch.

The control techniques and metrology instruments employed, such as Laser Trackers, FARO Arm Coordinate Measuring Machines and Leica Total Measurement Stations, ensure that each project meets the most demanding specifications.



Computerized plate duplicators, beam line machines and track torches ensure the highest accuracies in heavy steel construction.



Computer-controlled plasma cutters transform steel plate into complex shapes.



World-Class Facility

Located on 34 acres southeast of Dallas, Texas, SATCOM Technologies' Wortham heavy steel fabrication facility boasts a 100,000 square foot covered fabrication plant that is certified ISO-14001 and OHSAS-18001 approved. With full sandblast and paint capacity, 100 employees and all appropriate security clearances needed, General Dynamics' SATCOM Technologies' heavy steel fabrication facility is ready to meet any precision welded or bolted-together assignment.

GENERAL DYNAMICS SATCOM Technologies

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GENERAL DYNAMICS SATCOM Technologies

High Precision Large Steel Structure Fabrication

Proven...Reliable....Precise...

- Over 40 years of experience designing, manufacturing, and installing large steel structures
- Supplier of choice for government, military, commercial and scientific customers worldwide
- Highly precise to meet the most exacting specifications
- Designed to meet the most demanding tolerances
- Pre-assembly reduces cost, time and field integration risks



High Precision Heavy Steel Fabrication

General Dynamics SATCOM Technologies' heavy steel fabrication facility in Wortham, Texas, delivers the highest quality heavy steel structures and systems available today. Our proven expertise allows us to build large structures that require the most exacting specifications and highest precision in assembly, in some cases up to one thousandth of an inch. Our ability to pre-assemble many of the components for these structures allows us to significantly reduce integration time in the field which, in turn, significantly reduces risks and costs.

The combination of specialized equipment and skills in producing large welded steel structures makes us one of the few heavy steel fabricators in the world capable of building with INVAR36 nickel-iron alloy. Through the use of computerized control techniques and metrology instruments such as Laser Trackers, FARO Arm Coordinate Measuring Machines and Leica Total Measurement Stations we can ensure that each project meets the most demanding specifications.

With more than 40 years of experience designing, manufacturing and installing radar and telephony towers, satellite earth stations, aircraft rotator systems, and other large precision-built scientific installations, SATCOM Technologies has become the go-to choice for government, military, commercial and scientific customers worldwide.

The computerized control techniques and metrology instruments employed ensure that each project meets the most demanding tolerances.



ASDE-X Tower, 150 Feet



ASR-11 Tower 87 Feet

General Dynamics SATCOM Technologies' Wortham, Texas facility is one of the few heavy steel fabricators in the world equipped with the specialized welding equipment and skill required to build with INVAR36 nickel-iron alloy.

Towers are a Specialty

SATCOM Technologies is one of the largest suppliers of free-standing and self-support towers in the world. The large steel towers measuring up to 150 feet tall, are installed at hundreds of airports, cellular telecommunications and environmental monitoring stations throughout the United States and abroad.

Airport Safety

SATCOM Technologies specializes in towers that support Airport Surface Detection Equipment (ASDE-X) for runway safety. In addition, SATCOM Technologies produces Terminal Doppler Weather Radar (TDWR), Digital Airport Surveillance Radar (DASR) and Surface Movement Radar (SMR) towers in a variety of configurations.

Steel for Ecology

SATCOM Technologies is also providing more than 45 steel towers for the National Ecological Observatory Network (NEON), managed by the National Science Foundation to operate the first U.S. Continental-scale scientific infrastructure for research, discovery and education about ecological change. The towers are used for monitoring and observing changes in the local environment at all NEON field sites and ecosystems across the U.S.

Signal Achievements

SATCOM Technologies' towers, pedestals, and servo units meet the precise tolerances, speed and durability required to support and accurately position very large radio telescope antennas, optical telescope mirrors and their instruments operating in severe environmental conditions year-after-year.



NEON Environmental Observation Tower

SATCOM Technologies has installed more than 50 major optical structures and radio astronomy platforms worldwide ranging in antenna size from a mere three meters in diameter to mammoth structures boasting an 8,000 square-meter surface area and weighting 7,300 metric tons. Three of the five largest radio telescopes operating today are supported by mounts, subassemblies and control systems manufactured by SATCOM Technologies' Wortham steel fabrication plant.

Major manufacturing and installation achievements:

The Green Bank Telescope

The Robert C. Byrd Green Bank Telescope (GBT) is the world's largest fully steerable radio telescope, and at 450 feet tall (60% taller than the Statue of Liberty) and 16 million pounds it is the world's largest moveable land object. The GBT is part of the national Radio Astronomy Observatory site at Green Bank, West Virginia.



The Green Bank Telescope

The Sea-Based X-Band Radar (SBX-1) is a floating, self-propelled, mobile, active electronically scanned array early warning radar station designed to operate in mid-ocean under conditions of high winds and heavy seas. The SBX-1 is longer than a football field (381 feet) and nearly twice as tall as the Roman Colosseum (279 feet high). This self-propelled floating 'stadium' has many



Sea-Based X-Band Radar

Many of today's scientific structures require the highest precision in assembly – sometimes to one one-thousandth of an inch.

small radomes for various communications tasks and a large central dome that encloses a phased-array, 1,800 ton (4,000,000 pound) X band radar antenna.

Atacama Large Millimeter/submillimeter Array (ALMA)

observatory in the Chilean Andes is supported by 25 12-Meter antennas built by SATCOM Technologies. The 115-ton, highly specialized radio-telescope antennas are operating 16,400 feet above sea level to help astronomers study the origins of galaxies, stars, and planets.



ALMA Antenna Array

The **Discovery Channel Telescope (DCT)** is a 4.3-meter aperture telescope funded by the Lowell Observatory and The Discovery Channel. At 4.3-Meters, the DCT is the fifth largest optical telescope in the continental United States. The DCT is investigating a wide and evolving range of research topics including a survey of the composition of Kuiper Belt objects orbiting the sun beyond Neptune; studies of the physical properties of comets, investigations of the evolution and structure of small galaxies and studies of the masses of stars.



Discovery Channel Telescope

National Oceanic and Atmospheric Administration (NOAA) GOES-R

SATCOM Technologies' provided six 16-Meter antennas for NOAA's Wallops Command and Data Acquisition Station in Wallops, VA. The antennas support NOAA's mission for weather forecasting, severe storm tracking and meteorology research.



16 Meter GOES-R Antenna

Mobile User Objective MUOS System

Three 18.4-Meter antennas mounted on 53-foot tall pedestals are part of the U.S. Navy's Mobile User Objective System (MUOS), the U.S. Military's next generation narrowband, global mobile satellite communications network. MUOS provides U.S. armed forces high reliability, high quality telephonic communication services.



MUOS 18.4 Meter Antennas

Aircraft Rotator Systems

Among SATCOM Technologies' precision-weld accomplishments are a number of Aircraft Rotator Systems designed to support military aircraft during radar cross section measurement testing. The systems include Calibration Pylons and Hoist and Wing Lift Systems to accurately turn and position the aircraft during testing while remaining invisible to radar signals. SATCOM Technologies has completed a number of these Aircraft Rotator Systems for government and commercial customers in the United States, Asia and Europe.

