

# RELIABLE PARTNER IN SPACE SYSTEMS



**TÜRSAT 6A COMMUNICATION SATELLITE**  
INDUSTRIAL PARTNER  
TURKEY'S FIRST NATIONALLY DEVELOPED  
COMMUNICATION SATELLITE



**FULL ELECTRICAL COMMUNICATION SATELLITE FAMILY**  
PRIME CONTRACTOR  
HTS/BSS OR FLEXIBLE PAYLOAD SOLUTIONS and MULTI LAUNCH CAPABILITY



**GÖKTÜRK-Y SATELLITE SYSTEM**  
PRIME CONTRACTOR  
VERY HIGH RESOLUTION EO SATELLITE SYSTEM



**GÖKTÜRK-2 SATELLITE**  
INDUSTRIAL PARTNER  
TURKEY'S FIRST HIGH RESOLUTION  
REMOTE SENSING SATELLITE

**Turkish Aerospace**  
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# SPACE SYSTEMS





# TURKISH AEROSPACE

## SPACE SYSTEMS

### GÖKTÜRK-Y, VHR Electro-Optical Satellite System

A new satellite development program, dubbed GÖKTÜRK-Y is initiated by the Presidency of Defence Industries (SSB) to replace GÖKTÜRK-1, VHR EO Satellite System by the end of its design lifetime.

Owing to expertise on space system design, manufacture, integration and verification gained with various satellite programs, Turkish Aerospace has been awarded the contract by SSB in June 2021 as a Prime Contractor.

### GÖKTÜRK-1, VHR Electro-Optical Satellite System

As the main local subcontractor, Turkish Aerospace Space Systems directly participates in several space and ground segment work packages including design, manufacturing and test activities of GÖKTÜRK-1 Satellite System and subsystems. Turkish Aerospace manufactured, qualified and exported equipped flight panels of GÖKTÜRK-1 Satellite Mission Module. GÖKTÜRK-1 was launched on December 5th, 2016 and successfully operating in orbit.

### GÖKTÜRK-2, HR Electro-Optical Satellite System

Turkey's First High Resolution Electro-Optical (EO) Satellite GÖKTÜRK-2 has been designed and developed by Turkish Aerospace and TÜBITAK Space. GÖKTÜRK-2 was launched on December 18th, 2012 and successfully operating in orbit.

Besides the indigenous design and analysis activities, GÖKTÜRK-2 platform assembly and integration, payload integration, mass properties measurement, system level functional tests and thermal vacuum tests were performed at Turkish Aerospace AIT facilities.

### GÖKTÜRK-3, VHR Synthetic Aperture Radar (SAR) Satellite System

Being the prime contractor of Phase-I, Turkish Aerospace with its local main subcontractors have successfully performed the preliminary design of Turkey's first indigenous SAR Satellite System dubbed GÖKTÜRK-3 which consists of satellite with SAR Payload based on reflector antenna, fixed and mobile ground stations.

### SmallSAT Satellite System

As a response to the current market trend of small satellite utilization, Turkish Aerospace embarked on the design and development of a micro satellite platform that is envisioned to operate in Low Earth Orbit (LEO) between altitudes of 400 km to 600 km and will be able to support various payloads. Modular and expandable satellite bus design with a mass of 100-150 kg and a compact volume offers shared launch opportunities to minimize launch cost.



### TÜRKSAT 6A: Telecommunication Satellite

TÜRKSAT 6A is the first indigenous telecommunication satellite that is being designed and manufactured by the Turkish Space Industries and Institutes. Turkish Aerospace Space Systems holds essential responsibilities on national telecommunication satellite program with design, analysis, assembly, integration and test infrastructure and capabilities. With a solar array span of 17 meters, the satellite will have a launch mass around 5 tons. The system is designed to provide commercial services for at least 15 years.

### FULL ELECTRICAL COMMUNICATION SATELLITE FAMILY

Full Electrical Communication Satellite is relatively a small size communication satellite platform, which is capable of accommodating wide range of commercial payloads and missions; from TV broadcasting to multimedia applications, internet access and mobile or fixed services in a wide range of frequency bands (Ka, Ku, X, C, S, L, UHF etc.) with optionally encrypted satellite access. Optimized full electrical communication satellites provide new, resizable and flexible design that boosts technical capabilities and offer significantly more flexible operations in the commercial telecommunication market.

Turkish Aerospace initiative GSATCOM's full electrical communication satellite family reduces satellite CAPEX by short integration time, fast delivery, full electric propulsion, 15 years of minimum life time and rideshare options with the most known launchers. It also enables wide range of flexibility with HTS and optional software defined payload features for most of the operators.

### Space Equipment & Software

Turkish Aerospace gives high priority on research and technological innovation as it is the major way "to get ready for tomorrow" and extends its capabilities and infrastructure being aware of its prime role in the space industry. Accordingly, Turkish Aerospace Space Systems carries out the development of following units as indigenous space equipment hardware and software:

#### Space Equipment

On Board Computer -  
Platform Interface Unit -  
Power Control and Distribution Unit -

#### Software

Flight Software -  
Ground Command & Control Software -  
Monitoring and Control Software -  
Mission Planning Software -  
Flight Dynamics Software -

## SPACE SYSTEMS ASSEMBLY INTEGRATION AND TEST (AIT) CENTER

Turkey's full grade state-of-the-art Space Systems Assembly Integration and Test (AIT) Center, which exist in a few developed countries leader in the space sector in the world is fully operational at Turkish Aerospace premises in Ankara.

Turkish Aerospace Space Systems AIT Center is designed to serve assembly & integration activities, functional, environmental, performance testing and measurement processes for earth observation, communication and similar featured space systems until they are ready for launch activities.

Turkish Aerospace provides its customers with extensive range of services within the AIT Center that includes manufacturing workshops. All test facilities are under one roof to perform the activities with minimum risk, easy accessibility, time management and cost saving.

Time is crucial for system integrators and customers, therefore the direct connection of the AIT Center to the airport taxiway provides unique advantages in terms of safety, cost and risk management by eliminating to transport the satellite by road as well as customs formalities can also be completed within the premises.

In addition to national projects, Turkish Aerospace Space Systems AIT Center offers transparent and comprehensive services to international distinguished customers. This privilege enables us to submit competitive offers to our potential customers for their upcoming projects. Fully equipped Space Systems AIT Center that exists in a few developed countries in the world makes Turkish Aerospace a challenging international player by providing assembly, integrations and test services for space systems.

### AIT Center Main Capabilities

- 3,800 m<sup>2</sup> Class ISO 8 grade 100,000 Clean Room (capable of supporting simultaneous AIT activities for GEO and LEO satellites up to 5 tons)
- Thermal Vacuum Tests
- Electromagnetic Interference (EMI) and Compatibility (EMC) Tests
- Compact Antenna Tests
- Vibration Tests
- Acoustic Tests
- Climatic and Vibration Combined Tests
- Mass Properties Measurement
- Solar Array Deployment
- Antenna Deployment
- Alignment Measurements
- Multilayer Insulation Workshop
- Harness Workshop
- Various Mechanical Ground Support Equipment (MGSE)

