

# SENSORS AND SOLUTIONS FOR TEST AND LAUNCH CENTRES



## OMNISYS OFFERS

a full line of instrumentation solutions for missile and rocket launch centres, being the main sensor provider for launch sites of the Brazilian Armed Forces.

Omnisys's experience includes solutions for tracking radars, S-band telemetry, electromagnetic spectrum monitoring systems and optical tracking systems, with a broadly proven supply history, as well as modernisation and maintenance services for the operating conditions of those systems.

## MAIN FEATURES

- Provide the necessary means for detection, tracking, assessment and approval of devices such as rockets, missiles and other pieces of equipment, as well as unmanned aircraft.
- Ensure the safety of flights and provide consistent mission data.
- Enable test campaigns essential for the development of military or civil applications systems.

## BASIC SYSTEM CONFIGURATION\*

The Instrumentation basic configuration comprises the following subsystems:

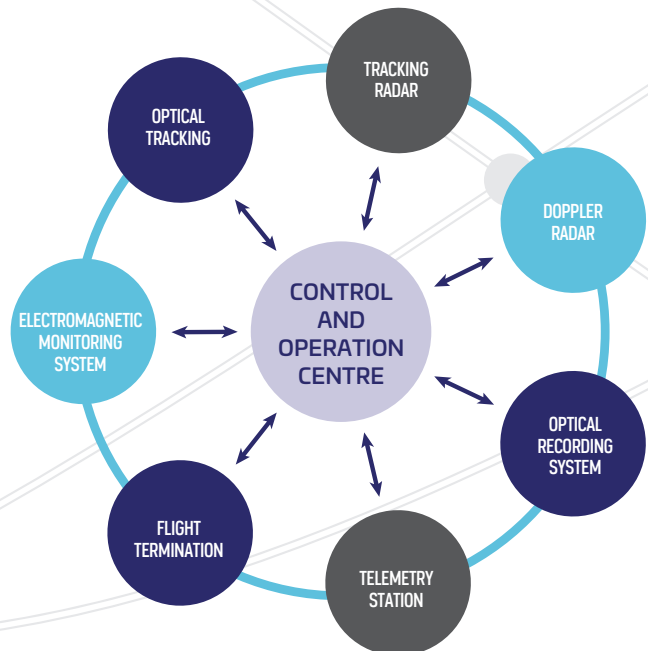
- C-band tracking radar
- S-band telemetry station
- Optical tracking station
- Electromagnetic spectrum monitoring system
- Command and Control Centre

Other equipment, such as static video recording systems, Doppler radars and meteorological systems, can be optionally incorporated into the centre's instrumentation.

## DESCRIPTION

The different subsystems and sensors form part of a Launch Centre, and the management and communication between them are performed through a Command and Control Centre, made of up local interfaces, the STDL system - Launch Data Treatment System - and the SISGRAF - a graphical interface used for flight safety - both developed by Omnisys and currently in operation at the Alcântara and Barreira do Inferno Launch Centres.

\* The basic configuration of the system can be tailored to the customer's operational needs as well as to the specific characteristics of the site.



The Command and Control Centre is a tool that enables efficient adjustment and administration of the whole mission, allowing for programming according to its specific characteristics.

In addition to the Command and Control Centre integrated operation, each sensor in a missile and rocket centre is fitted with local interfaces that enable each of them to operate autonomously.

The instrumentation can be equipped with a flight termination system, integrated in the Command and Control Centre, comprised of a set of devices designed to transmit flight termination signals through radio from equipment fitted with receptors, providing improved security to missions. Every subsystem in the centre has GPS/IRIG-B receptors for event dating, allowing countdown signal generation and correctly determining the launching moment and the subsequent events.

# SUBSYSTEMS DESCRIPTION



## C-BAND TRACKING RADAR

C-band tracking radars are high-precision equipment that tracks long-range rockets, missiles, aircraft (both manned and unmanned) and other devices showing their path and position.



## S-BAND TELEMETRY STATION

The S-band tracking system is used in trajectory tracking, as well as acquisition and recording of data sent by the target during launching. The system is fitted with a beacon to broadcast calibration reference signals.



## OPTICAL TRACKING SYSTEM

Capable of tracking rockets and missiles in the first moments after launching and of recording critical events such as flap opening and separation stages, this system also produces launch images and provides real-time data on the target's position to the STDL. SISROT is equipped with zoom, panoramic and infrared cameras, as well as a laser rangefinder.



## ELECTROMAGNETIC SPECTRUM MONITORING SYSTEM

This system provides the capability of detecting and identifying electromagnetic emissions, ensuring the protection of communication media, vehicles and payloads during a launch campaign.



## COMMAND AND CONTROL CENTRE

The Command and Control Centre is in charge of managing the mission, and broadcasting and receiving data between the remaining subsystems in the instrumentation centre. Furthermore, it is the Command and Control Centre that manages all data, voice and video communications, as well as the record of executed missions for subsequent analysis. Finally, the Centre is also responsible for providing the necessary information to the mission security team as well as the flight termination associated system.



## THALES CYPHERTRUST ENCRYPTION (CTE)

The information generated through Omnisys' instrumentation solutions can be encrypted using Thales CypherTrust Encryption (CTE) technology. The private encryption key is safely stored in the Cypher Trust Manager, where the data recorded in the hard drives is encrypted and can only be retrieved by the subsystems with access to the equipment, ensuring that only authorised and authenticated accesses can browse the information generated by the system.



## ABOUT OMNISYS

Omnisys is a Brazilian high-tech company with broad experience in the civil, space, defence & security and cybersecurity markets. Based in São Bernardo do Campo, the company boasts more than 200 employees and a strong presence in air traffic control, air defence, missile electronics, electronic war, sonar, satellite payloads, and on-board entertainment segments, as well as services. In 2006, Omnisys became a subsidiary of Thales Group and is a point of reference within the group with its Air Traffic Management Radar Excellence Centre, with production for both the national and international markets. Since 2015, Omnisys has also received investments to open a secondary radar line and implement the Sonars Centre. Together with Thales Alenia Space, Omnisys also opened its Space Technology Centre in São José dos Campos. Omnisys is the main provider of the CBERS space programme.



C-BAND TRACKING RADAR



S-BAND TELEMETRY STATION



OPTICAL TRACKING SYSTEM (SISROT)



ELECTROMAGNETIC SPECTRUM MONITORING SYSTEM



COMMAND AND CONTROL CENTRE