

## Thales Alenia Space España at a glance....

### 20 years of Space communication subsystems heritage |



Thales Alenia Space España is a Spanish company founded in 1988 fully owned (100%) subsidiary of Thales Alenia Space, since then the company has contributed to the success of more than 100 satellite programs.

The company plays a major role in the Spanish and International Space industry. At Thales Alenia Space España, we are dedicated to the development and production of systems and equipment spanning both civil and military space applications: telecommunications, navigation, optical and radar Earth observation, science and space infrastructures.

We are the world's leading manufacturer of S-band transponders, a top-tier supplier of radiofrequency equipment for satcom payloads and data handling equipment, and a recognized pioneer in onboard processing (OBP) solutions for advanced multimedia payloads.



The company is strongly involved in **Institutional Programs**, such as the design and supply of the S-Band TDRSS and Spread Spectrum Transponders for the **ATV** and **HTV** unmanned vehicles for the **ISS**. Besides for programs such as **Galileo**, **AmerHis** System, **Herschel/Planck** or in the frame of **ARTES 4** program to the development and qualification of an advanced **S-DMB Repeater** concept to offer broadcast services directly to cell phone user terminals.

Additionally we contribute together with ESA and Roskosmos Space Agencies in the study of the definition phase of the system and subsystems communications and breadboarding units for the CSTS (Crew Space Transportation System).

In the **Export market** the company is involved in the main commercial programs world-wide such as: Eutelsat W7 and W2A, Globalstar 2<sup>nd</sup> generation (48 satellites), THOR 6, Amazonas 2, Express MD 1-2, Astra 3B, Arabsat 5A and B, Yahsat 1A. Besides is actively working with the main **Space agencies** like ESA, NASA, JAXA, INVAP & CONAE, CNES, ROSKOSMOS, ISRO, CSA... and with the majors customers world-wide like Thales Alenia Space, EADS Astrium, Space System Loral, Orbital Sciences, Mitsubishi Electronic Corporation and many others.

In the **National programs**, Thales Alenia Space España is a key a traditional supplier of On board Space communication subsystems and equipment. The company is actively working together with Hispasat the Spanish satellite operator, in a variety of projects including some UE programs. Since 1990 its history is linked to the development of the Hispasat satellite series, 1A, 1B, 1C and 1D. In 2005 the company collaborates in the Amazonas satellite with the development and supply of the "AmerHis"



System, an advanced interactive Multimedia Regenerative Communication Payload, currently in commercial operation, most recently in a newly “AmerHis-2” system which is currently under development to be embarked in the Amazonas-2 satellite, as well as in REDSAT, an advanced communication payload, an ESA’ Small GEO mission to be embarked in the AG1 Hispasat’satellite.

The company is also actively working in the consolidation of the next Spanish Earth Observation Satellite (SEOSAT/INGENIO) in the study of definition phase of the electronic of the optic instrument and the communication subsystems.

## SYSTEMS AND SUBSYSTEMS DEVELOPMENT

### Advanced Telecom Repeaters & Systems

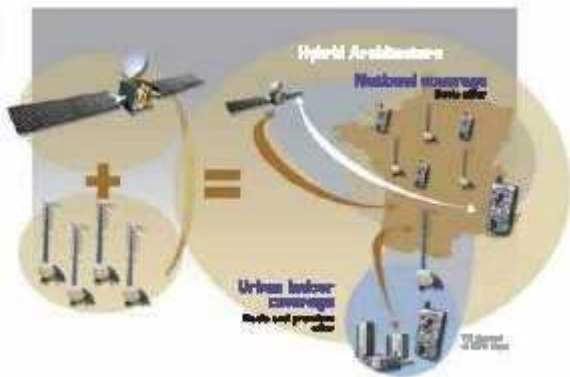
- \* A major reference is AmerHis 1 and 2, a Broadband Access Multimedia System based on a unique Regenerative Payload.
- \* S Band Repeaters for Mobile TV (the first European mission),
- \* Air Traffic Management (ATM) telecommunications, navigation and data relay missions, including original design studies

### Radio Communications for Space Applications (satellites, vehicles, launchers, ISS,...)

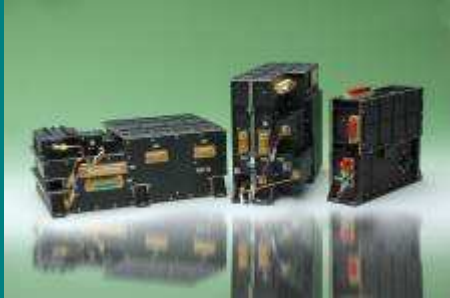
- \* Providing systems for TTC signals, communications systems for housekeeping, data transmission, inter-spacecraft coordination and crew voice and video transmission.

### Optical Payloads:

- \* Center of expertise in medium-resolution optical payloads.



## PRODUCT LINES



### TTC and Active RF.

- \* S and X Band TTC Transponders and Transceivers.
- \* S-Band TTC Spread Spectrum Transponders.
- \* UHF to X Band Transmitters and Receivers
- \* BPSK / QPSK Data Modulators.
- \* L / C / X / Ku Band TTC Transmitters and Beacons.
- \* S-Band Repeaters.
- \* TTC and Data Transmission Subsystems.



### Passive Microwaves.

- \* C, X, Ku, and Ka Band Input Multiplexers (IMUX).
- \* Filters, Diplexers, and other Passive Devices from S to Ka Band.
- \* Microwave Assemblies (RF Distribution Units, etc.).



### Digital Processing Units:

- \* DVB On-Board Processor.
- \* Digital Processing Modules and Subsystems
- \* On Board Data Handling Units:
  - Remote Terminals Units (RTU).
  - Payload Interface Units. (PIU).
- \* Control Electronics Equipment:
  - Antenna Pointing Mechanism Electronics (APME).
  - Solar Array Drive Electronics (SADE).

### R&D Activities

Thales Alenia Space España **invests more than 7%** of their revenues in R&D, the **total budget** dedicated to **R&D** amounts to **24%** of the sales. This allows us to maintain our engineering skills and growing our technological and industrial competitiveness. Thanks to the support of the CDTI and other institutional organisations, various high technology projects are currently being developed in collaboration with the major Spanish universities and other entities, mainly in the areas of On-Board Processing, advanced TTC techniques and lightweight microwave filters.

### INTERNATIONAL TRACK RECORD

With 20 years of experience in space programs, Thales Alenia Space España has been chosen for more than 100 satellite programs worldwide. To date, we have delivered 135 TTC S-band transponders, 2,500 microwave filter units and 130 digital processing units.

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