

Orbital systems  
Satellites  
Launchers  
Transversal competencies



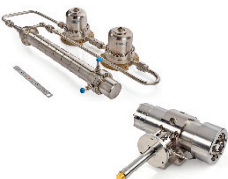
ABSOLUT SYSTEM (AS) is a technology enabling company offering its high skills in to provide customs-made cryogenic and thermal equipment. Absolut System design, optimize, test and qualify innovative solutions from components as per cryocooler, heat exchangers or thermal links, up to integrated system as per vacuum test chamber or infrared camera.

AS benefits through its width field of activity (industry, laboratories, research programs, aeronautics and space) of a large crossed linked between activities and is thus able to offer its customer the best technological choice with the highest quality and the flexibility offered by an SME.

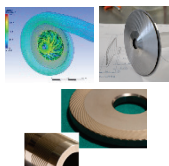
## COMPETENCIES & CAPABILITIES

- Development, realization and tests of cryogenic sub-systems for payloads: space cryocooler, cryogenic thermal links (copper, pure aluminium or POG), cryostat, cryogenic assembly, cryogenic fan
- Development, realization and tests of equipment for payload thermal management: centrifugal pump/fan, efficient and compact heat exchangers
- Design, realization and set-up of vacuum test bench for in-space propulsion large electrical thrusters
- Thermal tests (cycling) in vacuum environment down to  $-250\text{ }^{\circ}\text{C}$
- Zero or Reduced boil-off systems for cryogenic long term storage for LH2, LCH4, LOX, Liqui Argon
- Analysis of cryogenic propellant behavior in low gravity

Space cryocoolers: Pulse tube, turbo-brayton...)



HiRel turbomachines



High performance cryogenic thermal links



CFD modelling



Cryogenic test chambers



# ABSOLUT SYSTEM

## PRODUCTS & SERVICES

Low cost cryogenic assembly for earth observation

Space cryocoolers for earth observation:

- Low-cost Pulse-Tube LPT6510 (with our partner Thales Cryogenics)
- Vibration-free turbo-Brayton (on-going development, TRL 4)

Cryogenic equipment:

- Cryogenics thermal links: copper, alu or POG
- Cryogenic fan for cryogenic thermal management

On-ground large vacuum test chamber

On-demand cryogenic equipment

Thermal management: efficient and compact heat exchangers, centrifugal pump/fan

## MAJOR SPACE PROJECTS & REFERENCES

- More than 15 cryogenic thermal links Flight Models for different observation programs in 2018/2019: MTG, IASI-NG, EUCLID, Metimage
- Heat Exchangers Flight Models in 2019 for the Mechanical Pump Loop developed by Thales Alenia Space for very large GEO telecom satellites
- Design, realization and set-up of large capacities vacuum test bench for large in-space propulsion electrical thruster
- Different R&T projects with CNES and ESA on cryogenic equipment/concepts for launcher propulsion and for payloads

Main customers (alphabetic order): Airbus Defence and Space, CNES, ESA, MT Aerospace, Safran, Thales Alenia Space

## POINT OF CONTACT

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**TURNOVER** 3 M€

**WORK FORCE** 16

**SPACE TURNOVER** 1.5 M€

**SPACE WORK FORCE** 7