Space Power Workshop

Commoditization of Space:
Maintaining Resiliency in the Age of Faster and Cheaper

April 29–May 1, 2025
Torrance Marriott Redondo Beach, Torrance, CA

Mission and development heritage – Faster and cheaper

Space Electronics
A Space Products entity

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This document has been assessed by the following Technical Rater :

Assessed and classified by: Jean-Luc Poupat

Date classification completed: 01/09/2023

Space Electronics

Integrated Electronics supplier

450
France workforce

Paris

Toulouse

Worldwide Electronics and Sensors Actuators reference for Space

New Space & Conventional Space solutions

> 40%
Export

- EEE — Hi-Rel / Commercial parts, selection, procurement, test
- Radiation expertise
- Technology laboratory
- Electronics design house and chamber of reference
- Test facilities: Thermal, Vibration, EMC
- EGSE design house
- Full automatic assembly line SnPb and lead free

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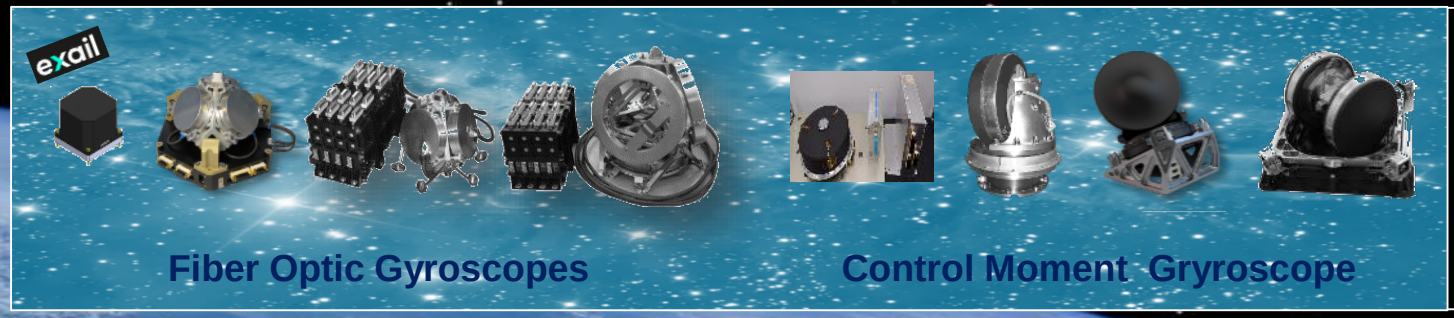
Reliable & large portfolio

Power & Propulsion Units

Platform & Payload Processing Units



Sensors & Actuators

www.airbus.com/en/products-services/space/equipment

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Faster and cheaper ?

Click & Collect

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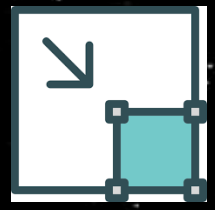
Power System – Power Electronics - Main challenges

Efficiency



Miniaturisation

Flexibility

Cost

Schedule

Skills

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Pillars Technologies and associated skills for Competitiveness & Performance

COTS based Design

- ADS heritage, skills
- Integration
- Manufacturability
- **COST**

GaNFET

- Performances
- **Power density**
- Manufacturability

Digital control

- Performances
- **Flexibility**
- Operability
- Testability

Architecture

- **Modularity**
- Flexibility
- Manufacturability
- **COST**

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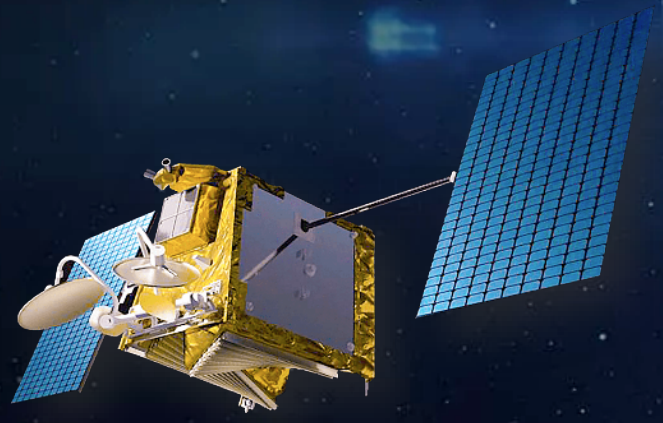
Mission and Program Experience

Step 1 - COTS for Constellation



Commoditization of space

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We received the specification …

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The specification …

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We analysed he Price schedule targets …

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The Price schedule targets …

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The reality …

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Reality

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Main Challenges & Achievements

Very short development time **20** **months** from T0 to first FM batch delivery

Cost reduction **20** **times lower** than usual HiRel products

Unprecedented mass production **32** **units / month**

With

No compromise on quality **2000** **years** successful in orbit operation

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Constellation from wish to reality

+ **Reliable** Rad-Hard COTS **DESIGN** =

10 years LEO

+ **Digital Control** + **Power Design** =

Performances and flexibility

In house COTS Part Selection

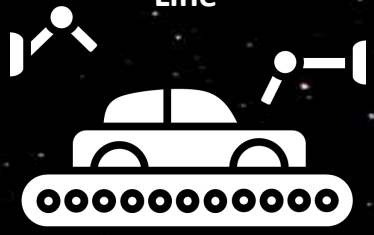
The « formula 1 »

= Σ **Breakthrough Price performance ratio**

+ **Fast prototyping** +

Design for Manufacturing
Design for test

+ **Automatic Assembly Line**



= **Cots reduction**

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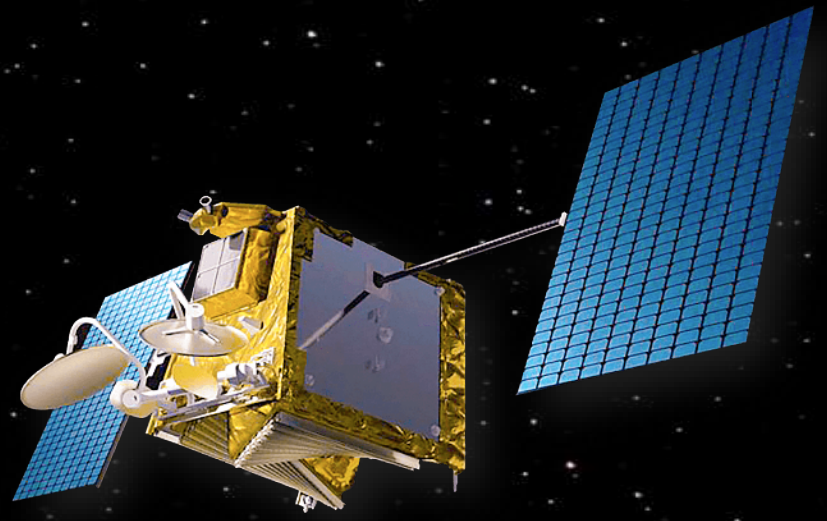
Constellation from wish to reality

TOPAZ PPU HET 300W class

Disruptive reliable rad hardened COTS design
Breakthrough price-performance ratio
10 years lifetime in LEO
Unregulated bus 27-38V
RS422 or CANBUS or MILBUS 1553
Mass <4kg



Some figures

650+ units in orbit
950+ flight models ordered
2000+ years cumulated in orbit

TOPAZ

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Mission and Program Experience

Step 2 - Application to classical missions

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The recipe for a step forward

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Step 2 – PPU example

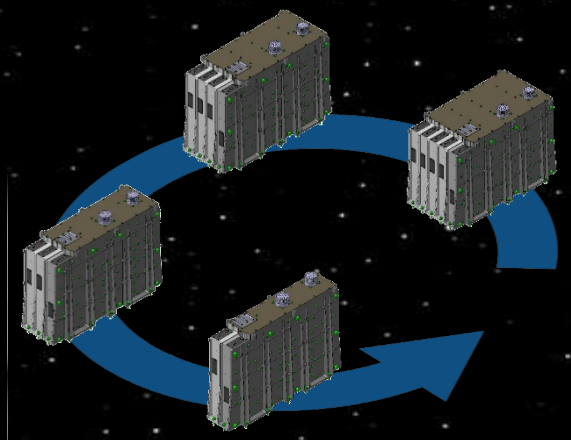
Versatile solution

Multiple compatibility:
- Thrusters
- Fluidics systems
- Voltages
- Powers

Some features

- Regulated 100V bus or 70V Unregulated
- MILBUS 1553 or CANbus

Product Approach



PPU NG2

State-of-the-Art design

- GaN & digital control
- Rad-hard COTS design
- Patents
- Flexible operation
- Self diagnostics
- Full-auto production

50% Cost reduction
30% Mass reduction

Modular Concept

- Optimized mass
- From 1kW to 21.6kW
- High efficiency

Step 2 achieved with FM in 2026

Simplified packaging

- Limited interconnection
- Fast assembly

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Conclusion – Need a Resilient portfolio

PPU TOPAZ 300W

Flying

650+ units flying
950+ units ordered
2000+ years cumulated

x3+ Power
Same Volume

PPU 1kW

coming soon

Next generation
Built upon the success of
Topaz PPU

Made for small and large constellations

PPU NG1

Flying

46 units flying
150+ ordered
80+ years cumulated

-50% cost
-30% mass

PPU NG2

PFM 2026

One PPU
for **hALL**
effect thrusters

Thrust your mission for HET above 1kW

On board in Europe, USA, …

www.airbus.com/en/products-services/space/equipment

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Thank you for your attention

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