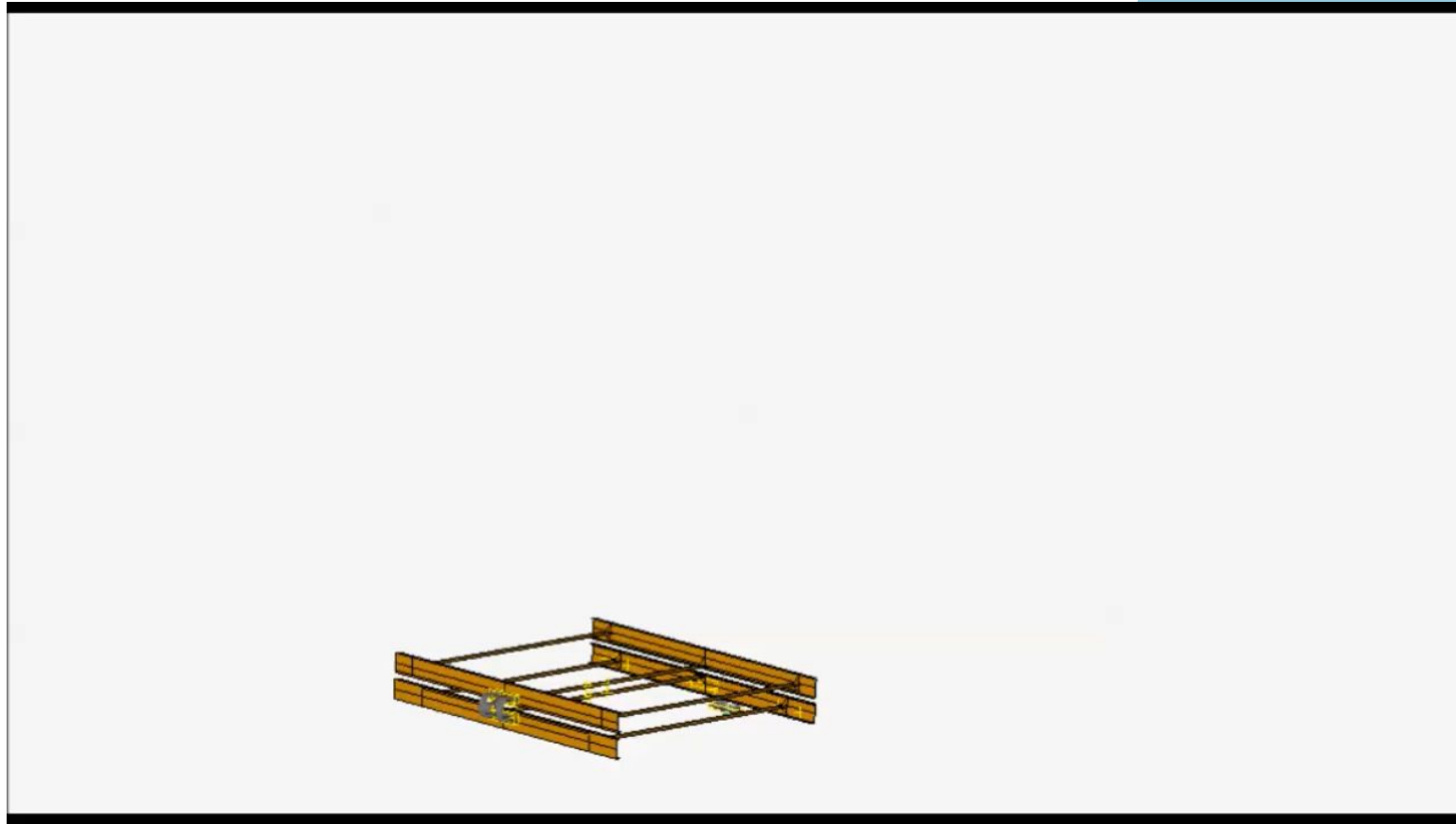




MAEVA Self-Locking Hinges

20 Years + of Heritage

1998 – First Patent



2010 – 0g flight test



A satellite with large solar panels and a parabolic dish antenna is shown in orbit above Earth's cloud-covered surface. The satellite is positioned on the left side of the frame, with its components clearly visible against the bright background of the planet.

Technical Data



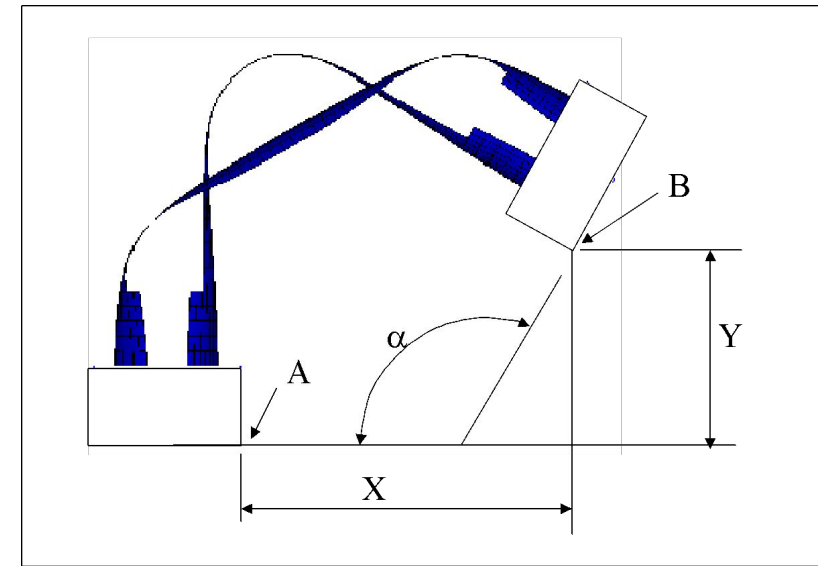
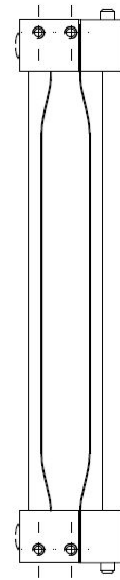
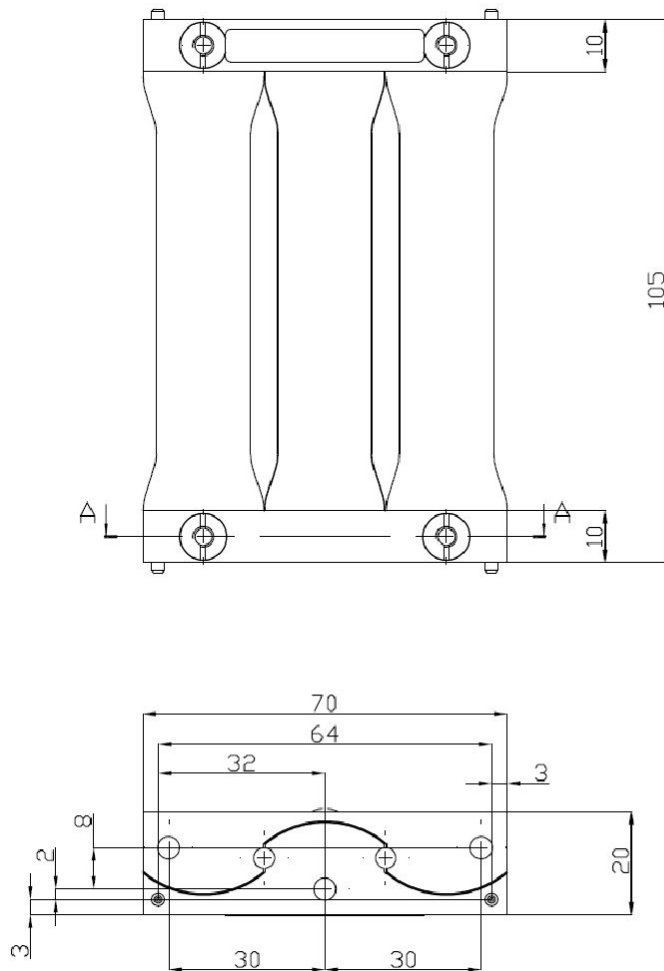
TECHNICAL DATA

MAEVA has been designed and qualified to comply with the CNES μ satellites Solar Arrays Hinges Technical Specification and according to ESA ECSS standards. Hereafter are listed the main characteristics of the device :

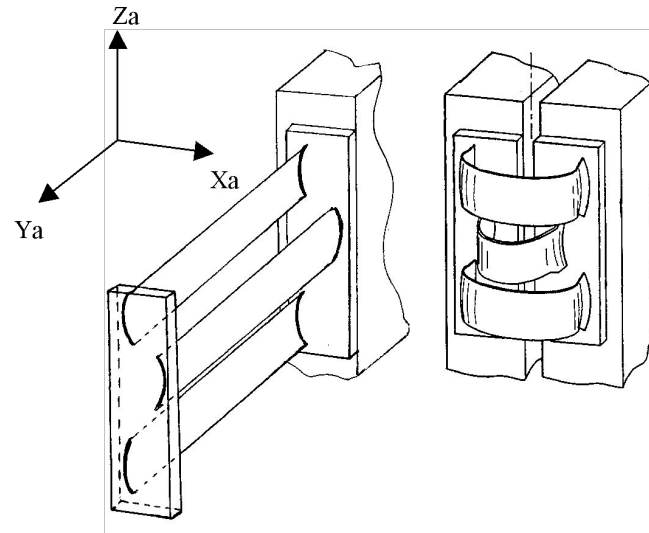
- Open volume: $105 \times 20 \times 70 \text{ mm}^3$
- Open length: $105 \text{ mm} \pm 0,1$
- Deployed accuracy: $\leq 1^\circ$
- Total mass: $< 90 \text{ g}$ (excluding screws).
- Motorisation torque: $> 0,15 \text{ N/m}$ whatever the angle
- Deployed stiffness: $\approx 1000 \text{ N.m/rad}$
- Locked holding torque: $\geq 4,5 \text{ N.m}$
- Electric resistance: $\leq 1 \Omega$
- Tested temperature range: $[-110^\circ\text{C}, +115^\circ\text{C}]$
- Qualified life cycle: 60 open/close cycles + 14 free deployments
- Allowed life cycle: 12 open/close cycles + 2 free deployments
- Tested Storage duration: 12 months 180° closed



INTERFACES



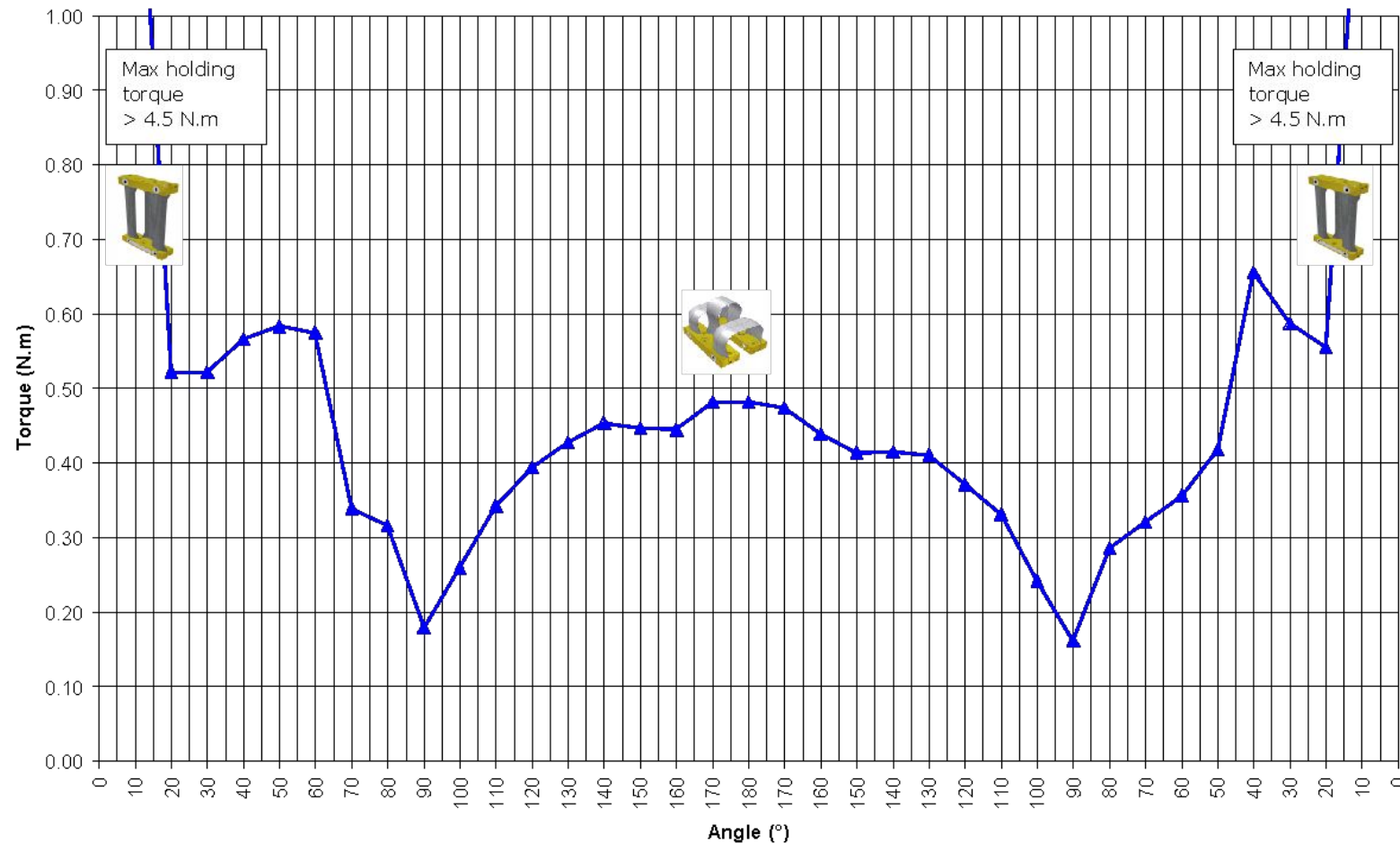
Theoretical stiffness matrix for one hinge



	TX	TY	TZ	RX	RY	RZ
FX	32348	0	0	0	0	0
FY	0	27660140	0	0	0	0
FZ	0	0	1276882	0	0	0
MX	0	0	0	8839	0	0
MY	0	0	0	0	76,2	0
MZ	0	0	0	0	0	964

Motorization Torque: standard measured curve

(for information only: non contractual values)





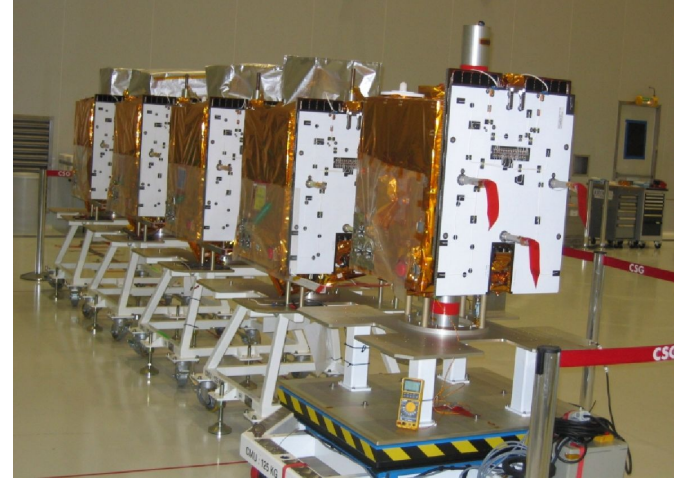
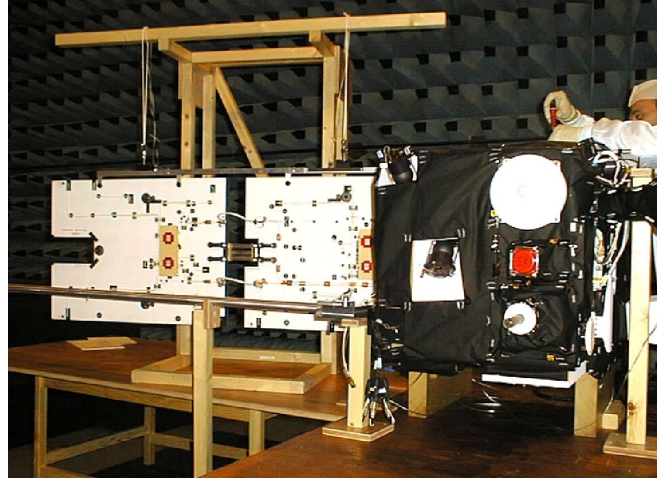
2

Missions



Missions

Double solar arrays deployment on DEMETER, PARASOL, ESSAIM, PICARD, ...: 14 hinges

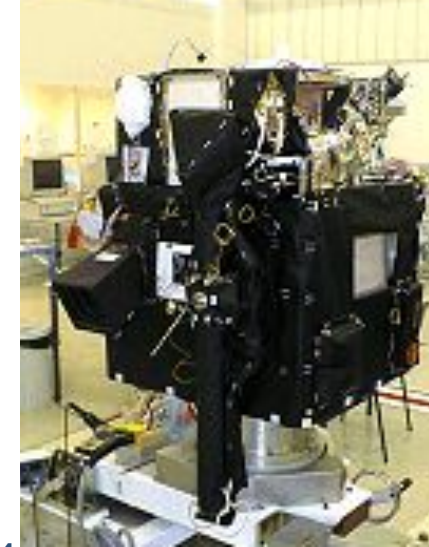


Antennas deployment on ESSAIM (launched in December 2004 with ARIANE 5 G+) : 8 hinges



Missions

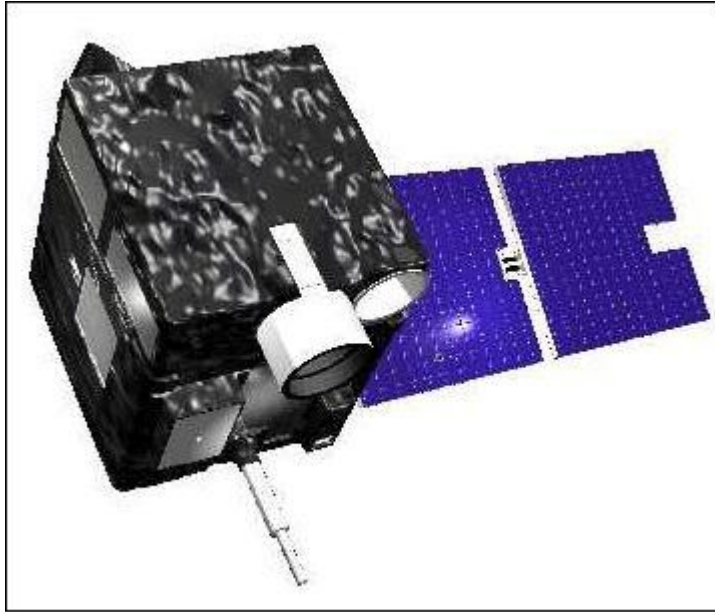
IMSC Sensors deployment on DEMETER **boom** (launched in June 2004 with DNEPR) : 2 hinges



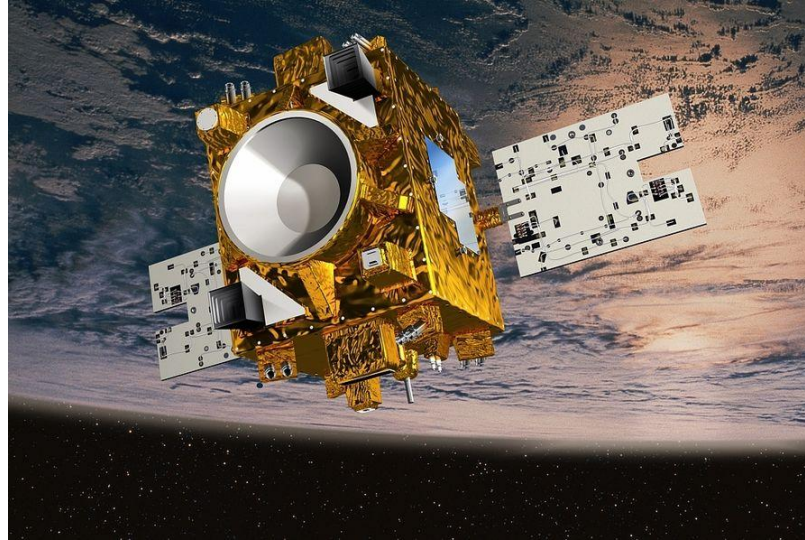
Single solar arrays deployment on PROBA 2 (ESA Mission 2009): 4 hinges (2 for one panel)



Missions



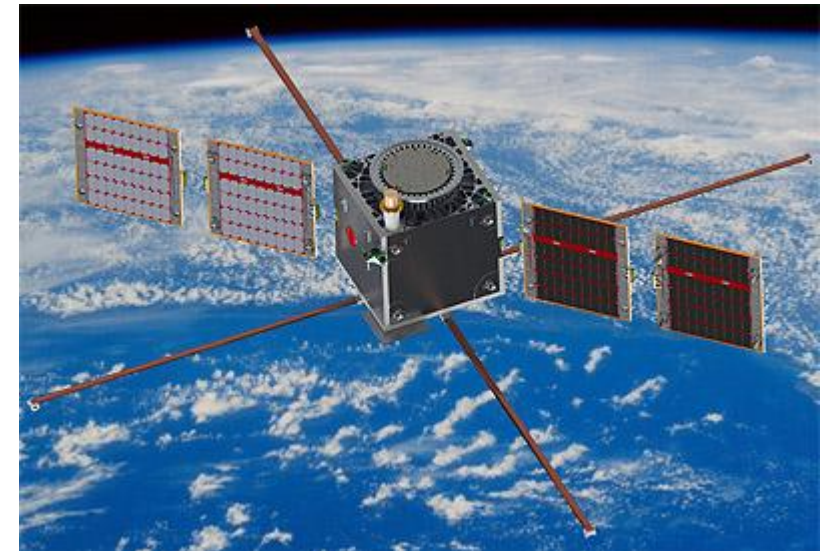
2009 - SPIRALE



2016 - MICROSCOPE



2020 - TARANIS



2020 - ESAIL

Thank you



metravib-engineering.com



Metravib Engineering

