Optics, radars

DIURNAL STAR TRACKER

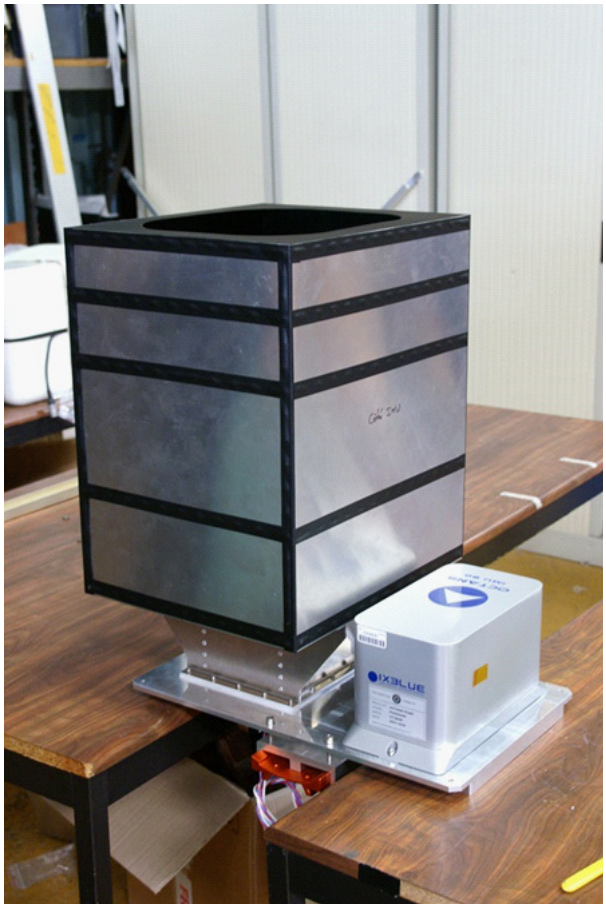
Innovative system for high-frequency measurement of the attitude of a stratospheric vehicle

Technological advantages

Accurate measurement
Attitude measurement with an accuracy of the order of an arcsec
Measurement frequency: 30 Hz, extendable to 200 Hz

A robust system
Operates up to 2°/sec or more during transit
Baffle for pointing to within 18° of the sun

Flexible operation
A single system for both diurnal and nocturnal phases
Autonomous operation
Initialises in a few seconds



Assembly with baffle

Summary of the invention

Hybrid gyro-star tracker system with optical fibre gyro-meter and a large sensor with a lens with a wide field of view

The size of the FOV, 10° x 15° for 16 Mpx, covers enough observable stars (up to magnitude 5.5) for orienting any vehicle above an altitude of 20 km

Potential applications

Possibility of using the system in a closed loop for locking on to the attitude (precise pointing loop.
Pointed gondola (pointing, attitude control)
Satellites (pointing, attitude control)
Drones: stability, precise location of images (sub-metric) without use of landmarks or ground control points
Military use (missile guidance, etc.)

Commercial advantages

Payload optimisation
Continued lightening of aircraft: only one device for daytime and night-time

Autonomous operation
Processing done on board; fast initialisation

Flexibility
Autonomous device which can be carried on various aircraft and space vehicles : observation balloons, drones, satellites, aircraft, etc.

TRL : 9

Patented invention available under licence

B1117

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