AEROSTAT FOR TRANSPORT AND/OR OBSERVATION MISSIONS ON A PLANET WITH AN ATMOSPHERE

Technological advantages

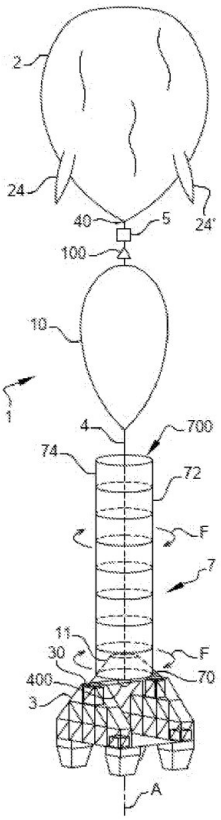
- Increased energy autonomy: The solar generator significantly extends mission duration.
- Optimized mass and bulk: No need for multiple batteries, lightening the payload.
- The generator's positioning avoids obstruction for nadir-pointing instruments.
- Improved stability: The axial arrangement of the generator prevents undesirable payload rotations.
- Modular and retractable design.

Invention synthesis

This invention introduces an innovative aerostat designed for long-duration transport and observation missions. The unique feature of this aerostat is the integration of a solar power generator, positioned between the inflatable body (the balloon) and the payload. This positioning helps overcome the energy limitations of traditional batteries, extending mission duration without increasing the payload's mass or bulk. The generator often has a columnar and retractable shape, extending around the flight chain. This design avoids any visual obstruction for payload instruments pointing downwards and offers optimal solar exposure thanks to photovoltaic cells. This optimizes the aerostat's design and stability.

Potential applications

- Planetary atmospheric exploration: Long-duration missions (any planet with an atmosphere).
- Meteorological monitoring: Continuous collection of atmospheric data.
- Onboard telescopes: Astronomical observation without visual interference.
- Climate research: Study of atmospheric phenomena over extended periods.
- Monitoring pollution or natural resources.



Schematic view
1) aerostat
2) inflatable body
3) payload
5) pyrotechnic separator
7) solar energy generator
10) auxiliary inflatable body
24,24') gas vent sleeve
72) columnar structure
74) photovoltaic cells

Commercial benefits

- Reduced operational costs: Fewer missions needed due to extended flight duration.
- Richer data collection over longer periods.
- Mission flexibility: adapted to various energy needs.
- Unique solution for long-duration space missions.
- Frees up space on the payload for other instruments.

Patented invention - under license.