Mechanics, energy

FOLDABLE STRUCTURE FOR SPONTANEOUS DEPLOYMENT AND LOCKING

Innovative concept with a flexible structure, which can be deployed without an actuator and with spontaneous locking, using the properties of Carpentier joints

Technological benefits

Maximised compactness

Composite material, flexible and lightweight (3 to 4 folds)
Accordion folding and flattened panels when the system is not deployed
Hollow structure once deployed
Possibility of adding panels without losing their mechanical properties

Easy deployment

Use of spring effect, no actuator
Deployment direction pantograph
Pivot-links connecting the panels
Carpentier joint-shaped panels ensuring self-locking in the deployed state

Solidity guaranteed

Section with significant inertia: rigidity and resistance to bending when the device is deployed
Box effect: withstands torsion and resists shearing

Invention overview

Compactable structure based on flexible composite panels formed by two Carpentier joints connected by flexible composite hinges.

The device can be spontaneously deployed in a controlled space until it self-locks.

Potential applications

ultra-lightweight, flexible/transportable supports

Solar generators using flexible cells (mobile, land-based or for small satellites)

Elements in deployable structures

In the space sector or as an alternative to inflatable structures

TRL : 3

Patented invention, available under license

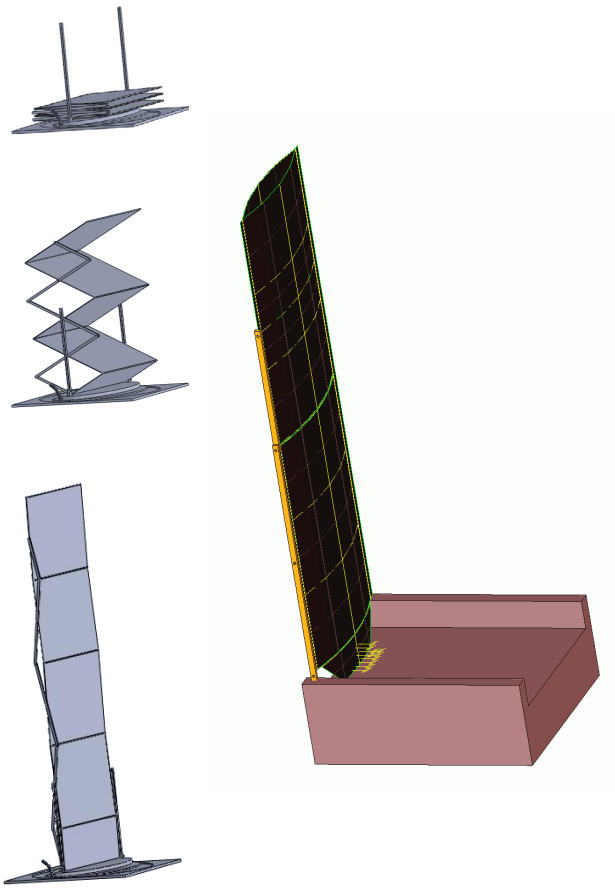

Illustration of deployment

Commercial benefits

Optimised payload

Ultra-lightweight structure
Reduced dimensions when panels are folded up and flattened
No engine

Reduced operational risks

Deployment and locking guaranteed
Controlled deployment area

B1042

For further information

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