Solar360 Mobile Energy

Roll out solar array performance

Overview

The Roll-Out Solar Array (ROSA) is an innovative, lightweight solar array with a flexible substrate that makes use of the stored strain energy in its composite structural members to provide deployment without the.

What is roll-out solar array (ROSA)?

The Roll-Out Solar Array (ROSA) flight experiment was launched to the International Space Station (ISS) on June 3rd, 2017. ROSA is an innovative, lightweight solar array with a flexible substrate that makes use of the stored strain energy in its composite structural members to provide deployment without the use of motors.

What is a roll-out solar array?

The Roll-Out Solar Array (ROSA) is an innovative new solar array design that uses high strain one-piece composite slit-tube booms. The stored strain energy of the booms enforces the deployment actuation, and the booms provide the array's deployed structural stiffness and strength.

Does Everlight space have a flexible solar array?

Notably, Everlight Space has designed a roll-out flexible solar array based on the ROSA architecture (Fig. 10), which was successfully deployed in orbit on an experimental satellite at the end of 2024. This demonstration validated the feasibility of the roll-out design for future applications.

What is Rosa solar array?

ROSA is an innovative, lightweight solar array with a flexible substrate that makes use of the stored strain energy in its composite structural members to provide deployment without the use of motors. This paper will discuss the results of various structural dynamics experiments conducted on the ISS during the weeks following launch.

Does a solar array have a stable thermal-structural response?

Throughout five days of testing, the driven dynamics of the solar array were

consistent and it exhibited a stable thermal-structural response. The primary structural mode was 20% below its expected value, was harder to excite in space than on the ground, and appeared highly damped.

How does a solar array work?

The arrays are powered by 8 cm × 8 cm monocrystalline silicon cells, interconnected through printed circuits embedded in a membrane substrate. Each array has a nominal power output of approximately 25 kW, contributing to a total system capacity of around 200 kW.

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Structural Analysis Methods for the Roll-Out Solar Array ...

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NASA DART - Southern Spars

The Roll-Out Solar Arrays will provide power to the spacecraft, allowing it to direct itself into its target, the binary asteroid system Didymos. DART will be the first-ever space mission to demonstrate asteroid deflection by kinetic impactor.

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Roll-Out ?????????????,Acta Astronautica

On-orbit flight testing of the Roll-Out Solar Array Abstract The Roll-Out Solar Array (ROSA) is an innovative, lightweight solar array with a flexible substrate that makes use of the stored strain ...

On-orbit Structural Dynamics Performance of the Roll-Out Solar Array

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