

Solar Energy South Africa

Does the Stellar Engine generate electricity from solar energy



Overview

Stellar engines are a class of hypothetical megastructures which use the resources of a star to generate available work (also called exergy). For instance, they can use the energy of the star to produce mechanical, electrical or chemical work or they can use the impulse of the light emitted by the star to produce thrust, able to.

Three classes of stellar engines have been defined. Class A (Shkadov thruster) One of the simplest examples of a stellar engine is the Shkadov thruster (named after Dr.

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In broad terms, a stellar engine uses a star to generate work. A simple example is solar panels, which use the Sun's radiation to generate electricity that we use to perform work. How does a stellar engine accelerate the Sun?

Active stellar engines, which accelerate the sun using electromagnetic mass collectors and thermonuclear driven jets, produce accelerations three orders of magnitude less than a passive stellar engine when utilizing the mass flux from the nascent solar wind alone.

How would a stellar engine work?

For a stellar engine, these structures could be equipped with solar sails or other propulsion systems to generate thrust. By carefully arranging and coordinating the motion of these orbiting structures, it would be possible to create a net force on the star, moving it through space much like the Shkadov thruster.

What is an active stellar engine?

An active stellar engine, instead of simply reflecting the luminosity of the star, as a class A, or 'passive' stellar engine would, utilizes energy provided by a Dyson sphere or swarm to acquire propellant in the form of hydrogen and helium from the star's surface, which is subsequently accelerated to generate thrust .

What happens if a star has a stellar engine?

A stellar engine produces a small net acceleration of the star, not large enough to disrupt the planetary system on short timescales, but sufficiently large to deflect the star and planetary system in its galactic orbit by many light-years given millions of years.

How do Star engines work?

Such an endeavor can be achieved via the construction of megastructures known as stellar engines, which utilize a star's own resources to gradually accelerate the star system in the desired direction over extended periods of time.

Does a stellar engine exhaust a star?

Operating a stellar engine at large accelerations does not necessarily exhaust a star, but will extend its life. The maximum acceleration for a thermonuclear driven stellar engine is limited by the mass lifting rate from the star, and scales approximately as $a \propto M^{-2.3}$.

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How is Solar Energy Converted to Electricity?

With the electrons free to move through the silicon, all that's needed is a path for the electrical energy to make its way out of the panel. Each solar cell has two sets of metal gridlines connected to its surface, called ...

Solar power 101: What is solar energy? , EnergySage

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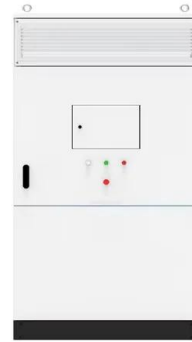
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Nor does ACI Europe have a written position on this matter, but it does point out that within its Airport Carbon Accreditation scheme it has highlighted how the generation of power from solar ...

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