



NAS Solar Photovoltaic Panels

What is print-assisted photovoltaic Assembly (Papa)?

Print-assisted photovoltaic assembly (PAPA) is an assembly process that leverages robotic automation to build fully functional flexible thin-film solar arrays. By increasing manufacturing efficiency, PAPA's no-touch technology can reduce labor costs, decrease time-to-market, and enable assembly of large-scale solar arrays of over 500kW.

Could NASA's Papa technology benefit large-scale solar arrays?

NASA is seeking licensees that may benefit from low-cost, automated assembly of large-scale solar arrays. NASA researchers have developed the PAPA technology to increase the efficiency of the thin-film solar array assembly process, significantly decreasing assembly time and labor costs associated with manufacturing large scale solar arrays.

Why are solar panels used in NASA's Space Telescope?

Silicon-based solar cells power many of NASA's spacecraft, including the James Webb Space Telescope. Learn more about why this abundant material is used in solar panels in this excerpt from NASA's Elements of Webb video series. Silicon is the go-to chip and sensor material for a reason: It works!

What is NASA Glenn's new multi-junction photovoltaic cell?

This NASA Glenn innovation is a novel multi-junction photovoltaic cell constructed using selenium as a bonding material sandwiched between a thin film multi-junction wafer and a silicon substrate wafer, enabling higher efficiencies.

Can solar panels be used in space?

NASA is also developing technology for flexible and rollable solar panels that can improve their use in constrained spaces. Using different materials for the base layer of a solar panel can make a panel lighter and more flexible -- essential attributes for space missions that need to be packed into a small space in a rocket.

Can solar panels power spacecraft?

Solar cells became the de facto way to power spacecraft, and remain so today. Some missions, such as NASA's Parker Solar Probe, require specialized solar panels that can operate in extreme environments.

Print-assisted photovoltaic assembly (PAPA) is an assembly process that leverages robotic automation to build fully functional flexible thin-film solar arrays. By increasing manufacturing efficiency, PAPA's no-touch technology can ...

One of the most important breakthroughs in the history of solar panels happened in 1876. Two researchers, Adams and Day, discovered that selenium produced electricity when exposed to the sun. Understanding this process led to the ...

The tilt angle of solar panels is significant for capturing solar radiation that reaches the surface of the panel. Photovoltaic (PV) performance and efficiency are highly affected by its angle of tilt ...

a photovoltaic panel to convert laser radiation will also convert sunlight. Ø When rover moves into an illuminated area, a laser receiver functions as a solar array. ... Solar Array Panel (Three 1.0 ...

End-of-life (EOL) solar panels may become a source of hazardous waste although there are enormous benefits globally from the growth in solar power generation. Global installed PV ...

Fig. 14.2 shows the calculated curve of power output as a function of temperature, comparing a high-efficiency silicon solar cell with a wide-bandgap solar cell, in the case of the linear ...

NASA is also developing technology for flexible and rollable solar panels that can improve their use in constrained spaces. Using different materials for the base layer of a solar panel can make a panel lighter and more flexible -- essential ...

radiation is central to generating power in PV systems, the complete spectrum includes short wavelength ultraviolet components, which photo-ionize materials, as well as long ... High ...

The solar panels incorporate Rocket Lab's quadruple-junction "Z4J" solar cells and utilize automated assembly methods pioneered by the Company's Albuquerque-based team for high-volume production of satellite ...

With the PV solar conversion efficiency ranging from 5-20% and a typical installed PV solar reflectance of 16-27%, 53-79% of the solar energy heats the panel. Most of this heat is then ...

