

Solar power generation efficiency on the moon

How will solar power affect the lunar surface?

The amount of electric power consumed on the lunar surface increases with the arrival of the lunar habitat and ISRU systems, which will bring their own power generation (solar arrays) and energy storage devices (batteries or fuel cells).

Can a solar array power the Moon?

An illustration of a vertical solar array power source on the surface of the Moon. NASA is working with commercial companies to mature vertically deployable solar array systems for the lunar surface. The Artemis program will return NASA to the Moon and establish a sustainable presence at the lunar South Pole.

What is the efficiency of solar thermal storage power generation system?

The heat rejection of radiator is 33.7%, and the generator heat loss is 1.0%. The total efficiency of the whole solar thermal storage power generation system is 19.6%, which is calculated by $\eta_{\text{total}} = \eta_{\text{generator}} \times \eta_{\text{storage}} \times \eta_{\text{radiator}}$ where the lunar circadian cycle T_{lunar} is 350h, generation efficiency η_{gen} is 0.95. Fig. 11.

Does a lunar surface economy need an electric power utility?

This is especially true as a lunar surface economy begins and requires an electric power utility. VI. ACKNOWLEDGMENTS The authors would like to thank NASA's Space Technology Mission Directorate, Game Changing Development Program for funding this work.

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NASA is working with commercial companies to mature vertically deployable solar array systems for the lunar surface. An illustration of a vertical solar array power source on the surface of the Moon. NASA is working with commercial companies to mature vertically deployable solar array systems for the lunar surface.

Is photovoltaic power generation possible on the Moon?

Girish T, Aranya S. Photovoltaic power generation on the moon: problems and prospects. In: Badescu V (ed) Moon. Berlin, Heidelberg: Springer Publishers, 2012. 29. Wadia C, Alivisatos AP, Kammen DM. Materials availability expands the opportunity for large-scale photovoltaics deployment.

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