



Lunar Microgrid Project

What is a lunar power grid?

Beyond Artemis Case for a Lunar Power Grid Lunar power grid to provide electrical power - Flexibility, evolvability, and reconfiguration - Optimal dispatch of power sources and energy storage to service loads & enhance reliability - Systematic integration of new sources and loads - Allow development and use of a common grid interface -

Why do we need a sustainable lunar surface power system?

Finite number of landers/flights with mass restrictions. Allows for consumers to grow and change over time. Sustainable power for the Lunar surface has some very unique challenges. Ability for the lunar surface power system to grow and evolve over time.

What is the lunar surface innovative initiative?

Implementation and evaluation of the US Army developed Tactical Microgrid Standard for space power systems. The Lunar Surface Innovative Initiative works across industry, academia and government through in-house efforts and public-private partnerships to develop transformative capabilities for lunar surface exploration.

What is a terrestrial microgrid?

Most terrestrial microgrids, and terrestrial electrical grids in general, run on alternating-current power. Like a high-end model train set, the testbed consists of three interconnected DC microgrids with custom-built electronics to mimic different power-production systems and devices that use electricity.

What makes a good lunar power system?

Ability to continue lunar surface operations regardless of time of lunar day. o Requires a complex power generation and energy storage strategy to provide continuous power. - Most likely cannot rely on just batteries/fuel cells to provide all power during lunar night. Highly distributed power system.

How will lunar surface power evolve?

2 Expected Evolution of Lunar Surface Power (Lunar Grid) 3 1) Early lunar surface power users will bring their own power sources (including energy storage) 2) Power sources will arrive that are not dedicated to a specified load will be available 3) Over time power demands will grow and exceed the original power source capabilities

An artistic rendering of what a resilient microgrid for a lunar base camp might look like. Sandia National Laboratories engineers are working with NASA to design the system controller for the ...

Tolton, meanwhile in the same class, created Luna Power, which proposed a lunar DC microgrid to kickstart mining on the Moon. Liang found Tolton's idea promising, so when the solar power project fizzled out, he ...



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microgrid for future lunar base May 5 2022, by Mollie Rappe 1/9. An artistic rendering of what a resilient microgrid for a lunar base camp might 2/9. ... that some of the lessons that come out ...

"Even though this work is for a microgrid on the moon, the research is also relevant to creating resiliency for communities on Earth," Darbali-Zamora said. "I'm originally ...

Lunar microgrids, or remote microgrids detached from any utility grid, are fully capable of powering and monitoring many different infrastructures, even in space. NASA recently revealed plans to ...

Reliable, resilient microgrid to sustain astronauts, mining and fuel processing LUNAR TESTING -- Sandia electrical engineers Rachid Darbali-Zamora, front, and Lee Raskin test an algorithm on a hardware-in-the-loop ...

May 11, 2022: Powering the moon: Researchers design microgrid for future lunar base (Nanowerk News) Sandia National Laboratories is well-known for designing reliable and resilient ...

lunar surface without the need of carrying their own power, which saves mass. For power sharing to occur on the lunar surface, a power distribution and transmission system must be designed. ...

In order to power that base, and manage energy flow between human habitation and other needs, NASA is partnering with Sandia National Laboratories in Albuquerque to design a resilient lunar microgrid.

This is not the first time Sandia has partnered with NASA to power equipment on the moon. In fact, Sandia provided the technical direction for the radioisotope thermoelectric ...

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