IAF SPACE POWER SYMPOSIUM (C3)
Solar Power Satellite (1)

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TESTING OF A SOLAR ENERGY SATELLITE CONCEPT ON NANOSATELLITE PLATFORM

Abstract

Energy production and consumption are major global concerns today, as conventional energy sources like coal, oil, and natural gas are rapidly depleting and posing a significant threat to the environment. In an effort to address these problems, new and innovative solutions are being explored, including the concept of using satellites to transport solar energy.

Solar energy has the potential to provide clean and renewable energy to meet the growing energy demands of the world. The development of new technologies to harness the power of the sun has become a priority for many nations as they seek to meet their energy needs while minimizing greenhouse gas emissions. One such technology is the Solar Energy Satellite (SES). This concept involves collecting solar energy in space and transmitting it back to Earth.

The idea of using satellites to gather solar energy has been known since the 1970s, but it has only become a practical option in recent years due to advancements in technology. One of the biggest challenges in developing SES technology is the cost of developing and launching a solar energy satellite. However, researchers and engineers are now testing the SES concept on nanosatellite platforms to overcome this challenge. Testing the concept of a SES on nanosatellite platforms can provide valuable insights and pave the way for the development of full-scale SES systems. Nanosatellites are small, relatively cheap spacecraft that are ideal for early-stage concept testing. They provide a low-cost and low-risk option for integrating key components, such as solar panels, power management systems, and communication systems. Nanosatellites can also be used to test the efficiency of power transmission from the satellite to the ground, which is a critical challenge in SES systems. By testing the SES concept on a nanosatellite platform, researchers and engineers can demonstrate the feasibility of the concept, validate the performance of key components, and gain valuable experience and information that can inform the development of full-scale SES systems. This can help accelerate their deployment and bring the world closer to realizing the potential of clean, renewable energy from space.

In conclusion, the article highlights the importance of testing the SES concept on nanosatellite platforms, the potential benefits it could bring to the development and deployment of SES systems, conceptual designs for testing SES on nanosatellites, and possible mission analysis.