IAF SPACE POWER SYMPOSIUM (C3)
Interactive Presentations - IAF SPACE POWER SYMPOSIUM (IP)

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DIRECT SUN REFLECTION ARCHITECTURE FOR PROVIDING ADDITIONAL ENERGY FROM SPACE TO EXISTING SOLAR FARMS

Abstract

The DSR concept is based on increasing sunlight on photovoltaic panels (or equivalent) by redirecting the solar light via reflection panel on satellites. Satellite Power Stations are acting as ever ready "additional artificial suns" that can be powered up, dimmed or shut down on demand. An analysis of the two main power transmission concepts, Radio Frequency (RF) and Direct Sun Reflection (DSR), shows that DSR could represent a competitive and complementary alternative for SBSP-RF system, especially in terms of flexibility and time to market. A new global electric energy economy is emerging. In 2020, renewable sources of electricity such as wind and solar PV continued to grow rapidly. In this context, a Space Solar infrastructure based on the DSR concept can highly contribute to reach the NZE scenario defined by the IEA, in particular if it target the non-electric energy market. The presentation describes the global DSR architecture of the space segment and the associated economics in terms of cost, EnROI and carbon net emissions. Here are some questions that will be addressed during the presentation: -What are the main components of the DSR concept and how do they operate? -How does the DSR concept potentially offer an infinite and decarbonized energy at a competitive cost? -How DSR architecture can be compared to SBSP-RF architectures ? what advantages and concerns? -What is the added value of the space infrastructure to existing ground infrastructure? -How the DSR concept can contribute to increase the efficiency of existing solar farms? -How it can help to increase the volume of clean electricity with a higher efficiency?