

SPACE POWER SYMPOSIUM (C3)
Architectures, concepts and systems for space power (3)

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SPACE SOLAR POWER SYSTEM AND WIRELESS POWER TRANSMISSION TECHNOLOGIES

Abstract

Space Solar Power System generates the electrical power (Giga-watt level) using solar battery on Geostationary-Orbit, exchanges the electrical power into the Microwave/Laser power, transmits the Microwave/Laser power from the space to the Earth, and exchanges the Microwave/Laser power into the electrical power again. Because this system does not use the fossil fuel to generate the electrical power, Space Solar Power System is expected to be one of the solutions for Global warming and Energy depletion. In Japan, research agencies (ex. Japan Aerospace Exploration Agency, Unmanned Space Experiment Facility), universities (ex. Kyoto University), and enterprises research and develop this system. Mitsubishi Heavy Industries also researches and develops this system earnestly. This paper explains current status of the researches and developments on Space Solar Power Systems, especially the fundamental experiments, the ground demonstrations, and the spin-off products. The first item is “the fundamental experiments”. (1) The fundamental experiments of the tether control systems for the hundred metres scaled space structure with Tokyo Metropolitan University. (2) The high-efficiency and high-accuracy microwave wireless power transmission unit with Kyoto University. (3) The fundamental experiments of the inflatable truss for the large scaled space structure. The second item is “the ground demonstrations”. (1) The microwave wireless energy transmission demonstration on the ground with Japan Aerospace Exploration Agency. The last item is “the spin-off products”. (1) The wireless power charge system (prototype) for Electric Vehicle with New Energy and Industrial Technology Development Mitsubishi Heavy Industries contributes to realize “Space Solar Power System” through these researches and developments.