

SPACE POWER SYMPOSIUM (C3)
Space-Based Solar Power Architectures / Space & Energy Concepts (1)

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STUDIES ON ASSEMBLY TECHNOLOGY OF DEPLOYABLE TRUSS STRUCTURE FOR SPACE
SOLAR POWER SYSTEMS

Abstract

Japan Aerospace Exploration Agency (JAXA) has been conducting studies on Space Solar Power Systems (SSPS) using microwave and laser beams since FY1998. Large structure assembly is one of the most critical technologies for realizing SSPS. The large structure of kilometer size must be constructed on orbit for SSPS practical models of 1GW class. We have been studying how to assemble the structure of 100m size on orbit as the middle target before the study of kilometer size structure. As the result of trade-off study on assembly technologies of the large structure for SSPS, we selected the assembly technology of the deployable truss structure. In this assembly technology, automatic deployment and joining functions of the deployable truss structure using equipment which supports deployment and joining are very critical functions. So, we carried out the ground test for demonstrating these functions and obtained the good result in FY2012. As the next step, we have plan to carry out the ground test for verifying full functions of this technology in FY2015 and afterwards. We completed the design of ground test equipment in FY2013 and are manufacturing it. Moreover, we are also analyzing attitude stability of the deployable truss structure on orbit. This paper shows the outline of these studies.