

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

Author: Dr. Joon Min Choi

Korea Aerospace Research Institute (KARI), Korea, Republic of, jmchoi@kari.re.kr

CONCEPTUAL DESIGN OF KOREAN SPACE SOLAR POWER SATELLITE

Abstract

Korean government established the 3rd national space development promotion basic plan in February 2018. In the plan, there are many road maps and strategies for space developments such as space launcher development, satellite development and its application, space exploration, Korean navigation system development, enforcement of fundamental abilities and industrialization. Coincidentally, the plan mentioned that Space Solar Power Satellite(SSPS) should be developed in order to find new technology convergence area, create new technologies and establish innovative industrial basis. In addition, Korean government already declared that old nuclear power plants will be shut down without extension of mission life and the dependency on nuclear energy will be reduced from 30

This paper covers all the activities for SSPS in Korea and proposed road map as well as the design concepts of Korean space solar power satellite(K-SPSS) for the first time. The design concepts of K-SPSS can be characterized as extendable type, non-focusing type using thin film roll-out solar array and adaptation of self-deployment mechanism as much as possible. This paper shows the reason that K-SPSS selected the above characteristics and illustrates how to integrate K-SPSS in a low earth orbit, transfer to a geostationary orbit and finally complete the integration of K-SPSS. This paper also includes strategy and current status of core technology build-up in subsystem and system levels in Korea in order to get over the disadvantages which a long period project usually has.