

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

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THREE-PHASES MODULAR CONSTRUCTION DEMONSTRATION SCHEME FOR MW-CLASS  
MR-SPS

**Abstract**

With the continuous breakthrough of key technologies related to space power station in China, on-orbit verification test for key technologies should be systematically and scientifically implemented to promote the realization of the medium-term goal of MW-class demonstration in 2030 which includes civilian emergency power supply demonstration, safety and reliability test research and scientific research. The construction of MW-class space power station is characterized by phase and periodicity. To accommodate phased demonstration of MW-class MR-SPS, a three-phases modular construction scheme based on operation system consist of launch vehicle, transfer vehicle and space assembly robots was given. Planning on launch, orbit transfer, on-orbit assembly, and system maintenance during life cycle was carried out. Also reasonable concept design for the demonstration of the key technologies including station space ultra-high voltage power collection and transmission test, the inter-orbital laser energy transmission test, and the space wireless energy to ground transmission was designed based on the three-phases construction scheme. With this three-phases modular construction demonstration scheme the full scale demonstration of the MW-class system will be achieved and a full functional platform will be provided for further scale expansion.