IAF SPACE POWER SYMPOSIUM (C3)
Space Power System for Ambitious Missions (4)

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PHOTOVOLTAIC ASSEMBLY FOR JUICE

Abstract

This paper describes the main contraints for the design and development of the JUICE photovoltaic assembly, in order to apply minimum variations with respect to structural and mechanical concept relevant for deployable solar arrays already qualified. The characterization program aims at demonstrating that the materials and components can survive and operate under the specific Jupiter environmental conditions.

Among others, the most demanding development activity is related to the grounding of the solar cells coverglasses. The JUICE mission requirements are very specific and demanding in terms of environmental conditions, magnetic and electric field. The additional design and verification for the JUICE mission is strongly determined by the following: 1) The performance of the PVA under Low Intensity Low Temperature (LILT) conditions 2) The target to keep the mass as low as possible. 3) The extreme nominal temperatures, expected to range from 54 K to 430 K 4) The stringent requirement to prevent Electro Static Discharge (ESD). The design of this product, which will be exposed to a not precedential environment, is an iterative process, to avoid a heavy overdesign risk.