

SPACE POWER SYMPOSIUM (C3)
Small and Very Small Advanced Space Power Systems (4)

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SIMPLIFIED ARCHITECTURE OF EPS FOR NANO SATELLITE

Abstract

PES Institute of Technology (PESIT), Bangalore has initiated the development of a student nano-satellite. A consortium of colleges has been formed to pool laboratory resources and research funding. Design, building, testing and flying satellites is challenging and requires the best effort of everyone involved. The objective of this is to familiarize and excite students in the area of space technology and provide practical experience in building a reliable, efficient low cost imaging satellite. Satellite is planned to be positioned in a 10:30 AM Polar Sun Synchronous orbit with an altitude range of 600 km -800 km and inclination of 98.0. A robust and highly reliable power system has been designed with ATJ solar cells, COTS technology Lithium ion batteries, battery management protection unit, advanced technology electronic parts and components. DC-DC buck – boost converters are used to provide regulated power supply from the solar array/battery to different onboard subsystems. The unique feature of the system is protection and management of power system elements (enable/disable of on-board devices, over current protection, health monitoring) and the distribution through interface with OBC. This paper describes the architecture and design details of the EPS.