Lightweight IMM PV Flexible Blanket Assembly

For high-voltage solar electric propulsion missions

Deployable Space Systems (DSS) has developed an inverted metamorphic multijunction (IMM) photovoltaic (PV) integrated modular blanket assembly (IMBA) that can be rolled or z-folded. This IMM PV IMBA technology enables a revolutionary flexible PV blanket assembly that provides high specific power, exceptional stowed packaging efficiency, and high-voltage operation capability. DSS’s technology also accommodates standard third-generation triple junction (ZTJ) PV device technologies to provide significantly improved performance over the current state of the art.

This SBIR project demonstrated prototype, flight-like IMM PV IMBA panel assemblies specifically developed, designed, and optimized for NASA’s high-voltage solar array missions.

Applications

NASA

- Near- to medium-term NASA Discovery, Flagship Outer-Planets, and New Frontiers–class science missions
- Interplanetary comet rendezvous and solar electric propulsion science missions
- Low Earth orbit (LEO), geosynchronous Earth orbit (GEO), planetary or celestial-body lander, planetary orbiter, and/or deep space applications

Commercial and Military

- Power and energy production for fixed-ground, mobile, and roof-mounted consumer applications
- High-altitude airship applications
- LEO surveillance, reconnaissance, communications, commercial mapping, and other critical payload/equipment satellites
- GEO commercial and Defense Department communications and critical payload/equipment satellites

Benefits

- High-voltage operability
- High specific power (>1,000 W/kg beginning of life [BOL] at the blanket subsystem level; >500 W/kg BOL at the array level)
- Compact stowage volume (>50 kW/m³)
- Rollable or z-foldable for stowage
- Flexible and durable
- Adaptable to all existing industry flexible blanket solar array products

Firm Contact

Deployable Space Systems
Brian Spence
Brian.Spence@DeployableSpaceSystems.com
75 Robin Hill Road, Building B2
Goleta, CA 93117–3108
Phone: 805–805–1313

Proposal Number: 09-2 S3.03-8863