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Space Power Supply Market - A Global and Regional Analysis: Focus on Application, Product, and Country Level Analysis - Analysis and Forecast, 2024-2034

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Abstracts

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This report will be delivered in 7-10 working days.Introduction of Space Power Supply Market

The space power supply market includes a broad range of solutions, such as solar power systems, batteries, energy storage devices, and power management technologies, all crucial for space applications. This market has been driven by increasing demand for more efficient and reliable power sources for satellites, spacecraft, and space stations. Innovations in space power technologies, including advanced solar panels and high-capacity energy storage systems, are responding to the growing need for sustainable energy solutions in space exploration. The space power supply market is highly competitive, with key players such as Airbus and Rocket Lab USA leading the industry. Additionally, the growing emphasis on cost-efficiency, sustainability, and long-duration space missions is shaping consumer and industry preferences, prompting companies to invest in cutting-edge technologies and innovative power solutions. This dynamic market is continuously evolving to meet the demands of space exploration and satellite operations.

Market Introduction

The space power supply market encompasses various solutions, including solar power systems, batteries, energy storage devices, and power management technologies, all essential for space missions. This market has been expanding as demand grows for

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efficient and reliable power sources for satellites, spacecraft, and space stations. Innovations such as advanced solar panels and high-capacity energy storage solutions have been gaining traction, providing sustainable power for long-duration space exploration. Leading companies such as Airbus, Boeing, and Lockheed Martin dominate the market, continually advancing their technologies to remain competitive. Additionally, increasing focus on sustainability and cost-effectiveness has been influencing the market, prompting investment in eco-friendly power solutions and energy-efficient systems. The space power supply market is evolving rapidly to meet the growing needs of space exploration and satellite operations.

Industrial Impact

The space power supply market has a significant industrial impact, driving considerable economic activity and employment in the aerospace and energy sectors. Major players such as Airbus, Boeing, and Lockheed Martin invest heavily in research, manufacturing, and distribution, supporting a wide network of suppliers, contractors, and service providers. The demand for advanced technologies such as solar panels, batteries, and power management systems fosters innovation in energy storage and power efficiency, benefiting electronics, materials science, and renewable energy industries.

The space power supply market also supports the growth of related sectors, including the satellite industry, where power solutions are critical for long-duration space missions and satellite operations. Innovations in space power systems lead to advancements in energy efficiency, which influence global energy markets and the development of cutting-edge technologies. The increasing focus on sustainability is prompting investments in renewable energy solutions and more efficient power management, reducing the environmental impact of space missions.

Moreover, the market's emphasis on supporting space exploration and communication infrastructure drives collaborations with space agencies, research institutions, and private companies, further enhancing technological advancements and creating a more sustainable space economy. Overall, the space power supply market is a key contributor to technological innovation, economic growth, and the future of space exploration.

Market Segmentation:

Segmentation 1: by Application

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Satellites

Space Exploration and Deep-Space Missions

Land

Rover

Orbiter

Space Stations and Habitats

Launch Vehicles

Small and Medium-Lift Launch Vehicles

Heavy and Super Heavy-Lift Launch Vehicles

Satellites to Dominate the Space Power Supply Market (by Application)

The space power supply market, by application, is predominantly driven by satellites. The satellite segment was valued at $8,480,479.7 thousand in 2023 and is projected to reach $13,191,524.0 thousand by 2034. This segment has been experiencing significant growth due to the increasing demand for more efficient and reliable power solutions for both commercial and governmental satellite operations. Additionally, advancements in solar power systems, energy storage technologies, and power management solutions have been further fueling this growth, supporting longer-duration missions and enhancing satellite performance.

Segmentation 2: by Satellite Orbit

Low Earth Orbit (LEO) Satellites

Geostationary Earth Orbit (GEO) Satellites

Medium Earth Orbit (MEO) Satellites

Beyond Earth Orbit Satellites

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Segmentation 3: by Satellite Type

Small Satellites (CubeSats, NanoSats) (1-10 kW)

Medium Satellites (10-15 kW)

Large Satellites (Above 15 kW)

Segmentation 4: by Component Type

Solar Power Systems

Solar Cells

Solar Array/Panel

Battery Systems

Power Management and Distribution (PMAD) Systems

Segmentation 5: by Region

North America

Europe

Asia-Pacific

Rest-of-the-World

Recent Developments in the Space Power Supply Market

5N Plus Inc. has announced that its subsidiary, AZUR SPACE Solar Power GmbH, successfully completed its 2024 production capacity expansion,

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increasing output by 35%, surpassing the original 30% target. By the end of 2025, AZUR plans to further boost solar cell production by an additional 30%, with minimal extra investment. This expansion will help meet the rising demand for space power supply solutions, enhancing AZUR's role as a key player in the space power supply market, particularly in advanced solar cell technology.

On June 11th, 2024, Rocket Lab announced that it had signed a preliminary agreement to receive up to $23.9 million in funding under the CHIPS Act to expand the production of space-grade solar cells. This investment will enhance Rocket Lab's manufacturing capacity for semiconductors used in spacecraft and satellites, creating over 100 new jobs in Albuquerque, New Mexico. The space-grade solar cells, crucial for national defense and space exploration programs such as NASA’s Artemis and the James Webb Space Telescope, position Rocket Lab as a key player in the space power supply market.

On January 31, 2022, Ascent Solar Technologies announced that it was selected by Momentus, Inc. to produce flexible CIGS photovoltaic (PV) modules for a demonstration deployable PV array. These modules will provide power to the Vigoride spacecraft, scheduled for a Low Earth Orbit flight in 2022. This collaboration highlights Ascent Solar’s role in advancing space power supply solutions with lightweight, flexible PV technology for space applications.

EaglePicher announced that its batteries are critical to NASA's Artemis I mission, providing power for both the Orion spacecraft crew module and the Space Launch System (SLS) flight termination system. The company supplied two 32-volt, 10 Ah silver-zinc batteries to ensure flight safety by powering the SLS’s flight termination system, which turns off propulsion in case of an emergency. This collaboration highlights EaglePicher’s role in advancing battery technology for space power supply and supporting deep space exploration missions.

How can this report add value to an organization?

Growth/Marketing Strategy: The space power supply market has seen major development by key players operating in the market, such as business expansion, partnership, collaboration, and joint venture. The favored strategy for the companies has been synergistic activities to strengthen their position in the space power supply market.

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Competitive Strategy: Key players in the space power supply market have been analyzed and profiled in the study of space power supply products. Moreover, a detailed competitive benchmarking of the players operating in the space power supply market has been done to help the reader understand how players stack against each other, presenting a clear market landscape. Additionally, comprehensive competitive strategies such as partnerships, agreements, and collaborations will aid the reader in understanding the untapped revenue pockets in the market.

Methodology: The research methodology design adopted for this specific study includes a mix of data collected from primary and secondary data sources. Both primary resources (key players, market leaders, and in-house experts) and secondary research (a host of paid and unpaid databases), along with analytical tools, have been employed to build the predictive and forecast models.

Data and validation have been taken into consideration from both primary sources as well as secondary sources.

Key Considerations and Assumptions in Market Engineering and Validation

Detailed secondary research has been done to ensure maximum coverage of manufacturers/suppliers operational in a country.

To a certain extent, exact revenue information has been extracted for each company from secondary sources and databases. Revenues specific to product/service/technology were then estimated based on fact-based proxy indicators as well as primary inputs.

The average selling price (ASP) has been calculated using the weighted average method based on the classification.

The currency conversion rate has been taken from the historical exchange rate of Oanda and/or other relevant websites.

Any economic downturn in the future has not been taken into consideration for the market estimation and forecast.

The base currency considered for the market analysis is US$. Currencies other than the US$ have been converted to the US$ for all statistical calculations,

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considering the average conversion rate for that particular year.

The term “product” in this document may refer to “service” or “technology” as and where relevant.

The term “manufacturers/suppliers” may refer to “service providers” or “technology providers” as and where relevant.

Primary Research

The primary sources involve industry experts from the space power supply industry, including space power supply product providers. Respondents such as CEOs, vice presidents, marketing directors, and technology and innovation directors have been interviewed to obtain and verify both qualitative and quantitative aspects of this research study.

Secondary Research

This study involves the usage of extensive secondary research, company websites, directories, and annual reports. It also makes use of databases, such as Businessweek and others, to collect effective and useful information for a market-oriented, technical, commercial, and extensive study of the global market. In addition to the data sources, the study has been undertaken with the help of other data sources and websites.

Secondary research was done to obtain critical information about the industry’s value chain, the market’s monetary chain, revenue models, the total pool of key players, and the current and potential use cases and applications.

Key Market Players and Competition Synopsis

Profiled companies have been selected based on thorough secondary research, which includes analyzing company coverage, product portfolio, market penetration, and insights gathered from primary experts.

The space power supply market is characterized by a mix of established industry leaders and emerging innovators. Major companies such as Airbus and EnerSys are prominent players that offer advanced power solutions for space applications. These companies maintain their dominance by consistently investing in research and

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development driving technological advancements in solar power systems, batteries, and power management solutions for space missions. Emerging startups and niche players are also making notable strides in the space power supply market, focusing on cutting-edge technologies such as micro-power systems and more efficient energy storage solutions.

Some prominent names established in this market are:

AZUR SPACE Solar Power GmbH

Spectrolab

Rocket Lab USA

SHARP CORPORATION

Shanghai Institute of Space Power-Sources

MicroLink Devices, Inc.

Mitsubishi Electric Corporation

Bharat Electronics Limited (BEL)

Ascent Solar Technologies, Inc.

CESI S.p.A.

EaglePicher Technologies

S.A.B. Aerospace Srl

AIRBUS

Saft

EnerSys

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