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Satellite Solar Cell Materials Market by Material Type (Silicon, Copper Indium Gallium Selenide (CIGS), Gallium Arsenide (GaAs)), Application (Satellite, Rovers, Space Stations), Orbit (LEO, MEO, GEO, HEO, Polar Orbit), & Region - Global Forecast to 2030

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Abstracts

The satellite solar cells materials market is projected to reach USD 96 million by 2030, at a CAGR of 13.7% from USD 44 million in 2024. The Gallium Arsenide (GaAs) segment is the fastest-growing category in the satellite solar cell materials market, owing to its unique combination of features that make it ideal for space applications. GaAs solar cells have higher efficiency and better radiation resistance than typical silicon-based cells, making them excellent for powering satellites in hostile space settings. Their better performance enables satellites to generate more electricity using smaller and lighter solar arrays, which is crucial for missions with limited payload capacity. Furthermore, GaAs solar cells have shown exceptional performance in high-temperature environments, ensuring consistent operation even after extended exposure to sunshine. As satellite technology progresses and the desire for more efficiency and dependability grows, GaAs solar cells are increasingly being favoured for their superior performance features, driving significant growth in the segment. Moreover, ongoing research and development efforts aimed at further improving GaAs solar cell efficiency and reducing manufacturing costs are expected to sustain the segment's rapid growth in the satellite solar cells materials market.

“Space Station, by application, accounts for the second-largest market share in 2024.”

The market for satellite solar cell materials is expanding quickly in the space station application segment because of a number of important aspects. First off, there is a growing need for dependable and effective power production systems as a result of the

growing use of space stations, like the International Space Station (ISS), for scientific study, technological progress, and international cooperation. Space stations require power from solar cells in order to run their equipment and experiments continuously. Furthermore, the need for more advanced and competent solar cell materials to fulfil changing power requirements is being driven by developments in space station technology, including the growth of crewed missions and the construction of new orbital platforms. Moreover, the increasing commercialization of space operations, the development of private space stations, and habitats are further boosting demand for solar cells in this segment. As a result, the Space station application segment is experiencing significant growth in the satellite solar cells materials market, driven by the expanding scope and increasing importance of space station missions in scientific research, technology development, and space exploration endeavors.

“LEO is expected to be the fastest growing at CAGR 13.9% for satellite solar cell materials market during the forecast period, in terms of value.”

The market for materials for satellite solar cells is expanding at the quickest rate in the Low Earth Orbit (LEO) sector for a number of important reasons. To begin with, there is a significant need for solar cells due to the expansion of satellite constellations in low Earth orbit (LEO) for a range of purposes including communication, Earth observation, and remote sensing. Because multiple satellites must operate in close proximity to each other in these constellations, lightweight, dependable, and effective solar cells are needed to provide power requirements while minimizing the total mass of the spacecraft. Furthermore, LEO deployments have increased due to the development of small satellite platforms and improvements in satellite miniaturization, which has increased the need for solar cells that are tailored for small satellite designs. Solar power is also becoming more widely used in low earth orbit (LEO) missions due to the growing emphasis on sustainability and renewable energy sources in space research.

“Based on region, Asia Pacific was the fastest growing market for satellite solar cells materials market in 2024.”

The market for materials for satellite solar cells is expanding at the quickest rate in Asia Pacific because of a number of important considerations. First, there is a surge in investments in space research and satellite technology development as a result of the region's fast economic expansion and technological innovation. The ambitious space programs of nations like China, India, and Japan, which are centered on satellite deployments for communication, navigation, Earth observation, and scientific research, are creating a large demand for solar cell materials. In addition, there are numerous

businesses in Asia Pacific that specialize in the development and installation of satellites, which increases demand for solar cells. An atmosphere that is favorable for market expansion is also created by the region's favorable legislative framework and government programmes that assist satellite development and space research.

In the process of determining and verifying the market size for several segments and subsegments identified through secondary research, extensive primary interviews were conducted. A breakdown of the profiles of the primary interviewees is as follows:

By Company Type: Tier 1 - 40%, Tier 2 - 30%, and Tier 3 - 30%

By Designation: C-Level - 20%, Director Level - 10%, and Others - 70%

By Region: North America - 30%, Europe -30%, Asia Pacific - 20%, Middle East & Africa - 10%, and South America-10%

The key players in this market are SPECTROLAB (US), AZUR SPACE Solar Power GmbH(Germany), ROCKET LAB USA (US), Sharp Corporation (Japan), CESI S.p.A (Milan), Thales Alenia Space (France), AIRBUS (France), MicroLink Devices, Inc. (US), Mitsubishi Electric Corporation (Japan), Northrop Grumman (US),etc.

Research Coverage

This report segments the market for the satellite solar cell materials market on the basis of Material type, application, Orbit and region. It provides estimations for the overall value of the market across various regions. A detailed analysis of key industry players has been conducted to provide insights into their business overviews, products & services, key strategies, new product launches, expansions, and mergers & acquisitions associated with the market for the satellite solar cells materials market.

Key benefits of buying this report

This research report is focused on various levels of analysis — industry analysis (industry trends), market ranking analysis of top players, and company profiles, which together provide an overall view of the competitive landscape, emerging and high-growth segments of the satellite solar cell materials market; high-growth regions; and market drivers, restraints, opportunities, and challenges.

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The report provides insights on the following pointers:

Analysis of key drivers: Rising Space Exploration and Satellite Deployment.

Market Penetration: Comprehensive information on the satellite solar cell materials market offered by top players in the global satellite solar cells materials market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product launches in the satellite solar cell materials market.

Market Development: Comprehensive information about lucrative emerging markets — the report analyzes the markets for the satellite solar cell materials market across regions.

Market Diversification: Exhaustive information about new products, untapped regions, and recent developments in the global satellite solar cell materials market.

Competitive Assessment: In-depth assessment of market shares, strategies, products, and manufacturing capabilities of leading players in the satellite solar cell materials market.

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Contents

Details on Business Overview, Products/Solutions/Services Offered, Recent Developments, MnM view (Key strengths/Right to win, Strategic choices made, Weakness/competitive threats) might not be captured in case of unlisted companies.

13 APPENDIX

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