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Large Satellite Propulsion System Market - A Global and Regional Analysis: Focus on Subsystem and Country - Analysis and Forecast, 2024-2040

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Abstracts

This report can be delivered within 1 working day.

Introduction of Large Satellite Propulsion System Market

The large satellite propulsion system market encompasses a broad spectrum of in-space thrust technologies, including chemical, electric, cold-gas, and hybrid thrusters, all of which are essential for orbit insertion, station-keeping, and end-of-life maneuvers of heavyweight satellites. The large satellite propulsion system market has been driven by the need for reliable, high-efficiency propulsion solutions that can support the surge in high-throughput communications satellites, advanced Earth-observation platforms, and expanding navigation constellations, each requiring precise orbit-raising and extended station-keeping capabilities. Innovations in propulsion, such as high-thrust electric Hall-effect thrusters, green-propellant chemical engines, and modular hybrid stages, are responding to the rising need among large satellite operators for scalable, cost-efficient, and sustainable propulsion solutions. The large satellite propulsion system market is highly competitive, with key players such as Boeing, Aerojet Rocketdyne, Airbus, Safran, and Northrop Grumman leading the industry. Additionally, heightened emphasis on propellant efficiency, orbital-debris mitigation, and mission flexibility is reshaping buyer priorities, spurring investment in next-generation electric and reusable propulsion architectures. Consequently, the large satellite propulsion system market remains highly dynamic, continually evolving in response to rapid technological innovation and the escalating performance demands of modern space missions.

Market Introduction

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The large satellite propulsion system market encompasses a variety of subsystems, including chemical thrusters, electric thrusters, cold gas systems, and hybrid engines, all critical for ensuring reliable maneuvering and station keeping of heavyweight spacecraft. As demand for high throughput communications, Earth observation, and navigation capacity grows, the need for efficient and dependable space propulsion rises. Innovations in propulsion architectures, such as high-power Hall-effect thrusters, green propellant chemical engines, and modular hybrid stages, are gaining prominence because they deliver scalable and reliable required change in orbital velocity for large satellites. Industry leaders such as Boeing, Aerojet Rocketdyne, Airbus, Safran, and Northrop Grumman dominate the market, continually advancing their technology portfolios to remain competitive. Moreover, an increasing focus on sustainability and mission cost efficiency is driving investment in eco-friendly propellants and high-efficiency electric propulsion systems. The large satellite propulsion system market is evolving rapidly to meet the rising demands of modern space missions and the growing need for efficient orbital maneuvering.

Industrial Impact

The large satellite propulsion system market has a significant industrial impact, driving substantial economic activity and employment within the aerospace, energy, and advanced manufacturing sectors. The demand for efficient thrust generation and orbital maneuvering solutions fosters innovation in propulsion technologies, benefiting industries such as electronics, energy storage, and telecommunications. As large satellites become increasingly vital for global connectivity and observation infrastructure, the need for advanced propulsion systems continues to grow, leading to developments in fuel efficiency, modular architectures, and intelligent engine-health management systems.

Additionally, the large satellite propulsion system market supports the growth of related sectors, including launch services, on-orbit servicing, and space situational awareness. These sectors rely heavily on efficient propulsion capability, where advancements in thrusters and subsystems play a crucial role in ensuring mission reliability and reducing overall operational costs. The increasing focus on sustainability has been prompting investments in green propellants and electric propulsion solutions, reducing the environmental footprint of launch activities and encouraging the adoption of reusable launch vehicles.

Moreover, the market's emphasis on optimizing propulsion efficiency, performance, and

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reliability drives collaborations across industries, including energy providers, research institutions, and aerospace companies. These collaborations enhance technological advancements, improving satellites' overall longevity and resilience. Overall, the large satellite propulsion system market is a key driver of technological innovation, economic growth, and the future of critical global space-based infrastructure.

Market Segmentation:

Segmentation: By Subsystem

- Chemical Thruster
  - Propellant Tank
  - Pump
  - Fuel and Oxidizer Valve
- Electric Thruster
  - Propellant Tank
  - Pump
- Cold Gas Thruster
  - Gas Storage Tank
  - Propulsion Chamber/Nozzle
  - Pump
- Hybrid Thruster
  - Propellant Tank
  - Propulsion Chamber/Nozzle
  - Pump

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Chemical Thrusters to Dominate the Large Satellite Propulsion System Market (by Product)

The large satellite propulsion system market, by product, is predominantly driven by chemical thrusters. The chemical thrusters segment was valued at $2,051.2 million in 2024 and is projected to reach $3,452.0 million by 2033. This segment has been experiencing remarkable growth due to increasing demand for high-thrust, reliable orbit-raising, and station-keeping solutions in heavyweight communications, Earth-observation, and national security spacecraft. Chemical thrusters play a crucial role in ensuring continuous mission capability by delivering immediate, high-impulse maneuvers that electric systems alone cannot match. The dominance of chemical propulsion has been further reinforced by the rapid expansion of GEO and deep-space programs, which require higher propellant capacities to accommodate extended mission durations and stricter end-of-life de-orbit mandates. Additionally, innovations in green propellants, additive-manufactured engine components, and advanced combustion management systems have driven segment growth, enabling chemical thrusters to meet evolving efficiency, sustainability, and cost targets.

Recent Developments in the Large Satellite Propulsion System Market

On March 14, 2025, Ursa Major secured approximately $10.0 to $15.0 million contract to supply fully integrated GEO-class propulsion packages for tactical satellite buses, boosting on-orbit maneuverability, collision-avoidance capability, and controlled de-orbit to meet the demand for more agile, responsive space operations.

On June 23, 2023, Terran Orbital and Safran formed a partnership to assess U.S. production of advanced electric propulsion centered on Safran’s PPSX00 Hall-effect plasma thruster for low-Earth-orbit satellites. The venture targets lighter, more efficient systems for orbit raising, station-keeping, and orbital transfers, delivering significant mass savings over conventional chemical engines.

On July 26, 2022, Thales Alenia Space partnered with Italian startup MIPRONS to create a water-powered satellite propulsion system. Leveraging MIPRONS’ proprietary electrolysis process, the technology splits water into hydrogen and oxygen, then recombines them in the engine’s combustion chamber, providing

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a greener and more cost-effective alternative to traditional propellants.

On July 12, 2023, Space Plasmatics, the Israeli electric-propulsion start-up, formally unveiled its plasma thrusters, an innovative system that accelerates ionized gas instead of relying on chemical combustion. The company had already signed a partnership agreement with Israel Aerospace Industries in June 2023 to integrate these thrusters into IAI's heavy-satellite platforms, a move that strengthens IAI's competitive position in large-satellite propulsion.

How can this report add value to an organization?

Product/Innovation Strategy: The product segment helps the reader understand the different types of products available globally. Moreover, the study provides the reader with a detailed understanding of the large satellite propulsion system market by products based on propulsion subsystems.

Growth/Marketing Strategy: The large satellite propulsion system 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 large satellite propulsion system 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

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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, considering the average conversion rate for that particular year.

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

Primary Research

The primary sources involve large satellite propulsion system industry experts, including large satellite propulsion system 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.

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Key Market Players and Competition Synopsis

The large satellite propulsion system market has been characterized by intense competition among several global industry leaders. Major companies such as L3Harris Technologies, Inc., Airbus, Safran, Boeing, Moog Inc., and Northrop Grumman dominate this space by offering a comprehensive portfolio of chemical, electric, and hybrid propulsion solutions. These firms invest heavily in research and development to deliver higher-efficiency thruster architectures, next-generation turbopumps, and cleaner propellant chemistries aimed at boosting performance and mission reliability while prolonging satellite operational life.

The large satellite propulsion system market has been further shaped by ongoing technological advances and the entrance of new players, introducing high-efficiency electric thrusters, green propellants, and solar-electric propulsion architectures. This dynamic environment keeps the large satellite propulsion system market highly competitive and responsive to evolving operator requirements for efficiency, scalability, and sustainability while driving continuous innovation across the satellite value chain.

Some prominent names established in this market are:

Boeing

L3Harris Technologies, Inc.

Airbus

Safran

QinetiQ

Nammo AS

IHI Corporation

ISRO

Lanzhou Institute of Physics

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OKB Fakel

Rafael Advanced Defense System Ltd.

Keldysh Research Center

Moog Inc.

Northrop Grumman

OHB SE

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