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Global Semiconductor Turbomolecular Pump Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Semiconductor Turbomolecular Pump market size is expected to reach $ 1286 million by 2032, rising at a market growth of 8.2% CAGR during the forecast period (2026-2032).
In 2025, global Molecular Pump for Semiconductor Equipment production capacity is 50,000 units, with production reached approximately 35,000 units, with an average global market price of around US$ 21,000 per unit. The market gross margin is mainly 30%-40%.
A Molecular Pump for Semiconductor Equipment refers mainly to a turbomolecular pump (TMP) used in semiconductor manufacturing vacuum systems to generate and maintain high vacuum and ultra-high vacuum environments, typically from 10?? to 10?? mbar. Unlike mechanical pumps that compress gas, molecular pumps operate by transferring momentum to gas molecules through high-speed rotating blades, directing them efficiently toward a backing dry pump. This operating principle enables extremely clean, oil-free vacuum conditions, which are essential for advanced semiconductor processes.
The upstream segment includes precision components and materials such as high-strength metal rotors and stators, magnetic or ceramic bearing systems, high-speed motors, inverters, sensors, and specialized surface coatings for corrosion resistance and particle control. These components require extremely tight tolerances and high reliability, as failures can cause severe tool downtime.
The midstream segment consists of molecular pump manufacturers and vacuum system suppliers. This is the core value-creation stage, involving aerodynamic blade design, bearing control algorithms, thermal management, electronics integration, and compliance with semiconductor fab standards. Molecular pumps are often delivered as part of an integrated vacuum module together with dry pumps and control units, and must undergo lengthy qualification with semiconductor equipment OEMs.

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The downstream segment includes semiconductor equipment manufacturers and wafer fabs. Molecular pumps are embedded in process tools and generate additional long-term revenue through spare parts, refurbishment, and service contracts, giving the industry a strong recurring-revenue characteristic.

Looking ahead, the global demand for molecular pumps in semiconductor equipment is expected to grow steadily, driven by advanced process nodes (5nm and below), increased wafer sizes (300mm and future 450mm), and the expansion of logic, memory, and power semiconductor manufacturing. Key development trends include the adoption of high-speed, high-throughput magnetic levitation pumps to reduce downtime and improve process uniformity; the integration of smart sensors for predictive maintenance and remote diagnostics; and enhanced material engineering to resist corrosive process gases. Furthermore, regional supply chain shifts are accelerating domestic innovations in Asia, particularly in China and South Korea, as part of broader equipment localization strategies. In this context, molecular pumps are becoming increasingly strategic components, directly influencing tool uptime, process yield, and fab productivity.

The growth of molecular pumps for semiconductor equipment is driven by technology scaling, increasing process complexity, and structural changes in the semiconductor supply chain.

First, the continued move toward advanced technology nodes significantly raises requirements for vacuum cleanliness, stability, and control. Smaller feature sizes are more sensitive to pressure fluctuations and contamination, making high-performance molecular pumps essential for yield and process repeatability.

Second, vacuum-intensive processes such as etching and ALD are gaining importance, both in terms of process count and technical difficulty. These processes require higher pumping speeds, faster response times, and stronger resistance to corrosive gases, increasing both the number of molecular pumps per tool and the value per pump.

Third, the industry trend toward oil-free, low-particle, high-reliability manufacturing favors magnetic bearing molecular pumps over traditional mechanical designs. Predictive maintenance and smart monitoring capabilities further enhance their attractiveness in high-volume fabs.

Finally, supply chain security and localization strategies driven by geopolitical and strategic considerations are encouraging diversified sourcing and sustained investment in vacuum technologies. Together, these factors underpin the long-term structural growth of the semiconductor molecular pump market.

This report studies the global Semiconductor Turbomolecular Pump production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Semiconductor Turbomolecular Pump and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores

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demand trends and competition, as well as details the characteristics of Semiconductor Turbomolecular Pump that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Semiconductor Turbomolecular Pump total production and demand, 2021-2032, (K Units)

Global Semiconductor Turbomolecular Pump total production value, 2021-2032, (USD Million)

Global Semiconductor Turbomolecular Pump production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)

Global Semiconductor Turbomolecular Pump consumption by region & country, CAGR, 2021-2032 & (K Units)

U.S. VS China: Semiconductor Turbomolecular Pump domestic production, consumption, key domestic manufacturers and share

Global Semiconductor Turbomolecular Pump production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)

Global Semiconductor Turbomolecular Pump production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

Global Semiconductor Turbomolecular Pump production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global Semiconductor Turbomolecular Pump market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Shimadzu Corporation, ULVAC Technologies, Osaka Vacuum, KYKY Vacuum, Ebara Corporation, Edwards, Busch, Leybold Turbovac, Pfeiffer, Beijing Zhongke Instrument, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Semiconductor Turbomolecular Pump market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (K Units) and average price (US$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Semiconductor Turbomolecular Pump Market, By Region:

United States

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China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Semiconductor Turbomolecular Pump Market, Segmentation by Type:

Magnetic Bearing TMP

Mechanical Bearing TMP

Global Semiconductor Turbomolecular Pump Market, Segmentation by Gas Speed Level:

?1,000 L/s

1,000?3,000 L/s

?3,000 L/s

Global Semiconductor Turbomolecular Pump Market, Segmentation by Operating Condition:

Standard TMP

Corrosion-Resistant TMP

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Global Semiconductor Turbomolecular Pump Market, Segmentation by Application:

Semiconductor Manufacturing Equipment

CVD Equipment

PVD Equipment

Ion Implantation

Etching Equipment

Others

Companies Profiled:

Shimadzu Corporation

ULVAC Technologies

Osaka Vacuum

KYKY Vacuum

Ebara Corporation

Edwards

Busch

Leybold Turbovac

Pfeiffer

Beijing Zhongke Instrument

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Shanghai Canter Vacuum Technology

Tianjin Feixuan Technology

Zhongke Jiuwei Technology Co., Ltd.

Key Questions Answered:

1. How big is the global Semiconductor Turbomolecular Pump market?
2. What is the demand of the global Semiconductor Turbomolecular Pump market?
3. What is the year over year growth of the global Semiconductor Turbomolecular Pump market?
4. What is the production and production value of the global Semiconductor Turbomolecular Pump market?
5. Who are the key producers in the global Semiconductor Turbomolecular Pump market?
6. What are the growth factors driving the market demand?

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