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Global Cryopump for Semiconductor Supply, Demand and Key Producers, 2026-2032

https://marketpublishers.com/r/G5249C07A24DEN.html
Date: January 2026
Pages: 108
Price: US$ 4,480.00 (Single User License)
ID: G5249C07A24DEN

Abstracts

The global Cryopump for Semiconductor market size is expected to reach $ 139 million by 2032, rising at a market growth of 5.2% CAGR during the forecast period (2026-2032).
A Cryopump for Semiconductor is an ultra-high-vacuum pumping device that removes gases and vapors by cryocondensation, cryosorption, and cryotrapping using cryogenic temperatures generated by helium compressors, enabling clean, oil-free, particle-free vacuum environments essential for semiconductor manufacturing processes such as etching, deposition, ion implantation, and lithography.
The cryopump for semiconductor industry chain begins upstream with suppliers of helium compressors, cryogenic coolers, aluminum chambers, stainless-steel housings, activated charcoal adsorbents, sensors, vacuum valves, and electronic control components, followed midstream by manufacturers specializing in vacuum engineering, low-temperature technology, precision machining, sealing systems, performance calibration, and semiconductor equipment integration, and ends downstream with OEM semiconductor equipment companies, wafer fabs, advanced packaging houses, maintenance service providers, and global distributors that deliver installation, repair, monitoring, refurbishment, and lifecycle management for semiconductor-grade cryopumping systems.
Current projects under construction and planned include expansions of cryopump production capacity by major vacuum equipment manufacturers in the United States, Japan, South Korea, and China, new facilities for high-capacity Gifford-McMahon and pulse-tube cryopumps used in EUV and advanced etch/deposition tools, collaborative R&D centers focused on helium efficiency and low-vibration technologies, refurbishment and upgrade programs for installed base cryopumps in global fabs, and semiconductor OEM-led initiatives to integrate smarter, energy-efficient, lower-maintenance cryopumping solutions into next-generation vacuum systems supporting nodes below 7

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nm.

2025 Global Market Sales Volume: 4,056 units.Average Global Market Price: USD 23,290 per unit. Market Average Gross Profit Margin: 30%.

The cryopump market for semiconductor applications is experiencing strong growth driven by increased wafer fab expansions, advanced process equipment upgrades, and stricter requirements for oil-free ultra-high-vacuum environments. As semiconductor technology moves toward 7 nm, 5 nm, and 3 nm nodes, cryopumps have become increasingly important due to their ability to deliver clean vacuum performance without hydrocarbon contamination. Demand is particularly strong in etch and deposition chambers, where gas load is high and pumping stability directly affects yield and uniformity.

Regionally, the United States, Japan, and Europe lead in high-end cryopump manufacturing, while China and South Korea show rapid growth in capacity expansion and local substitution. Asia-Pacific remains the largest demand region due to large-scale fab investments.

Market opportunities arise from EUV lithography, where advanced cryogenic vacuum systems are required for both optical modules and chamber environments. However, the industry faces risks such as helium supply constraints, export control restrictions, and long product development cycles. Cryopump technology is gradually shifting toward higher efficiency, longer maintenance intervals, and regenerative functionality to minimize downtime. Competition is increasing as more Asian firms accelerate development of domestic cryogenic vacuum technologies. At the same time, refurbished cryopumps form an important secondary market, especially for aging fabs and non-leading-edge nodes. Industry trends include digital monitoring of cryogenic performance, predictive maintenance systems, and integration of low-vibration cooling technology for precision processes.

Overall, the market remains technologically intensive, highly specialized, and closely tied to semiconductor capital expenditure cycles, with strong long-term growth prospects aligned to global wafer capacity expansion.

This report studies the global Cryopump for Semiconductor production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Cryopump for Semiconductor and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Cryopump for Semiconductor that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Cryopump for Semiconductor total production and demand, 2021-2032, (Units)

Global Cryopump for Semiconductor total production value, 2021-2032, (USD Million)

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Global Cryopump for Semiconductor production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Units), (based on production site)
Global Cryopump for Semiconductor consumption by region & country, CAGR, 2021-2032 & (Units)
U.S. VS China: Cryopump for Semiconductor domestic production, consumption, key domestic manufacturers and share
Global Cryopump for Semiconductor production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Units)
Global Cryopump for Semiconductor production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Units)
Global Cryopump for Semiconductor production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Units)
This report profiles key players in the global Cryopump for Semiconductor 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 Atlas Copco, SHI Cryogenics, ULVAC, Inc., PHPK Technologies, Cryofab, CSSC Pride (Nanjing) Cryogenic Technology Co., Ltd, Zhejiang Bwokai Electromechanical Technology Co, Suzhou Bama Superconductive Technology Co, 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 Cryopump for Semiconductor market
Detailed Segmentation:
Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (Units) and average price (K 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 Cryopump for Semiconductor Market, By Region:

United States

China

Europe

Japan

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South Korea

ASEAN

India

Rest of World

Global Cryopump for Semiconductor Market, Segmentation by Type:

Diameter Below 300mm

Diameter 300mm-500mm

Diameter 500mm or Large

Global Cryopump for Semiconductor Market, Segmentation by Cooling Stage Structure:

Single-Stage Cryopump

Multi-Stage Cryopump

Global Cryopump for Semiconductor Market, Segmentation by Cooling Method:

Helium Mechanical Cryopump

Closed-Cycle Cryopump

Others

Global Cryopump for Semiconductor Market, Segmentation by Application:

Semiconductor Etching

PVD/CVD Deposition

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Ion Implantation

Others

Companies Profiled:

Atlas Copco

SHI Cryogenics

ULVAC, Inc.

PHPK Technologies

Cryofab

CSSC Pride (Nanjing) Cryogenic Technology Co., Ltd

Zhejiang Bwokai Electromechanical Technology Co

Suzhou Bama Superconductive Technology Co

Key Questions Answered:

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

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