

Cryogenic Valves Market Report by Product (Ball Valves, Check Valves, Gate Valves, Globe Valves, and Others), Gas (Liquid Nitrogen, Liquid Helium, Hydrogen, Oxygen, and Others), End Use Industry (Chemical, Oil and Gas, Energy and Power, Food and Beverages, Medical, and Others), and Region 2024-2032

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Report description:

The global cryogenic valves market size reached US\$ 2.0 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 2.9 Billion by 2032, exhibiting a growth rate (CAGR) of 3.7% during 2024-2032. Expansion of LNG infrastructure, significant growth in industrial and chemical processing industry, ongoing technological advancements, and increased focus on energy efficiency are primarily driving the market's growth.

Cryogenic Valves Market Analysis:

- **Major Market Drivers:** A considerable rise in the utilization of cryogenic valves in the oil and gas industry represents one of the key factors strengthening the growth of the market. Moreover, many governments are supporting hydrogen projects through funding and incentives, further boosting the market growth.
- **Key Market Trends:** Cryogenic gases are extensively utilized for cryosurgery in the healthcare industry, which is positively influencing the sales of cryogenic valves around the world. Moreover, numerous product applications in rock concerts and theater stages worldwide coupled with the burgeoning F&B sector are anticipated to escalate the industry's demand.
- **Competitive Landscape:** Some of the prominent cryogenic valves market companies include Bac Valves, Bray International Inc., Cryofab, Emerson Electric Co., Flowserve Corporation, Habonim, Herose GmbH, L&T Valves Limited (Larsen & Toubro Limited), Parker-Hannifin Corporation, Powell Valves, Samson Aktiengesellschaft, Schlumberger Limited, The Weir Group PLC, and Velan Inc., among many others.
- **Geographical Trends:** According to the cryogenic valves market dynamics, the growth of the North American region is driven by the oil and gas industry, particularly in the extraction and processing of natural gas and LNG. Moreover, the European market is

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driven by the chemical and petrochemical industries, as well as the expanding LNG infrastructure.

-□Challenges and Opportunities: High costs associated with cryogenic valves, and stringent safety and regulatory standards are hampering the market's growth. However, the expansion of the liquefied natural gas (LNG) market creates significant demand for cryogenic valves for LNG storage, transportation, and processing.

Cryogenic Valves Market Trends:

Rising Demand for LNG

The growing global demand for liquefied natural gas (LNG) for cleaner energy solutions has significantly boosted the need for cryogenic valves. For instance, according to an article published by Shell Global, the global demand for liquefied natural gas (LNG) is expected to increase by more than 50% by 2040. The global trade in LNG reached 404 million tonnes in 2023, up from 397 million tonnes in 2022. These valves are essential in the LNG production, storage, and transportation processes due to their ability to handle extremely low temperatures. These factors are expected to propel the cryogenic valve market in the coming years.

Expansion of the Oil and Gas Sector

The expansion of the oil and gas industry is significantly driving the growth in the cryogenic valves market. The construction of new pipelines and storage tanks for transporting and storing natural gas and other cryogenic fluids necessitates the use of specialized valves. For instance, in December 2023, there were nearly 228,700 kilometers of gas transmission pipes in development around the world, with a total cost of US\$ 723 billion. Cryogenic valves are used to handle the extremely low temperatures and high pressures associated with these fluids. These factors further positively influence the cryogenic valves market forecast.

Technological Advancements

Innovations in sealing technologies, such as advanced gaskets and sealants, enhance the reliability of cryogenic valves by reducing leakage and ensuring better performance in low-temperature environments. For instance, in November 2023, Flowserve launched Worcester Cryogenic ball valves to assist in managing fugitive emissions. These valves, available in three-piece (CF44 series) and flanged (CF51/CF52 series) designs, include a high-strength stem and an improved live-loaded stem seal for superior fugitive emissions control, thereby boosting the cryogenic valves market revenue.

Global Cryogenic Valves Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global cryogenic valves market report, along with forecasts at the global, regional, and country levels from 2024-2032. Our report has categorized the market based on product, gas, and end use industry.

Breakup by Product:

- Ball Valves
- Check Valves
- Gate Valves
- Globe Valves
- Others

The report has provided a detailed breakup and analysis of the cryogenic valves market based on the product. This includes ball valves, check valves, gate valves, globe valves, and others.

According to the cryogenic valves market outlook, ball valves use a spherical disc (the ball) with a hole through the middle. When the valve is open, the hole aligns with the flow path, allowing fluids to pass through. They offer quick quarter-turn operation, reliable sealing, and low-pressure drop. Ball valves are ideal for applications requiring fast shutoff and precise control. Moreover, check valves allow flow in one direction only, using a disc or ball that moves to block reverse flow. They prevent backflow and protect equipment from damage caused by reverse flow. They are crucial for maintaining system integrity and preventing potential contamination. Besides this, gate valves use a gate-like mechanism that slides up or down to open or close the flow path. They provide a straight-through flow path when open, minimizing turbulence.

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Breakup by Gas:

- Liquid Nitrogen
- Liquid Helium
- Hydrogen
- Oxygen
- Others

The report has provided a detailed breakup and analysis of the cryogenic valves market based on the gas. This includes liquid nitrogen, liquid helium, hydrogen, oxygen, and others.

According to the cryogenic valves market overview, liquid nitrogen is widely used in industrial processes, medical applications (such as cryopreservation and cryosurgery), and in research and laboratory environments. The demand for cryogenic valves in these applications is relatively high due to the extensive use of LN?. Moreover, liquid helium is crucial for applications requiring extremely low temperatures, such as in superconducting magnets (used in MRI machines and particle accelerators) and in scientific research. Its high demand in specialized fields makes cryogenic valves for liquid helium highly critical. Besides this, liquid hydrogen is used as a fuel in aerospace applications and in hydrogen fuel cells for energy. The growth of hydrogen-based technologies and increasing focus on clean energy contribute to the rising demand for cryogenic valves in these systems.

Breakup by End Use Industry:

- Chemical
- Oil and Gas
- Energy and Power
- Food and Beverages
- Medical
- Others

A detailed breakup and analysis of the cryogenic valves market based on the end use industry has also been provided in the report. This includes chemical, oil and gas, energy and power, food and beverages, medical, and others.

Cryogenic valves are used for handling liquefied gases like nitrogen, oxygen, and hydrogen, which are essential in various chemical processes. Moreover, in oil and gas, cryogenic valves are vital for transporting and processing liquefied natural gas (LNG) and other cryogenic hydrocarbons. The growing global demand for LNG, as a cleaner alternative to other fossil fuels, boosts the need for cryogenic valves. Besides this, the expansion of renewable energy sources, such as hydrogen energy, necessitates the use of cryogenic valves for hydrogen storage and distribution. Energy storage solutions like liquefied air energy storage also contribute to the demand.

Breakup by Region:

- North America
 - o□United States
 - o□Canada
- Asia-Pacific
 - o□China
 - o□Japan
 - o□India
 - o□South Korea
 - o□Australia
 - o□Indonesia
 - o□Others
- Europe
 - o□Germany

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- o France
- o United Kingdom
- o Italy
- o Spain
- o Russia
- o Others
- Latin America
- o Brazil
- o Mexico
- o Others
- Middle East and Africa

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia and others); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the cryogenic valves market statistics, the North American market is driven by the growing demand for LNG and advancements in cryogenic technology. The U.S. and Canada have significant investments in LNG infrastructure and industrial applications, which drive the demand for cryogenic valves. Regulatory frameworks and standards related to safety and environmental considerations also impact market growth. Moreover, the growth in Europe is driven by the growing focus on energy efficiency, and investments in LNG and hydrogen infrastructure. Europe's regulatory environment, emphasizing sustainability and reducing carbon emissions, supports market growth. Apart from this, rapid industrialization across the Asia Pacific region, particularly in the manufacturing and petrochemical sectors, drives the need for reliable cryogenic valves.

Competitive Landscape:

The market research report has provided a comprehensive analysis of the competitive landscape. Detailed profiles of all major market companies have also been provided. Some of the key players in the market include:

- Bac Valves
- Bray International Inc.
- Cryofab
- Emerson Electric Co.
- Flowserve Corporation
- Habonim
- Herose GmbH
- L&T Valves Limited (Larsen & Toubro Limited)
- Parker-Hannifin Corporation
- Powell Valves
- Samson Aktiengesellschaft
- Schlumberger Limited
- The Weir Group PLC
- Velan Inc.

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

Cryogenic Valves Market Recent Developments:

- July 2024: Dover acquired Marshall Excelsior Company, a provider of Mission-Critical Cryogenic and Flow Control Components, for US\$ 395 Million.
- November 2023: Flowserve launched Worcester Cryogenic ball valves to assist in managing fugitive emissions. These valves, available in three-piece (CF44 series) and flanged (CF51/CF52 series) designs, include a high-strength stem and an improved live-loaded stem seal for superior fugitive emissions control.

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- February 2023: Flowserve Corp., a pioneer in the cryogenic valves market, acquired Velan Inc., a maker of highly engineered industrial valves.

Key Questions Answered in This Report:

- How has the global cryogenic valves market performed so far and how will it perform in the coming years?
- What has been the impact of COVID-19 on the global cryogenic valves market?
- What are the key regional markets?
- What is the breakup of the market based on the product?
- What is the breakup of the market based on the gas?
- What is the breakup of the market based on the end use industry?
- What are the various stages in the value chain of the industry?
- What are the key driving factors and challenges in the industry?
- What is the structure of the global cryogenic valves market and who are the key players?
- What is the degree of competition in the industry?

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