

Cryogenic Equipment Market to Reach USD 54.06 Billion by 2035, Driven by LNG Expansion and Hydrogen Economy

Liquid Oxygen accounts for approximately USD 5.8 billion in 2025, sustained by healthcare and steelmaking applications.

NEW YORK, NY, UNITED STATES, September 8, 2026 /EINPresswire.com/ -- The global [Cryogenic Equipment Market](#) reached an estimated USD 27.48 billion in 2025 and is projected to grow from USD 29.40 billion in 2026 to USD 54.06 billion by 2035, registering a CAGR of 7.0% during the forecast period. This trajectory is anchored by two converging forces: the global push toward clean-energy infrastructure —

particularly LNG import/export terminal buildouts — and a semiconductor fabrication boom that depends on ultra-high-purity industrial gas delivery. Government-backed spending programs, including the U.S. Department of Energy's USD 7 billion clean hydrogen hub initiative and the European Commission's REPowerEU gas-diversification plan, are channeling billions into cryogenic supply chains.

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Heat Exchangers are forecast to grow at a 7.6% CAGR, reflecting rising demand from LNG baseload plants and air-separation units.

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Chitranshi Jaiswal



Market Overview

Cryogenic equipment encompasses the specialized machinery, storage vessels, and transfer systems required to handle gases at ultra-low temperatures, typically below -150°C. This includes tanks, valves, pumps, vaporizers, and heat exchangers used for liquefied natural gas (LNG), liquid nitrogen, oxygen, argon, hydrogen, and helium. These systems are critical for industries ranging from energy and healthcare to electronics and aerospace, enabling the safe

storage, transport, and distribution of liquefied gases.

The market is experiencing robust growth driven by several key factors. The expansion of LNG infrastructure is the single largest catalyst, with global liquefaction capacity expected to increase by over 250 MTPA between 2024 and 2030 . Each new liquefaction train requires hundreds of cryogenic heat exchangers, storage tanks, and transfer pumps rated for temperatures below -162°C . The semiconductor fabrication boom, with global capital expenditure exceeding USD 180 billion in 2024, has created surging demand for liquid nitrogen and argon delivery systems . The [clean-hydrogen](#) economy is emerging as a structural growth vector, with the U.S. DOE's Hydrogen Shot program targeting USD 1/kg production costs and the European Hydrogen Backbone mapping 53,000 km of dedicated pipeline.

Industry trends indicate a decisive transformation from legacy manually controlled systems to digitally integrated, sensor-driven equipment. Major gas producers are committing capital toward smart vaporizers and automated filling stations — Air Liquide alone allocated over EUR 4 billion to low-carbon infrastructure between 2023 and 2025. The transition from conventional welded-tank designs to vacuum-insulated, modular skid-mounted systems is shortening commissioning timelines and cutting lifecycle maintenance costs by an estimated 15–20% . IoT-enabled cryogenic equipment is enabling predictive maintenance, reducing unplanned downtime by 25–35%.

Technological developments are reshaping the market landscape. The development of plug-and-play hydrogen modules is allowing LNG-trained fabricators to pivot to hydrogen with minimal retooling. Digital twins and predictive-maintenance platforms are creating sticky aftermarket revenue streams, with valve manufacturers leveraging these tools even as unit sales plateau . Magnetic-levitation transfer lines, eliminating friction losses, are positioning ancillary component specialists for long-cycle orders in space-grade pipelines . The integration of SIL-3 certified sensors is becoming baseline in tenders, driving instrumentation demand.

Policy and regulatory influence continues to shape market dynamics. The U.S. Department of Energy's USD 7 billion clean-hydrogen hub initiative and the European Commission's REPowerEU gas-diversification plan are channeling billions into cryogenic supply chains. The CHIPS and Science Act in the U.S. is directing USD 52.7 billion toward domestic chip manufacturing, while similar programs in Japan and the EU are pulling cryogenic supply-chain investment into new geographies . The EU's Corporate Sustainability Reporting Directive and SEC's climate-risk regulations are compelling LNG operators to invest in boil-off gas recapture and zero-emission transfer systems.

Asia-Pacific commands the largest share of the cryogenic equipment market at approximately 38% of 2025 revenue, driven by China's aggressive LNG regasification capacity expansion and India's space-launch and steel-sector demand . The fastest-growing region is also Asia-Pacific, expected to sustain a CAGR above 8.0% through 2035. North America holds roughly 27% of the global market, supported by shale-gas liquefaction infrastructure and semiconductor fab

construction in Arizona and Texas. Europe follows at about 22%, where hydrogen-backbone pipeline investments are gaining momentum .

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Market Segmentation

By Gas Type

LNG: Commands the largest share at approximately 31%, reflecting the sheer scale of liquefaction and regasification infrastructure investment worldwide . Global LNG trade volumes surpassed 420 million tonnes in 2024.

Liquid Nitrogen: Holds roughly 28% of market revenue, underpinned by electronics fabrication and food-processing cold-chain demand .

Liquid Oxygen: Accounts for approximately USD 5.80 billion in 2025, sustained by healthcare and steelmaking applications .

Liquid Hydrogen: The fastest-growing gas segment with a CAGR of 9.5% through 2035, tied to national hydrogen strategies in over 40 countries .

Liquid Helium: A niche but strategic segment, with shortages intensifying focus on recycling skids .

By Equipment Type

Tanks: The dominant equipment category, capturing over 34% of total revenue, supported by demand for full-containment LNG storage nearing 250 m³ and high-pressure composite cylinders .

Pumps: The fastest-growing equipment segment with an 8.18% CAGR, boosted by low-NPSH centrifugal designs .

Heat Exchangers: Forecast to grow at a 7.6% CAGR, reflecting rising demand from LNG baseload plants and air-separation units .

Valves and Regulators: Represent approximately 12% of the market, with manufacturers leveraging digital twins for predictive-maintenance offerings .

By Application

Storage: Commands the largest share at ~42%, encompassing terminal tank farms and industrial gas depots .

Transportation and Distribution: Expands at a robust CAGR of ~7.8% through LNG tanker loading

and tube-trailer logistics .

Others: Supports specialized process cooling, laboratory, and aerospace applications .

By End-User Industry

Oil and Gas: The largest end-user segment at ~36%, encompassing the full LNG value chain and upstream nitrogen-injection equipment .

Electronics and Semiconductors: The fastest-growing segment at an 8.2% CAGR, driven by fab gas supply and cleanroom cooling .

Healthcare: Valued at USD 3.30 billion in 2025, driven by medical oxygen plants and MRI helium requirements .

Aerospace and Defense: Expanding at an 8.8% CAGR, fueled by rocket propellant and satellite testing demand .

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Regional Analysis

Asia-Pacific

Asia-Pacific commands the largest share of the cryogenic equipment market at approximately 38% of 2025 revenue, driven by China's aggressive LNG regasification capacity expansion and India's space-launch and steel-sector demand . China accounts for nearly half of regional revenue, driven by the construction of over 30 LNG receiving terminals and massive industrial-gas demand from its electronics and chemicals sectors . India is the region's fastest-growing country market, propelled by steel expansion, the National Green Hydrogen Mission, and ISRO's growing launch cadence. Japan and South Korea are on the path of hydrogen mobility and LNG-based power generation, indirectly benefiting the market .

North America

North America holds roughly 27% of the global market, supported by shale-gas liquefaction infrastructure and semiconductor fab construction in Arizona and Texas . The United States drives the vast majority of regional demand, with Gulf Coast LNG export capacity under active expansion. By 2028, the United States projects 21.2 bcf/d liquefaction capacity, underpinning large storage-tank and cold-box orders . Canada's LNG Canada project in Kitimat is the country's single largest cryogenic equipment procurement event in a decade . Louisiana's hydrogen corridor positions local OEMs to supply twin-service valves viable for both methane and hydrogen .

Europe

Europe accounts for approximately 22% of the global market, where hydrogen-backbone

pipeline investments are gaining momentum . Germany anchors regional demand through its National Hydrogen Strategy, which earmarks EUR 9 billion for electrolyzer deployment and associated liquefaction infrastructure . The UK's HyNet Northwest and East Coast Hydrogen clusters are stimulating cryogenic procurement for transport and storage. France benefits from Air Liquide's headquarters presence and its commitment to EUR 8 billion in clean-energy investment through 2035 . The continent's hydrogen strategy, targeting 10 million t/y output, channels capex toward electrolyzer-coupled liquefiers .

Middle East & Africa

The Middle East & Africa region is growing at approximately 7.8% CAGR, driven by LNG mega-projects and industrial diversification . Saudi Arabia's NEOM green-hydrogen project — targeting 600 tonnes per day of liquid-hydrogen-equivalent ammonia — represents one of the largest single procurement events for cryogenic equipment globally. The UAE's ADNOC is expanding its Ruwais LNG capacity, while QatarEnergy projects leverage low-carbon LNG . Egypt is positioning itself as a regional gas hub following the Zohr field development .

South America

South America holds approximately 7% of the global market, driven by medical-oxygen expansion and oil-and-gas upstream equipment . Brazil dominates regional demand through Petrobras-led offshore pre-salt developments requiring nitrogen injection systems and on-site medical-oxygen plant investments. Argentina's Vaca Muerta unconventional gas basin is an emerging procurement hotspot as small-scale LNG processing plants come online.

Competitive Landscape / Key Players

The cryogenic equipment market exhibits medium concentration, with the top five players collectively holding an estimated 45–55% revenue share . Large industrial-gas companies with vertically integrated equipment-manufacturing arms compete alongside specialized equipment OEMs and regional fabricators.

Linde plc (~12-15% revenue share): Vertically integrated gas-and-engineering conglomerate offering air-separation plants, hydrogen liquefiers, and LNG heat exchangers with a global footprint .

Air Liquide S.A. (~10-13%): Clean-energy transition leader with EUR 4 billion low-carbon capex commitment, offering cryogenic tanks, vaporizers, and PLANTSERV digital services .

Chart Industries Inc. (~8-11%): Broadened portfolio through the 2023 Howden acquisition, offering brazed-aluminum heat exchangers, LNG fueling equipment, and Orca digital platform [citation:23].

Air Products and Chemicals (~6-9%): Focused on mega-project EPC and green-hydrogen leadership, including large-scale LNG MCHEs and hydrogen infrastructure .

Emerson Electric Co. (~4-6%): Automation and process-control specialist offering cryogenic control valves, regulators, and measurement instrumentation .

Other notable players include Parker Hannifin Corp., Flowserve Corporation, INOX India Limited, Taylor-Wharton International, and Wessington Cryogenics Ltd.

Latest Industry News & Developments

Air Liquide (October 2025): Expanded its presence in India by agreeing to acquire NovaAir, strengthening its footprint in the Indian market and enhancing its ability to serve local industrial and energy customers .

Nikkiso Co. Ltd. (November 2025): Collaborated with a major European EPC company to supply 12 cryogenic submerged pumps for LNG carriers being converted into floating storage and regasification units, supporting global LNG import infrastructure expansion .

Linde plc (May 2025): Entered into an agreement with PsiQuantum to deliver a large-scale cryogenic cooling plant in Australia, supporting the development of the world's first utility-scale quantum computer .

Market Challenges & Opportunities

Key Constraints

High capital costs for large-scale LNG or air-separation units (USD 5 billion-plus annual capex for market leaders) deter smaller entrants . Heat-exchanger manufacture alone can form 30% of plant budgets . Helium supply shortages and price volatility constrain the addressable market for helium-rated cryogenic equipment . Skilled-workforce shortages in cryogenic welding and complex installation create operational challenges. U.S. tariffs on foreign steel and aluminum, effective March 2025, are raising infrastructure expenses for LNG developers . Supply chain disruptions lead to longer lead times for specialized materials and components .

Emerging Opportunities

Modular and skid-mounted cryogenic systems are reducing field-installation timelines from 18 months to under 6 months for mid-scale applications . Hydrogen liquefaction scale-up projects a market that could exceed USD 12 billion annually by 2035. Emerging-market medical and industrial gas infrastructure in Sub-Saharan Africa, Southeast Asia, and South America represent a multi-billion-dollar greenfield opportunity. Digital services and predictive-maintenance monetization are creating recurring revenue streams with gross margins exceeding 40% . Space-launch demand for cryogenic propellants is creating a parallel procurement channel at launch complexes worldwide .

Future Potential

By 2030, an estimated 40% of newly installed cryogenic systems will ship with embedded IoT sensors and cloud-connected control platforms . The IEA projects that global hydrogen trade could reach 13 million tonnes annually by 2035, implying a USD 8–12 billion addressable market

for hydrogen-specific liquefiers and storage spheres. Liquid-air energy storage (LAES) is emerging as a long-duration grid-storage technology, potentially contributing up to USD 2 billion annually by the early 2030s. ESG reporting and methane-emission reduction requirements are compelling LNG operators to invest in boil-off gas recapture and zero-emission transfer systems.

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Final Market Summary

The global Cryogenic Equipment Market is positioned for robust growth, with projections indicating expansion from USD 29.40 billion in 2026 to USD 54.06 billion by 2035, registering a 7.0% CAGR. Market dynamics are driven by the convergence of LNG terminal expansion, semiconductor fabrication, and the clean-hydrogen economy. The shift from legacy manually controlled systems to digitally integrated, modular, and hydrogen-ready equipment is transforming the market landscape.

Asia-Pacific commands the largest share at approximately 38%, driven by China's LNG regasification capacity expansion and India's industrial demand. The region is also the fastest-growing, expected to sustain a CAGR above 8.0% through 2035. North America holds roughly 27%, supported by LNG export infrastructure and semiconductor fab construction, while Europe accounts for about 22%, with hydrogen-backbone pipeline investments gaining momentum. While challenges including high capital costs and supply chain disruptions persist, the long-term industry outlook remains robust, supported by the essential role of cryogenic equipment in enabling the energy transition, semiconductor manufacturing, and healthcare infrastructure. The decade ahead promises a structural expansion cycle, positioning the cryogenic equipment market as a critical enabler of the global clean-energy infrastructure buildout.

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+1 855-661-4441

[email us here](#)

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