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Oxygen Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Form (Gas, Liquid, Solid), By Application (Metals & Mining, Chemical, Oil & Gas, Healthcare, Others), By Region & Competition, 2021-2031F

https://marketpublishers.com/r/OFEC386B369CEN.html
Date: January 2026
Pages: 180
Price: US$ 4,500.00 (Single User License)
ID: OFEC386B369CEN

Abstracts

The Global Oxygen Market is projected to expand from a valuation of USD 48.97 Billion in 2025 to USD 65.33 Billion by 2031, registering a CAGR of 4.92%. As a vital colorless and odorless element, oxygen functions as an essential feedstock across industries ranging from heavy manufacturing to medical care. The sector is largely driven by the steel and metallurgy industries, which require high-purity oxygen to optimize combustion efficiency in blast furnaces. Furthermore, the chemical industry employs the gas for oxidizing raw materials, while the healthcare sector depends on it for critical respiratory treatments. Data from the European Industrial Gases Association indicates that in 2024, the global industrial gas market was worth ?86.9 billion, with nitrogen and oxygen together comprising roughly 56% of the total.

A major obstacle hindering market progression is the substantial energy intensity associated with cryogenic air separation processes. Producing high-purity oxygen necessitates significant electricity consumption, causing operational expenditures to be heavily influenced by fluctuating energy rates. Such price volatility can diminish manufacturer profit margins and disrupt supply chains, especially in areas prone to energy crises or grid instability. As a result, increased production costs are frequently passed on to end-users, which may suppress demand in industrial applications that are sensitive to price changes.

Market Driver

The growth of the steel and metallurgy sectors in emerging economies acts as a fundamental catalyst for the global oxygen market. High-purity oxygen is indispensable for enriching air in blast furnaces and electric arc furnaces, a process that raises combustion temperatures to improve steel quality and shorten production cycles. This reliance is especially pronounced in developing nations, where rapid infrastructure expansion drives the need for massive amounts of structural steel, leading to higher industrial gas usage. According to the World Steel Association's 'Short Range Outlook October 2024', global steel demand is expected to recover by 1.2% in 2025, reaching 1,772 Mt, a trend that guarantees continued volume demand for oxygen in major manufacturing centers.

Additionally, the rising adoption of Green Hydrogen and Carbon Capture Technologies is a strategic driver shifting the market toward decarbonization efforts. Oxygen is crucial for partial oxidation processes used to create low-carbon hydrogen and is vital for oxy-combustion technologies that enable efficient carbon capture by generating concentrated CO2 streams. Leading industry participants are allocating substantial capital to develop infrastructure for these clean energy uses. For example, Air Liquide announced in a June 2024 press release an investment of up to $850 million to build air separation units capable of providing 9,000 metric tons of oxygen daily for a low-carbon hydrogen initiative. Highlighting the financial magnitude of suppliers facilitating these shifts, Linde plc reported third-quarter 2024 sales of $8.4 billion.

Market Challenge

The significant energy intensity required for cryogenic air separation poses a major hurdle to the expansion of the global oxygen market. Cryogenic distillation is a power-heavy process that demands substantial electricity to compress and cool air to the point of liquefaction. Consequently, energy costs make up a large proportion of the variable production expenses for manufacturers. When energy markets face volatility or prolonged price hikes, the cost of operating air separation units rises sharply, cutting into profit margins and causing financial precarity for producers unable to absorb these sudden increases.

These cost pressures directly inhibit market growth by raising the final price of oxygen, which in turn reduces demand in price-sensitive industrial sectors. Producers are frequently forced to pass escalating energy costs onto end-users, rendering high-purity oxygen increasingly unaffordable for heavy industries already dealing with constrained budgets. According to the 'World Steel Association', global steel demand was projected to shrink to 1,751 million tonnes in 2024, suggesting that this key customer base is under economic pressure and highly vulnerable to rising input costs. As primary industrial consumers navigate these compounded financial difficulties, their capacity to maintain or grow oxygen usage declines, effectively slowing overall market development.

Market Trends

There is an accelerating trend toward adopting Pressure Swing Adsorption (PSA) and Vacuum Swing Adsorption (VSA) technologies as industrial users and healthcare facilities aim to mitigate supply chain risks linked to bulk liquid delivery. By establishing independent on-site production systems, these sectors can generate oxygen at the point of consumption, thereby stabilizing operational expenses and guaranteeing supply during periods of peak demand. This transition is highlighted by growing orders for gas generation and processing machinery that supports decentralized infrastructure. For instance, in its 'Second-quarter report 2024', Atlas Copco noted a 6% organic revenue increase in its Compressor Technique division, largely fueled by robust orders for gas and process compressors utilized in such applications.

Concurrently, the market is experiencing significant growth in the development of miniaturized portable oxygen concentrators (POCs) tailored for patients with chronic respiratory issues who maintain active lifestyles. Manufacturers are focusing on ultra-lightweight designs and connectivity options that enable remote monitoring and better patient compliance, moving away from cumbersome traditional tanks. This surge in demand for advanced mobility solutions is evident in the recent financial results of specialized medical device companies. Inogen's 'Second Quarter 2024 Financial Results' from August 2024 revealed a 6.1% revenue increase to $88.8 million over the previous year, driven mainly by stronger business-to-business sales. This financial momentum underscores a growing end-user preference for compact, tech-enabled respiratory devices that support home-based care and mobility.

Key Market Players

- Linde
- Air Liquide
- Air Products
- Praxair

Messer

Taiyo Nippon Sanso

Air Water Inc.

Messer Group

Gulf Cryo

Iwatani

Report Scope

In this report, the Global Oxygen Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Oxygen Market, By Form

Gas

Liquid

Solid

Oxygen Market, By Application

Metals & Mining

Chemical

Oil & Gas

Healthcare

Others

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Oxygen Market, By Region

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - France
  - United Kingdom
  - Italy
  - Germany
  - Spain
- Asia Pacific
  - China
  - India
  - Japan
  - Australia
  - South Korea
- South America
  - Brazil
  - Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Oxygen Market.

Available Customizations:

Global Oxygen Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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