Laboratory Gas Generators - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Laboratory Gas Generators Market size is estimated at USD 537.45 million in 2025, and is expected to reach USD 739.47 million by 2030, at a CAGR of 6.59% during the forecast period (2025-2030).

COVID-19 impacted the laboratory gas generators market due to the disruption of operation and supply chain, decreased customer demand, and global economic slowdown. Thus, the closure of academic institutions and laboratories across the globe has resulted in a significant loss of segmental revenue for businesses. Moreover, the demand for laboratory gas generators increased during the pandemic due to COVID-19-related laboratory-based research and development activity. For instance, in June 2021, Novagenix used PEAK nitrogen generators in their COVID-19 drug discovery study to assess and certify the efficacy and quality of medications in Turkey. Such usage of laboratory gas generators in drug discovery of COVID drove the demand for laboratory gas generators during the pandemic. Thus, the COVID-19 pandemic has boosted the market's growth and is expected to follow the same traction during the forecast period of the study.

The growth in this market is primarily driven by the rising safety concerns related to conventional gas cylinders use, the growing importance of analytical techniques in drug and food approval processes, and increasing R&D spending in target industries.

Analytical chemistry plays a crucial role in drug development, ensuring novel medications' quality, safety, and efficacy. Although several analytical methods are utilized in the pharmaceutical sector, three general analytical techniques are chiefly used to determine the structure, separate analytes, and quantify target compounds. These include chromatography, spectroscopy, and conventional analytical chemistry techniques. The application of analytical testing is growing for detecting and identifying dangerous chemicals, including both adulterants and pharmaceutically active compounds. In this context, the Azo optics article published in March 2022 stated that ultraviolet/visible (UV/Vis) and infrared (IR) spectroscopy are two standard spectroscopic

techniques used to quantify the presence of food additives in their finished food items. These two methods can offer crucial details about the chemical composition, textural traits, and quality-related aspects of food additives. Thus, with the increasing spectroscopy use for analytical testing of the food approval process, laboratory gas generators are also expected to increase, thereby boosting the market growth.

Furthermore, high-performance liquid chromatography (HPLC) techniques use stationary phases containing proteins and phospholipids to simulate the biological environment where diffused drug molecules are known as biomimetic chromatography. The article published by European Chemical Societies in April 2022 mentioned using biomimetic chromatographic data to forecast the aquatic toxicity of drugs and pesticides. Such increasing adoption of these analytical techniques is expected to generate the demand for laboratory gas generators, frequently used to perform them, thereby driving the market growth.

Additionally, the PharmaVoice article published in July 2022 stated that in the five years running up to 2022, the biotechnology sector's R&D spending nearly doubled. As the biotechnology labs are a controlled environment, the nitrogen laboratory gas generators are primarily used in such labs. Thus, with the increasing investment in the biotechnology industries, the growth of laboratory gas generators is anticipated.

Moreover, market players are also involved in strategies such as acquisitions, mergers, and product launches, among others. For instance, in August 2022, Tisch Environmental acquired AADCO Instruments (Advanced Analytical Device Company). The company AADCO is developing a state-of-the-art line of Zero Air Generators.

Hence, factors such as the growing importance of analytical techniques in drug and food approval processes, growing R&D expenditure, and increased market player activities such as mergers and acquisitions are expected to witness growth over the forecast period. However, reluctance to replace conventional gas supply methods and lack of skilled personnel is expected to restrain the market's growth.

Laboratory Gas Generators Market Trends

Nitrogen Gas Generators is Expected to Hold Significant Share in the Market Over the Forecast Period

Nitrogen gas generator is expected to contribute to the growth of the studied segment over the forecast period. Nitrogen gas generators are machines that separate nitrogen molecules from compressed air. It is widely adopted in the food industry, semiconductors, petroleum, chemistry, and research institutes. Factors such as the growing importance of analytical techniques in drug and food approval processes, rising food safety concerns, and increasing R&D spending in target industries are driving segment growth. Additionally, advantages such as low reactivity with other compounds and the ability to control ambient oxygen levels are increasing the adoption of nitrogen gas generators in carrying out liquid chromatography-mass spectrometry (LC-MS) analysis to operating evaporative light scattering detectors (ELSDs) and maintaining environmental conditions in Vitro Fertilization (IVF) incubators.

Conventional nitrogen cylinders are associated with several downsides, such as a higher risk of leaks. For instance, an NPR study article published in January 2021 demonstrated how dangerous nitrogen leaks had killed six people and caused 11 hospitalizations in the Northeast Georgia poultry plant. The report also mentions that storing vast amounts of pressurized, highly flammable nitrogen in laboratories increases the risk of fire and explosions. Hence there is an increase in demand for advanced nitrogen gas generators as it mitigates these risks. These nitrogen gas generators are compact, consistent, cost-effective, and easy to operate. Thus, such advancements boost the demand for nitrogen gas generators.

Moreover, companies are also involved in marketing strategies such as acquisitions, mergers, and product launches. For instance, in September 2021, another company Nikkiso Cryogenic Industries' Clean Energy & Industrial Gases Group, reported that Nikkiso

Cosmodyne recently commissioned its TGNO-1000 gaseous oxygen and nitrogen plant. TGNO is a cryogenic oxygen and nitrogen generator designed to produce three gaseous product streams, which are medium and high-pressure nitrogen and oxygen gas.

Additionally, in July 2021, Scientific Laboratory Supplies launched a line of SLS lab pro gas and liquid nitrogen generators, available exclusively in the UK and Ireland. This technology gives laboratories control over their gas supplies and promotes sustainability by eliminating the need for cross-country transportation of gas canisters.

Likewise, the rising research and expenditure for developing various biologics or pharmaceutical products are also expected to reflect positively on the growing demand for nitrogen gas generators.

Thus, due to the growing preference for nitrogen gas performance over conventional nitrogen cylinders and innovative product launches, the overall market for nitrogen gas generators will grow steadily over the forecast period of the study.

North America is Expected to Hold Significant Share in the Laboratory Gas Generators Market Over the Forecast Period

North America is expected to hold a significant market share, owing to the rise in research and development activities among numerous pharmaceutical and other industries in the region. The major factors driving the growth of the laboratory gas generators market in the North American region include the well-established infrastructure and increased R&D spending for the pharmaceutical industry.

The high expenditure on research and development (R&D) by various pharmaceutical companies and government organizations has been increasing recently in the US, anticipated to drive market growth over the forecast period. For instance, per the 2021 annual reports of Novartis AG, one of the global pharmaceutical companies, invested USD 14,886 million in 2021 for R&D, which increased from USD 14,197 million in 2020. In addition, another major pharmaceutical manufacturer, Pfizer Inc., invested USD 13,829 million in 2021 on R&D, which increased heavily compared to USD 9,393 in 2020, as mentioned in the 2021 annual report of the company. Thus, the increased research and development expenses in the pharmaceutical industry are expected to reflect positively on the demand for laboratory gas generators. They play a crucial role in drug production and down-streaming processes, thereby contributing to the market's growth in this region.

Additionally, in June 2021, Sanofi launched the mRNA Center of Excellence and invested over USD 410.14 million to accelerate developing and delivering next-generation vaccines in the US. Establishing manufacturing facilities to produce advanced vaccines will likely create opportunities for using laboratory gas generators in the pharmaceutical and biopharmaceutical industry segment. Thus, it is expected to drive market growth in the region.

Research organizations and universities are taking initiatives to develop new technologies, which are expected to contribute to the market growth in the country during the forecast period. For instance, in February 2022, the Massachusetts Institute of Technology (MIT) Lincoln Laboratory demonstrated a portable hydrogen fuel generator, a prototype device to convert aluminum into hydrogen fuel. The device is called the Hydrogen Tactical Refueling Point (H-TaRP). It comprises an aluminum dispenser, reactor vessel, water cooling system, and a control system manifold to fill a hydrogen tank.

Therefore, the factors such as rising research and development expenditure, quick adoption of advanced new technologies, and significant market players in this region are expected to contribute to the market's growth in North America during the forecast period.

Laboratory Gas Generators Industry Overview

The market studied is moderately competitive and consists of local players across several countries and some international

players. The major players in the laboratory gas generators market include Claind S.r.l., ErreDue spa, F-Dgsi, Labtech S.R.L., LNI Swissgas, Nel ASA, Parker-Hannifin Corporation, Peak Scientific Instruments, Ltd and VICI DBS S.r.l., providing these products across the globe.

Additional Benefits:

  The market estimate (ME) sheet in Excel format
 3 months of analyst support

Table of Contents:

1 INTRODUCTION
1.1 Study Assumptions and Market Definition
1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET DYNAMICS
4.1 Market Overview
4.2 Market Drivers
4.2.1 Rising Safety Concerns Related to the Use of Conventional Gas Cylinders
4.2.2 Growing Importance of Analytical Techniques in Drug and Food Approval Processes
4.2.3 Increasing R&D Spending in Target Industries
4.3 Market Restraints
4.3.1 Reluctance to Replace Conventional Gas Supply Methods
4.3.2 Lack of Skilled Personnel
4.4 Porter's Five Forces Analysis
4.4.1 Bargaining Power of Suppliers
4.4.2 Bargaining Power of Buyers/Consumers
4.4.3 Threat of New Entrants
4.4.4 Threat of Substitute Products
4.4.5 Intensity of Competitive Rivalry

5 MARKET SEGMENTATION (Market Size by Value - USD Million)
5.1 By Type
5.1.1 Nitrogen Gas Generators
5.1.2 Hydrogen Gas Generators
5.1.3 Zero Air Generators
5.1.4 TOC Gas Generators
5.1.5 Other Gas Generators
5.2 By End User
5.2.1 Food and Beverage Companies
5.2.2 Chemical and Petrochemical Companies
5.2.3 Pharmaceutical and Biotechnological Companies
5.3 Geography
5.3.1 North America

5.3.1.1 United States
5.3.1.2 Canada
5.3.1.3 Mexico
5.3.2 Europe
5.3.2.1 Germany
5.3.2.2 United Kingdom
5.3.2.3 France
5.3.2.4 Italy
5.3.2.5 Spain
5.3.2.6 Rest of Europe
5.3.3 Asia-Pacific
5.3.3.1 China
5.3.3.2 Japan
5.3.3.3 India
5.3.3.4 Australia
5.3.3.5 South Korea
5.3.3.6 Rest of Asia-Pacific
5.3.4 Middle East and Africa
5.3.4.1 GCC
5.3.4.2 South Africa
5.3.4.3 Rest of Middle East and Africa
5.3.5 South America
5.3.5.1 Brazil
5.3.5.2 Argentina
5.3.5.3 Rest of South America

6 COMPETITIVE LANDSCAPE
6.1 Company Profiles
6.1.1 Claind S.r.l.
6.1.2 ErreDue spa
6.1.3 F-Dgsi
6.1.4 Labtech S.R.L.
6.1.5 LNI Swissgas
6.1.6 Nel ASA
6.1.7 Parker-Hannifin Corporation
6.1.8 Peak Scientific Instruments, Ltd.
6.1.9 Linde Plc (Praxair Technology Inc.)
6.1.10 Valco InstrumenValco Instruments Company, Inc (VICI DBS SRL)
6.1.11 On Site Gas Systems Inc
6.1.12 Isolcell S.p.A
6.1.13 Oxymat A/S

7 MARKET OPPORTUNITIES AND FUTURE TRENDS

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