

Industrial Nitrogen Generator Market Grows with PSA & Membrane Tech for Food, Pharma & Oil Industries | DataM Intelligence

Explore how industrial nitrogen generators are transforming energy efficiency & reliability across food, pharma, oil & gas and electronics manufacturing globally.

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[Industrial Nitrogen Generators](#) play a crucial role in supporting a wide range of industrial applications by providing a reliable, efficient, and cost-effective supply of nitrogen gas on-site. These systems eliminate the need for high-pressure cylinder storage or regular

nitrogen deliveries, making them indispensable in sectors such as food and beverage, pharmaceuticals, chemicals, electronics, and oil & gas. The flexibility and operational savings offered by these generators are significantly boosting their adoption globally. The Industrial Nitrogen Generator Market is projected to grow at a CAGR of 4.4% during 2024–2031, driven by technological advancements and the increasing demand for continuous, high-purity nitrogen generation.

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On-site nitrogen generators are changing the industrial landscape offering energy-efficient, cost-effective, and safe nitrogen solutions across diverse sectors.”

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Market Drivers are :

Rising demand in food & beverage packaging: Nitrogen is

widely used for food preservation through modified atmosphere packaging (MAP), extending shelf life and maintaining product quality.



Growth in pharmaceutical and chemical industries: High-purity nitrogen is essential for inerting, blanketing, and purging applications to avoid contamination and oxidation.

Cost-efficiency over bulk delivery: On-site nitrogen generation eliminates logistics, storage, and recurring refill costs, especially beneficial for remote industrial facilities.

Increased adoption in oil & gas and petrochemicals: Nitrogen is vital in drilling, enhanced oil recovery, and pipeline purging due to its inert characteristics.

Technological advancements in PSA and membrane systems: New-generation Pressure Swing Adsorption (PSA) and membrane-based systems offer higher purity levels and lower energy consumption.

Stringent safety regulations: On-site generation reduces the hazards associated with high-pressure gas cylinders and improves workplace safety compliance.

Rising environmental awareness: Reducing transportation emissions and gas losses through on-site production contributes to lower carbon footprints.

Key Players in the Industrial Nitrogen Generator market are :

The global market is highly competitive, with key players focusing on product innovation, regional expansion, and industry-specific solutions. Major companies include:

Hitachi Industrial Equipment System Company

Inmatec

Parker Hannifin Corporation

Ingersoll Rand

Air Products and Chemicals, Inc.

Atlas Copco

Air Liquide

Linde Plc

Novair SAS

Oxymat A/S

These manufacturers are known for their broad product portfolios, advanced system design, and ability to customize solutions for diverse industrial needs.

Market Segmentation

By Technology

Pressure Swing Adsorption (PSA) – High purity, ideal for critical applications.

Membrane Separation – Lower purity, energy-efficient for less stringent needs.

Cryogenic Distillation – Large-scale, ultra-high purity systems.

By End-Use Industry

Food & Beverage – Packaging, storage, and bottling.

Pharmaceuticals – Inerting, cleanroom atmosphere, product blanketing.

Chemicals & Petrochemicals – Flammable material handling and oxidation prevention.

Electronics & Semiconductors – Purging, soldering, and wafer manufacturing.

Metal Manufacturing & Fabrication – Laser cutting, welding, and annealing processes.

Oil & Gas – Pressure testing, enhanced oil recovery, and pipeline inerting.

By Region

North America – Strong demand in oil & gas and industrial manufacturing.

Europe – Driven by green energy policies and pharmaceutical production.

Asia-Pacific – Fast-growing chemical and electronics sectors, especially in China and India.

Latin America & MEA – Expanding oil & gas infrastructure and food packaging industries.

Latest News – USA

In 2024, Parker Hannifin Corporation launched its next-generation PSA nitrogen generator for small-scale pharmaceutical and food production units. The system boasts energy savings of over 20% and remote diagnostics via IoT-enabled sensors. Additionally, Ingersoll Rand announced a strategic partnership with a major U.S. brewery to supply modular nitrogen systems tailored to high-volume bottling operations.

Latest News – Japan

In Japan, Hitachi Industrial Equipment System Company expanded its manufacturing facility in Yokohama to meet growing domestic demand for compact membrane nitrogen generators used in semiconductor fabrication. Meanwhile, Air Liquide Japan collaborated with a local logistics firm to integrate nitrogen-based fire suppression systems in their automated warehouses, enhancing safety standards.

Recent Key Developments are :

Atlas Copco introduced an advanced nitrogen generator series for laser cutting operations with integrated oxygen monitors for real-time purity control.

Inmatec released a mobile nitrogen generation unit for offshore drilling platforms, catering to dynamic environments and space constraints.

Linde Plc enhanced its digital service platform, offering predictive maintenance and system optimization tools for industrial nitrogen generators.

Novair SAS developed an energy-efficient PSA system that uses eco-friendly materials and recyclable components, targeting European sustainability goals.

Oxymat A/S expanded into the Southeast Asian market by establishing a service hub in Singapore, supporting regional industrial clients.

These developments reflect the market's move toward high-efficiency, modular, and digitally integrated systems that align with modern industrial automation trends.

Conclusion

The Industrial Nitrogen Generator Market is steadily advancing, propelled by the shift toward self-sufficient and cost-effective industrial gas systems. With growing application across diverse industries and increasing demand for uninterrupted nitrogen supply, especially in remote and high-demand environments, the market is set for sustained growth through 2030. As end-users seek more control, lower operational costs, and enhanced safety, nitrogen generator manufacturers continue to innovate through advanced technologies and sustainable designs. The market's steady CAGR of 4.4% is a reflection of the crucial role nitrogen generators play in supporting global industrial operations in a post-pandemic, efficiency-driven era.

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