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Pressure Swing Adsorption (PSA) Units Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

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Abstracts

The Global Pressure Swing Adsorption Units Market was valued at USD 2.7 billion in 2024 and is projected to grow at a strong CAGR of 6.8% from 2025 to 2034. The increasing demand for energy-efficient and environmentally sustainable gas separation technologies is one of the primary factors driving the market's growth. PSA units are gaining traction due to their efficiency in separating gases and their ability to reduce energy consumption. As industries around the world seek solutions that not only improve operational efficiency but also align with sustainability goals, PSA units are becoming an essential part of gas separation processes. Technological innovations, such as advanced adsorption materials and refined system designs, are enhancing the performance of PSA units, contributing to the expansion of the market. Furthermore, the growing adoption of PSA technology in renewable energy projects, including hydrogen production and biogas upgrading, presents additional avenues for market growth.

A particularly noteworthy trend is the increasing application of PSA technology in healthcare settings, with its role in oxygen generation for hospitals and clinics being pivotal. The demand for reliable, cost-effective oxygen sources has surged, especially in critical care environments. This has fueled the growth of the PSA market as it provides a dependable solution for hospitals worldwide. As healthcare systems, particularly in developing regions, continue to expand, the demand for PSA units is expected to rise in tandem. Additionally, industries such as chemicals, petrochemicals, and manufacturing are major drivers of market growth, with PSA units playing a key role in the purification of industrial gases and the removal of carbon dioxide.

The PSA units market is segmented based on gas type, with key segments including oxygen, nitrogen, hydrogen, and others. The oxygen segment generated USD 0.8 billion

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in 2024 and is anticipated to grow at a CAGR of 7.6% from 2025 to 2034. The surge in demand for oxygen, driven primarily by the healthcare industry, is a significant growth factor for this segment. PSA units are increasingly relied upon for ensuring a continuous, high-quality oxygen supply in medical settings, particularly during emergencies or high-demand situations.

In terms of applications, gas separation remains the dominant segment, accounting for 36.5% of the market share in 2024. This segment is expected to continue growing at a robust CAGR of 7.5% through 2034. The hydrogen purification segment is also witnessing impressive growth, with a projected CAGR of 7.7% over the same period. The demand for industrial gases in sectors such as chemicals, petrochemicals, and manufacturing is propelling the gas separation market, making PSA units indispensable for these industries.

In the U.S., the PSA units market was valued at USD 700 million in 2024 and is projected to grow at a CAGR of 7.4% from 2025 to 2034. This growth is driven by the increasing demand for industrial gases across key sectors, including chemicals, oil and gas, and food and beverages. The U.S. market is well-positioned for expansion due to its strong industrial base, ongoing technological advancements, and a growing emphasis on sustainability, particularly in renewable energy applications. These factors are significantly driving the demand for PSA units in the country.

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