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Vapor Recovery Units Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Application (Processing, Storage, Transportation, Railcar and Loading), By End-Use (Oil & Gas, Chemicals & Petrochemicals, Landfills and Others), By Technology (Absorption, Condensation, Membrane Separation and Adsorption), By Region, By Competition Forecast & Opportunities, 2018-2028F

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Abstracts

The Global Vapor Recovery Units Market reached a size of USD 909.19 million in 2022 and is projected to grow to USD 2317.59 million by 2028, with a CAGR of 5.26% through 2028. The increasing demand for vapor recovery units in the oil and gas industry is a key driver for the growth of the vapor recovery units market. Additionally, disruptions in the food processing and brewery sectors, coupled with the growing requirement for efficient storage and transportation of oil and gas, are expected to further fuel the adoption of vapor recovery units, driving market growth.

Key Market Drivers

Stringent Environmental Regulations and Emissions Reduction Goals

With increasing concerns about air quality, climate change, and environmental sustainability, governments and regulatory bodies worldwide are implementing measures to control volatile organic compound (VOC) emissions from industrial processes. In response to these regulations, industries such as oil and gas, petrochemicals, and chemicals are increasingly adopting Vapor Recovery Units (VRUs)

to capture and recover VOC emissions that would otherwise be released into the atmosphere. Notably, regulations like the Clean Air Act in the United States, the Industrial Emissions Directive in the European Union, and similar policies in regions like Asia-Pacific have mandated industries to significantly reduce their VOC emissions. Non-compliance with these regulations can result in substantial fines and damage to a company's reputation. VRUs play a crucial role in helping industries meet emissions reduction targets by recovering VOCs and preventing their release. By doing so, these units not only aid in regulatory compliance but also contribute to a cleaner environment and improved air quality. Furthermore, industries that proactively adopt VRUs demonstrate their commitment to environmental sustainability, aligning with the growing consumer demand for socially responsible practices. As governments tighten emission control regulations and establish ambitious reduction targets, the demand for VRUs is expected to increase further. Industries worldwide recognize the need to invest in VRU technologies as a vital step toward achieving emissions reduction goals and fulfilling environmental responsibilities.

Cost Savings and Resource Efficiency

Cost savings and resource efficiency are key drivers influencing the global Vapor Recovery Units (VRUs) market. Industries across various sectors are increasingly recognizing the economic benefits of integrating VRUs into their operations. This is primarily due to the optimized resource utilization, waste reduction, and improved operational efficiency that VRUs offer. By capturing and recovering valuable VOCs that would otherwise be released into the atmosphere, VRUs contribute to significant cost savings. In industries like oil and gas, where hydrocarbon recovery is a primary objective, VRUs provide an opportunity to monetize the captured VOCs, thereby generating increased revenue streams. Additionally, VRUs align with resource efficiency goals by minimizing the wasteful release of VOCs, which often serve as valuable feedstocks or energy sources. By capturing and reintroducing these VOCs into the production process, industries can reduce their reliance on extracting or manufacturing new resources, resulting in a more sustainable and cost-effective operation. Furthermore, the implementation of VRUs enhances operational efficiency by ensuring compliance with emissions regulations and mitigating the risk of fines or penalties. Companies that invest in emission control technologies like VRUs can avoid potential legal complications and disruptions to their operations. Moreover, the adoption of VRUs can lead to improved public relations and brand reputation. Companies that demonstrate their commitment to environmental responsibility and sustainability through emission reduction measures often gain positive recognition from customers, investors, and the general public. In summary, the economic advantages offered by VRUs make

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them an attractive solution for industries seeking to optimize resource utilization, reduce waste, and enhance their bottom line. As businesses continue to prioritize operational efficiency and sustainability, the VRUs market is poised for growth as a solution that aligns with both economic and environmental objectives.

Key Market Challenges

Integration with Existing Infrastructure and Processes

Integrating Vapor Recovery Units (VRUs) with existing industrial infrastructure and processes presents a significant challenge for industries considering the adoption of these emission control technologies. Many industrial facilities possess intricate systems, equipment, and processes that may require modification or adaptation to effectively accommodate the installation of VRUs. The challenge lies in ensuring a seamless integration of VRUs with existing systems without disrupting ongoing operations or compromising safety. Industries must assess the compatibility of VRUs with their specific processes, consider spatial constraints, and address potential technical issues that may arise during the integration process. Furthermore, industries often have limited downtime windows for retrofitting or modifying existing infrastructure to accommodate VRUs, which can further complicate the integration process. Striking a balance between operational continuity and the need to implement emission reduction measures necessitates meticulous planning and coordination. To tackle this challenge, VRU manufacturers and suppliers can offer comprehensive engineering support and tailored solutions that cater to the unique needs of each facility. Collaborative efforts between VRU providers and industries can result in well-executed integration plans that minimize disruptions and ensure a smooth transition to VRU-enabled operations. Ultimately, overcoming integration challenges requires a proactive approach involving close collaboration between VRU experts, engineering teams, and operational staff to devise solutions that optimize both emissions reduction and operational efficiency. Successful integration efforts can yield long-term benefits for industries, including improved environmental performance and enhanced operational sustainability.

Key Market Trends

Integration of IoT and Digitalization

The integration of IoT offers numerous benefits to the VRUs market. Firstly, real-time monitoring enables operators to promptly identify abnormalities or deviations from optimal operating conditions. This proactive approach facilitates preventive

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maintenance and mitigates the risk of unexpected downtime. Secondly, IoT-enabled VRUs contribute to data-driven decision-making, empowering operators to optimize VRU performance, implement emissions reduction strategies, and enhance overall operational efficiency. Thirdly, remote monitoring capabilities provided by IoT technologies enable operators to oversee multiple VRU systems from a centralized location, reducing the necessity for on-site visits and augmenting operational control. Furthermore, the data collected by IoT-enabled VRUs can be utilized for predictive maintenance, trend analysis, and compliance reporting. This data-driven approach not only enhances VRU performance but also improves regulatory compliance and sustainability reporting. As IoT technologies continue to advance, the integration of sensors, connectivity, and data analytics in VRUs is expected to become even more sophisticated. This trend aligns with broader industry efforts to leverage digitalization for achieving improved operational excellence and environmental stewardship.

Segmental Insights

End-Use Insights

The Oil & Gas segment is expected to dominate the market during the forecast period. The oil and gas segment plays a crucial role in the global Vapor Recovery Units (VRUs) market. As one of the primary contributors to volatile organic compound (VOC) emissions, the oil and gas industry aims to mitigate its environmental impact through the implementation of VRUs. VRUs are indispensable tools in capturing and recovering VOC emissions from various oil and gas operations, including production, refining, storage, and distribution. In the upstream segment of the oil and gas industry, VRUs are utilized to capture VOC emissions from diverse sources, such as crude oil storage tanks, production facilities, and wellhead operations. During oil and gas production, substantial amounts of VOCs are released into the atmosphere alongside hydrocarbons. VRUs play a pivotal role in preventing these emissions by recovering the VOCs and returning them to the production process or storage tanks. The adoption of VRUs assists operators in complying with emissions regulations, minimizing environmental impact, and optimizing resource recovery. In the midstream segment, VRUs are employed to manage VOC emissions in pipelines, terminals, and storage facilities. Pipelines and storage tanks used for oil and gas transportation and distribution can emit VOCs during loading, unloading, and storage processes. VRUs are integrated into these facilities to capture emissions and ensure compliance with emissions regulations. The midstream segment's focus on maintaining efficient and safe operations aligns with the goals of VRU implementation.

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Application Insights

The transportation segment is expected to dominate the market during the forecast period. As emissions regulations become increasingly stringent and environmental awareness continues to grow, the transportation industry is embracing VRUs as a viable solution to mitigate volatile organic compound (VOC) emissions in various modes of transportation and storage. Within the gasoline transportation sector, loading and unloading terminals play a critical role in the transfer of fuel to and from storage tanks, trucks, and railcars, making them crucial points where VOC emissions can occur. By implementing VRUs at these terminals, VOC emissions can be captured and recovered, preventing their release into the atmosphere. These units play a pivotal role in ensuring compliance with emissions regulations and upholding environmental standards in the transportation of gasoline. Similarly, in the transportation of chemicals, whether by road, rail, or sea, the handling of volatile substances presents the risk of VOC emissions. Consequently, VRUs are being increasingly adopted in the chemical transportation sector to capture emissions during loading, unloading, and storage processes. Given the chemical industry's strong focus on safety and environmental protection, VRUs provide a reliable solution for emissions control and regulatory compliance.

Regional Insights

North America is expected to dominate the market during the forecast period. North America, specifically the United States and Canada, enforces some of the most rigorous environmental regulations with the aim of mitigating air pollution and greenhouse gas emissions. Regulations such as the Clean Air Act and regional emissions limits have compelled industries to adopt technologies like VRUs to capture and recover volatile organic compounds (VOCs) that would otherwise be released into the atmosphere. The oil and gas sector is a significant user of VRUs in North America. With a focus on reducing methane emissions and VOCs across upstream, midstream, and downstream operations, the industry has seamlessly integrated VRUs to comply with regulations and enhance environmental sustainability. The refining and petrochemical sectors also contribute significantly to North America's demand for VRUs. These industries emit various VOCs during their processes, and VRUs are employed to capture these emissions, thereby reducing their environmental impact. The shale gas revolution in North America, particularly in the United States, has led to a surge in natural gas production, which in turn has resulted in higher VOC emissions. This necessitates the critical role of VRUs in capturing and recovering these emissions.

Key Market Players

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BORSIG Membrane Technology GmbH

John Zink Company, LLC

Symex GmbH & Co. KG

Hy-Bon Engineering Company, Inc.

Cool Sorption A/S

VOCZero Ltd.

Zeeco, Inc.

FLOGISTIX, LP

Kappa GI

Kilburn Engineering Ltd Thermax Limited

Report Scope:

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

Global Vapor Recovery Units Market, By Application:

Processing

Storage

Transportation

Railcar

Loading

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Global Vapor Recovery Units Market, By End-Use:

Oil & Gas

Chemicals & Petrochemicals

Landfills

Others

Global Vapor Recovery Units Market, By Technology:

Absorption

Condensation

Membrane Separation

Adsorption

Global Vapor Recovery Units Market, By Region:

North America

Europe

Latin America

Middle East & Africa

Asia Pacific

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Vapor Recovery Units Market.

Available Customizations:

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Global Vapor Recovery Units Market report with the given market data, Tech Sci 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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