

Rotary Vane Vacuum Pump Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The rotary vane vacuum pump market is expected to register a CAGR of 5.4% during the forecast period. Vacuum pumps have experienced a substantial demand from various end-user verticals. The operations in these verticals are extremely susceptible to corrosion due to constant exposure to harsh environments, emphasizing the need for vacuum pumps to comply with various industrial regulations.

Key Highlights

The rotary vane vacuum pump is an oil-sealed rotary displacement pump. The system usually comprises a housing, an eccentrically installed rotor, vanes that move radially under spring force, and the inlet and outlet. The outlet valve is generally oil-sealed.

The rapid growth of the electronics and semiconductor industries can be attributed to the increasing proliferation of consumer electronics like smartphones, laptops, and other relevant gadgets. It is a significant factor driving the rotary vane pump market growth.

The upcoming semiconductor fabrication projects by different companies are likely to boost the rotary vane vacuum pump demand further. For instance, Global Foundries announced its intentions to invest USD 1.4 billion in its global manufacturing capacity in March 2021. The company invests hundreds of millions of dollars yearly to improve its production capacity.

The COVID-19 pandemic had a detrimental impact on the Dry Vacuum Pumps Market. Due to the lockdown and social distancing norms, significant corporations halted operations in several areas. The sector anticipated a high level of demand and supply following the epidemic due to increased urbanization and the growing need for efficient use of available space.

Oil-lubricated rotary vane vacuum pumps have been deployed across many fields for decades. Currently, they represent the most widely used mechanical vacuum pumps. However, oil-free vacuum pumps have been introduced in the market, which acts as a restraint towards adopting rotary vane vacuums.

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For instance, in August 2021, Pfeiffer Vacuum introduced the HiPace 80 Neo turbopump, which has a longer service life and lowers vibration and noise emissions. The novel, advanced Laser Balancing method developed for turbopump rotors enables these advantages.

Rotary Vane Vacuum Pump Market Trends

Semiconductor Industry is Expected to Hold Significant Share

With the semiconductor industry being a key driver of the significant region's economic strength, global competitiveness, and technology leadership, especially in microprocessors, the demand for vane vacuum pumps has been substantial. Semiconductor technology has rapidly evolved, leading to the development of semiconductor devices over generations. Currently, the manufacture and use of semiconductor equipment involves many high and new techniques, such as various chemical elements, and has a robust technical comprehensiveness.

Semiconductor equipment technology has gradually integrated technology modularization into equipment, making it highly automated and intelligent, affecting the natural separation of material and the process to change. New vacuum applications in the semiconductor manufacturing process have emerged, mainly fueled by the production of smartphones, high-brightness LED lighting, photovoltaic solar panels, and Li-ion batteries.

For instance, according to WSTS, semiconductor sales in 2021 were USD 555.89 billion. It increased from USD 440.39 billion globally and was forecasted to rise to USD 613.52 billion in 2022. The increase in semiconductors sales will drive the rotary vane vacuum pump market.

Semiconductor process vacuum is used across evaporation, sputtering, PECVD, vacuum dry etching, vacuum adsorption, testing equipment, vacuum cleaning, and other bonding processes. The flammable, explosive, and toxic substance gases in the manufacturing process of semiconductor, leads the manufacturer of vacuum pumps to adhere to compliances such as CE and UL/CSA standards for production and personnel safety.

Dry etching, for instance, is generally used to remove the etched thin film through a combination of physical and chemical methods, so the etching has anisotropy, which can fundamentally improve the inherent problem of horizontal drilling erosion of wet process, to meet the requirements of fine line etching, rotary vane vacuum technology is one of them. Also, vacuum pumps alone represent up to 25% of the total energy consumed by a semiconductor manufacturing facility.

North America is Expected to Hold Significant Share

Traditionally, European vendors dominated the rotary vane vacuum pump market, such as Atlas Copco, which acquired various pump businesses to increase its foothold. However, these companies reported revenues closer to their domestic revenues. While several vendors have established their manufacturing facilities in North America, in the United States, the other international vendors have increased their distributor networks in North America. The rotary vane vacuum pump is expected to grow significantly in the United States owing to the several developments taking place in various end-user industries, such as semiconductors, solar, and process industries.

In August 2022, Qualcomm and GlobalFoundries announced a new partnership that included USD 4.2 billion to manufacture chips in an expansion of GlobalFoundries' upstate New York facility. Qualcomm, the leading fabless semiconductor company in the world, announced plans to increase semiconductor production in the US by up to 50% over the next five years. With the rotary vane vacuum pump significantly used in semiconductors, the developments are expected to impact the region's market positively.

Similarly, in September 2022, the US President signed into law the Chips and Science Act, which authorized about USD 52 billion

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in government subsidies for US semiconductor production and research, as well as an investment tax credit for chip plants estimated to be worth USD 24 billion.

The upcoming semiconductor fabrication projects by different companies will further boost the rotary vane vacuum pump demand. For instance, in March 2021, Intel stated that it would invest USD 20 billion in two new fabs in Chandler, Arizona, adding to Arizona's burgeoning semiconductor manufacturing base.

Such subsidies and investments in semiconductor production and research in this region will drive the market for rotary vane vacuum pumps.

Rotary Vane Vacuum Pump Market Competitor Analysis

The rotary vane vacuum pump market is consolidated, with most of the market occupied by a few players. Technological advancements in their product line are bringing sustainable competitive advantage to the companies, and the market is also witnessing the upgradation of the existing product portfolio. The market is also witnessing various mergers and acquisitions. Gardner Denver Inc., Gardner Denver Inc., Busch Holding GmbH, Atlas Copco Group, Gebr. Becker GmbH, and Pneumofore SPA are the major players in the rotary vane vacuum pump market.

In October 2021, HHV Pumps Pvt. Ltd agreed to be acquired by Atlas Copco. Vacuum pumps and systems are designed and manufactured by the company for various industries. HHV Pumps, based in Bengaluru, India, was started in 2009 and employs 151 people. The company generated around USD 6 million in revenue in 2020.

In August 2021, Pfeiffer Vacuum introduced the HiPace 80 Neo turbopump, which has a longer service life, and lowers vibration and noise emissions. The novel, advanced Laser Balancing method developed for turbopump rotors enables these advantages.

Additional Benefits:

The market estimate (ME) sheet in Excel format

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