Solenoid Valves Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 120 pages | Mordor Intelligence

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Report description:

The Solenoid Valves Market is anticipated to register a CAGR of 5.4% during the forecast period. The market for solenoid valves is primarily driven by the growing popularity of process automation and the increased deployment of solenoid valves in various process sectors. For instance, these valves are frequently used in water treatment facilities. They assist in removing organic pollutants from contaminated water and have several other uses.

Key Highlights
Numerous solenoid valves, including those composed of plastic, brass, and stainless steel, are used in the water treatment sector. They can be used for various equipment intake valves, tank filling, service valves on water softeners, piloting larger actuated valves with air or water, and more.
Further, the solenoid valve is one of the most commonly used in the food processing industry and is a great option for food processing. Many solenoid valves are designed to withstand harsh room temperatures and moist, corrosive conditions. Solenoid valves are often constructed with stainless steel because of the material's resistance to contaminants.
A solenoid valve can also be used in hydropower, a kind of renewable energy, as a component of a system to control the flow of water. The rise in renewable energy projects is expected to drive the studied market. For instance, in November this year, as part of Invest Karnataka, ABC Cleantech and the Government of Karnataka signed an MoU for the establishment of a green hydrogen production unit with an annual capacity of 0.2 million tonnes and a green ammonia production unit with an annual capacity of 1 million tonnes, both integrated with 5 GW of renewable energy projects and costing an estimated USD 6 billion.
The solenoid valves are of utmost importance in the medical sector as they facilitate delivering the correct concentration of gas and rate of flow to a patient on medical ventilators. In addition, solenoid valves moderate the oxygen flow rate with great speed and precision (increments as small as half a liter per minute) which provides effective patient care. The COVID-19 pandemic augmented the demand for critical medical equipment, thereby increasing the demand for solenoid valves.

The medical sector is also witnessing several solenoid valve innovations catering to specific vital applications. For instance, in April this year, Emerson expanded its ASCO Series 090 line of miniature solenoid valves, adding a three-way Series 090 valve configuration to enable lighter, space-efficient solutions for gas control in oxygen therapy, compression therapy, and gas analyzer devices.
However, one of the reasons that can hinder market expansion is solenoid coil failure, which has various possible causes. The coil could malfunction and perhaps burn out if the wrong voltage is applied. Electrical surges or spikes could also harm the coil. Coils that have burned out are beyond repair and must be replaced.

Solenoid Valves Market Trends

The Food and Beverage Sector is Anticipated to Hold a Major Market Share

Food-grade solenoid valves and solenoid valve manifolds are used for many food handling applications, especially in beverage dispensing machines. Special requirements include food-grade seals and valve body materials (316 SS) for unaltered beverage taste. The solenoid valves are designed to resist adverse temperature, humidity, and corrosive conditions, making them the most preferred valves in the food and beverage industry. Due to its contaminant resistance, stainless steel is used to construct these valves to ensure their longevity.
Solenoid valves are commonly used in the Meat and Abattoir Industry, Fruit and Vegetable Canneries, Fish Canneries, Salting Systems, Beverage (Soft Drinks, Wines, Spirits) and Ready Meal Industry, Dairy Industry, Oils and Fats Industry, Animal Feed Production Industry, and other Industries.
According to OECD, between 2016 and 2022, the global production volume of meat increased from 317 million metric tons to over 345 million metric tons. Such an increase in meat production is likely to boost the growth of the studied market.
Moreover, the use of pneumatic solenoid valves is predominantly witnessed in the food and beverage industry as they are much cleaner than hydraulic solenoid valves, which mainly use oil. They can be sealed to prevent any product from being trapped within its internal cavities. Thus, lessening the risk of product contamination.
However, when processing animal fodder, cereals, and powdered milk, a dusty hazardous environment is produced. Dust, when mixed with air, can create a potentially explosive atmosphere that a spark or flame could ignite. There is always a chance that due to moisture or general usage, the solenoid coil may fail and generate an ignition source. So, for all hazardous environments, an ATEX-rated solenoid valve is advisable to be used.

The Asia Pacific Region is Expected to Witness a High Market Growth

Asia Pacific is expected to stand as one of the fastest-growing markets for solenoid valve installations in food & beverage, automotive, power generation, oil & gas, healthcare & pharmaceutical, owing to the rising population, a significant increase in demand for fuel and petroleum products, and the increasing disposable income of the middle-class population in the region.
According to British Petroleum (BP), China is the largest oil consumer in the Asia-Pacific region, consuming 15.5 million barrels per day last year. In the same year, India consumed over 4.95 million barrels daily, making it the second-largest oil consumer in the region. Also, the oil production in the Asia Pacific region amounted to 7,428 thousand barrels per day in 2020 and 7,335 thousand barrels per day in 2021. Such a robust oil and gas sector in the region is anticipated to offer numerous opportunities for the growth of the solenoid valve market.
Further, the rise in the production of automotive vehicles in the region is expected to drive the market. Electromechanically operated valves also comprise automotive solenoid valves. These valves regulate the rate at which fluid or air flows through automotive systems and motors. When electric current flows through the solenoid's wire, it produces a magnetic reaction, which

is how solenoids transform electrical energy into mechanical energy. Solenoid valves are often used with hydraulic systems and power fluids..
According to the Society of Indian Automobile Manufacturers (SIAM), India was one of the significant manufacturers in terms of global automobile production. The total number of automobiles produced in India during the last fiscal year was approximately 22.9 million units, an increase over the previous year. Further, according to the China Association of Automobile Manufacturers, 210,000 commercial vehicles and 996,000 passenger automobiles were produced in China as of April this year. The industry produced a total of 1.2 million automobiles during the month, a decrease of 46.2% from the previous month and 46.1% year-over-year.
According to METI(Japan), in Japan's fabricated metals sector, the production volume of solenoid-operated valves increased by 3.2 thousand tonnes (+19.38%) last year compared to the previous year. As a result, Japan's output volume reached 19.66 thousand tonnes in 2021. Such a huge rise in the production volume hints at the possibility of an increase in the adoption of solenoid valves.

Solenoid Valves Market Competitor Analysis

The Solenoid Valves Market is highly competitive. In the current market scenario, there is a considerable consolidation among top players in the market. Acquisitions, such as ABB of General Electric Industrial Systems and by Emerson Electric Co. of Aventics have helped a number of vendors to improve their market share as suppliers of solenoid valves and other industrial automation solutions.

In October 2022, Kendrion presented its new bistable solenoid valve 63.0 at COMPAMED 2022. The valve controls the flow rate with great speed and precision. An integrated permanent magnet keeps it de-energized in the open or closed state without permanently energizing the coil. The valve is available as a 2/2- or 3/2-way version and can be adapted to meet precise requirements. As well as a version with a lead wire or connector for PCB interfacing, common sealing materials like NBR, EPDM, or FPM are also an option

In February 2022, Emerson, the technology, engineering, and software company, opened an integrated manufacturing facility at Mahindra World City in Chennai. Emerson integrated manufacturing under one roof to leverage production synergies for some of its key products. This facility would manufacture fluid control and pneumatics products, including solenoid valves, cylinders, air preparation units, pneumatic valves and manifolds, position monitoring, and high-pressure regulators for Emerson?s field-proven brand AVENTICS, ASCO, TopWorx, and TESCOM.

Additional Benefits:

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

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