Biomedical Pressure Sensors - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Biomedical Pressure Sensors Market size is estimated at USD 1.18 billion in 2025, and is expected to reach USD 1.78 billion by 2030, at a CAGR of 8.52% during the forecast period (2025-2030).

Key Highlights
- Biomedical sensors are the result of combining electronic information technology and biomedicine, and they remain highly dynamic due to the growth of multidisciplinary collaborations. Biomedical pressure sensors are unique electronic devices capable of converting pressure signals into measurable electric signals. These sensors play a crucial role in a wide range of medical diagnostic and therapeutic equipment and instruments. The ongoing progress in the biomedical industry is expected to boost the need for pressure sensors.
- Sensor technology has undergone significant evolution, leading to its integration into advanced medical devices. This evolution has not only enabled the creation of miniaturized and portable medical devices but also enhanced their effectiveness. For instance, biomedical pressure sensors can now monitor a patient's condition across a wide spectrum of scenarios. From assessing the efficacy of oxygen therapy in concentrators to automating precise drug infusions in pumps and even measuring blood pressure, these sensors play a pivotal role.
- Moreover, pressure sensors are now a vital component of medical care, offering precise and stable measurement of critical pressure levels in gases and liquids within the body and during patient treatments. Advancements in technology will lead to the development of more sophisticated and smaller biomedical equipment while also reducing the cost of home-use devices. This will result in an improved quality of life for the aging population. These significant developments are expected to enhance market opportunities.
- Biosensors play a crucial role in the healthcare industry by facilitating the sensing, detection, and monitoring of a wide range of disorders in individuals. The increasing incidence of diabetes and chronic diseases worldwide is a key driver behind the growth of

the biosensors market. These innovative devices are integrated into medical wearables to accurately measure blood glucose levels, enabling the early detection of diabetes. Consequently, this factor significantly contributes to the advancement and expansion of biosensors.
- The market is witnessing robust growth, propelled by rising demand for superior patient care. This demand surge is a direct outcome of heightened global consumer awareness and escalating healthcare spending. With increased healthcare investments, especially in cutting-edge medical devices and infrastructure-where pressure sensors play a pivotal role-the market is poised for further expansion. With the increasing demand for these sensors in the medical industry, several companies are significantly investing in various product launches.
- For instance, in April 2023, Superior Sensor Technology unveiled specialized biomedical pressure sensors tailored for medical ventilators. These sensors integrate advanced over-sampling methods, elevating their dynamic range. This enhancement empowers mechanical ventilators to harness sensor outputs directly, eliminating the necessity for subsequent over-sampling procedures. Such vendor developments are expected to drive the market's growth significantly.
- Remote patient monitoring stands out as a burgeoning trend in healthcare, propelling the uptake of digital technologies and cutting-edge medical devices for electronic health data recording. Patients utilize wearables to monitor their health and activity, while clinicians employ them for remote monitoring. The synergy between medical devices, patient wearables, EMRs, smartphones, and telehealth platforms not only streamlines operations but also enhances clinical decision-making. Leading wearable manufacturers are enhancing their products by integrating advanced health monitoring features, thereby fueling the demand for biomedical pressure sensors.
- Nevertheless, the technical constraints of biomedical pressure sensors, including the impact of the environment on detection capabilities and sensor readings, continue to be significant obstacles to the expansion of the market under examination. Moreover, the necessity for product distinctiveness and awareness, particularly in emerging regions, along with the expense of the sensors, further hinders the growth of the market being studied.

Biomedical Pressure Sensors Market Trends

Therapeutic Applications to Witness Major Growth

- The therapeutic segment is expected to drive the market's growth significantly over the coming period, owing to the increasing adoption of pressure sensors. Various therapeutic devices, like chest physiotherapy machines and nebulizers, incorporate pressure sensors. Nebulizers utilize compressed air to produce a medication mist for patients to inhale. The pressure sensor monitors the flow rate of compressed air and makes adjustments as needed to guarantee precise drug administration. These devices are specifically engineered to manage chronic obstructive pulmonary disease (COPD), asthma, cystic fibrosis, and other respiratory conditions.
- Chest physiotherapy machines utilize high-pressure air jets to help loosen and remove mucus from the lungs. These devices are equipped with a pressure sensor to monitor and adjust the pressure of the air jets for maximum therapeutic benefit. Additionally, a sensitive and flexible pressure sensor is employed to detect pressure changes, and an efficient ASP system is utilized to extract heart rate data from the signal. The accuracy of this heart rate sensor has been confirmed through testing on multiple subjects, demonstrating its high precision.
- Respiratory physiotherapy equipment provides numerous benefits, including the ability for independent use, full treatment control, and user-friendly operations, which ultimately enhance patients' adherence to daily treatment regimens and consequently boost the demand for such equipment. These pressure transducers offer an indirect assessment of airflow through the detection of pressure fluctuations, exhibiting a strong response to airflow patterns and the ability to identify airflow restrictions. The rising investments in respiratory therapeutic equipment are anticipated to propel market prospects.
- According to the World Health Organization (WHO), asthma and chronic obstructive pulmonary disease (COPD) are the most prevalent chronic respiratory diseases. These two conditions collectively result in nearly 4 million deaths annually, with

approximately half a billion individuals living with them. Additionally, data from Socialstyrelsen indicates that the number of respiratory disease patients receiving outpatient specialized care in Sweden increased from 2,644.1 in 2022 to 2,843 in 2023. These significant developments are anticipated to drive increased investments in respiratory therapeutic equipment, consequently boosting the demand for pressure sensors within this segment.
- Additionally, the rising need for advanced respiratory drug delivery devices and the growing acceptance of these devices by patients will drive the demand for biomedical pressure sensors in therapeutic settings over the forecast period. The surge in respiratory conditions like asthma and COPD is fueling the demand for therapeutic devices, contributing to market expansion.

North America Expected to Register Significant Market Growth

- The primary share of the North American regional market can be credited to the expansion of application areas within the healthcare industry. Forecasts indicate that the increasing demand from emerging economies like the United States and Canada would significantly boost the need for biomedical pressure sensors. High growth is anticipated in the region throughout the forecast period, with key factors such as investments in medical infrastructure, research and innovation centers, government initiatives, and policies favoring the healthcare equipment and devices markets.
- The North American market is poised for growth due to factors such as the rising prevalence of chronic diseases and the increasing awareness of medical sensors among the populace. As per the National Health Council, by 2024, approximately 133 million Americans will be affected by chronic conditions, constituting over 40% of the country's population. The expansion of the biomedical pressure sensors market is linked to the growing focus on medical sensor development, improvements in healthcare infrastructure, and the early diagnosis of diseases.
- The inclusion of pressure sensors and transmitters in ventilators is necessary to regulate oxygen and air pressure, ensuring the safe and smooth operation of the device. These sensors are essential components in delivering respiratory support to patients undergoing COVID-19 treatment and other medical interventions. As a result, the increasing prevalence of chronic diseases and the growing aging population in the region are expected to drive technological advancements in the market.
- Additionally, the regional population's increasing concerns over sleep apnea are boosting the need for pressure sensors. This disorder impacts numerous people, and devices like CPAP, BiPAP, and APAP depend on pressure sensors to supervise airflow and respiration. Positive Airway Pressure therapy is the most suggested remedy for obstructive sleep apnea, and different pressure sensors support its operations. Patients don a mask covering their nose and mouth, and a gentle air blower pushes air through the mask, opening up possibilities for the pressure sensors.
- According to data released by the American Medical Association in 2023, approximately 30 million people in the United States are affected by sleep apnea, with nearly 30% of the nation's population showing signs of this disorder. The most common form was obstructive sleep apnea, affecting around 26% of individuals aged between 30 and 70. Therefore, healthcare professionals recommend the use of a CPAP device to reduce the occurrence of apnea episodes during sleep and decrease the likelihood of developing health issues like heart disease and stroke. Such factors are expected to create demand for pressure sensors.
- Government investments in the region are set to bolster the North American medical devices industry, creating favorable growth prospects for the market studied. The recent US legislation, specifically the Inflation Reduction ACT (IRA), will also play a role in influencing investments in the medical devices industry by introducing new guidelines for medical devices and other healthcare system components. Additionally, the increasing export and production values of medical devices from the United States to foreign countries like China, Japan, the Netherlands, and Germany are expected to drive market opportunities further.

Biomedical Pressure Sensors Industry Overview

The biomedical pressure sensors market is anticipated to face significant competitive challenges during the forecast period due to the limited number of manufacturers. Market leaders, including Resonetics LLC, RJC Enterprises LLC, All Sensors Corporation, and

Opsens Inc., exert considerable influence on the market. These companies have grown their operations by focusing on strategic expansions and acquisitions.

- March 2024 - Haydale has developed a series of functionalized biomedical sensor inks designed for biosensing and diagnostic purposes. These inks incorporate functional groups that facilitate interactions with biological molecules such as proteins and DNA, thereby enabling the detection of specific analytes. The biosensor has been engineered to identify particular electrochemical urinary microRNAs, thereby removing the need for invasive biopsies in diagnosing delayed graft function in kidney transplant recipients.
- November 2023 - Millar announced its strategic intention to acquire Sentron, a leading manufacturer of pressure and pH sensors, based in Leek, The Netherlands. Sentron, currently under the ownership of Wellinq, has been known for its fully integrated sensor solutions. This move underscores Millar's dedication to pushing the boundaries of medical knowledge and facilitating scientific breakthroughs, particularly in the realm of pressure sensor technology. By uniting under a common vision of excellence, this acquisition not only sets the stage for Millar to revolutionize medical sensor technology but also promises to catalyze advancements in global healthcare outcomes.

Additional Benefits:

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

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