Electrochemical Sensor - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 100 pages | Mordor Intelligence

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Report description:

The Electrochemical Sensor Market is expected to register a CAGR of 11.2% during the forecast period.

Key Highlights
- Increasing focus on the safety of hazardous locations due to the rise in the number of explosions occurring in the extreme environment of the manufacturing and chemical industries because of the presence of toxic and combustible gases has prompted an increased focus on explosion prevention through implicit monitoring across the hazardous zones of these end-user industries to achieve a safer working environment.
- The automotive sector has witnessed favorable gains, primarily driven by emerging applications such as cabin air quality and fuel emission detectors. Aligning trends such as improving fuel efficiency and air quality control has been a significant driver for the electrochemical-based gas sensor market.
- Furthermore, government regulations, such as COSHH and OSHA regulations, toward offshore oil and gas exploration and production, and storage activities, impose strict limits on the exposure to carbon monoxide and other toxic gases fumes. This has been a significant driver for the adoption of electrochemical technology-based gas sensors.
- Medical and diagnostics are lucrative market segments driven by a strong interest in fast point-of-care testing and monitoring devices. Furthermore, the integration of bio-sensors into multiple diagnostic medical equipment is set to offer a plethora of opportunities for the market over the forecast period.
- Further, the vendors in the studied market are constantly innovating and offering new solutions. For instance, in July 2021, DropSens, a Metrohm company, unveiled new capabilities that will make mass production of customized electrochemical sensors easier. Custom sensors are made using a highly scalable and cost-effective manufacturing technique that has almost no quantity restrictions. From original concept to in-depth prototype design, Metrohm DropSens covers the whole development and manufacturing process.

- Moreover, in March 2021, for industrial safety applications, DD-Scientific introduced a new line of high-performance electrochemical gas sensors. The DceL suite of solutions not only provides industry-leading robustness and performance for dangerous gas and oxygen monitoring, but they also come in an ultra-compact design that allows for detector size reduction. Sensors for the most routinely measured hazardous species, such as hydrogen sulfide, carbon monoxide, nitrogen dioxide, ammonia, and Sulphur dioxide, are available in the DceL range.
- The outbreak of the COVID-19 pandemic caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) posed a threat to public health worldwide. Thus, the development of a rapid, accurate, and easy-to-implement diagnostic system for virus detection became crucial for controlling the infection sources and monitoring the illness progression.
- In June 2020, the Northeastern University College of Engineering Professor Nian Sun was awarded a USD 200,000 NSF RAPID grant for the COVID-19 new handheld gas sensor for Airborne SARS-CoV-2 Virus instant COVID-19 diagnosis from exhaled breath. In collaboration with Jeremy Luban from UMass Medical School, the project aims to streamline the COVID-19 detection and diagnosis process. Both professors developed a handheld gas sensor for the SARS-CoV-2 virus in air detection, using each of their fields of expertise.

Electrochemical Sensor Market Trends

Medical Sector to Witness Significant Market Growth

- The market in this segment has been augmented by the demand for modern methods for diagnosis and the advances in microfabrication methodology that have led to the development of sensitive, selective, and effective electrochemical sensors for clinical analysis. Billions of dollars are spent on research & development to improve medical technology.
- The proliferation of bio-sensors employing electrochemical sensing technology has been gaining traction owing to strong demand for point-of-care applications, such as self-monitoring blood glucose meters.
- Also, molecular point-of-care (POC) diagnostics use electrochemical sensors, which helped improve the sensitivity and specificity of existing near-patient and rapid tests and expand the diagnostic capabilities at points of care such as hospital critical care units, physician offices, and outpatient clinics across the world.
- Further, advancements in precise printing and processing technology and next-generation medical and diagnostic electrochemical biosensor product designs in developing implantable glucose sensors for treating diabetes have been developed for intravascular and subcutaneous applications.

North America to Account for a Significant Market Share

- North America is one of the largest markets for advanced research industries, globally. The huge demand in the region is mainly due to growing R&D activities in biomedical, automotive, building automation, and other verticals.Additionally, North America is one of the largest markets for advanced electronic devices and control, globally. This significant market share is a result of large-scale domestic manufacturing, government initiative toward disruptive technologies, and technological innovation in information technology.
- Moreover, the future growth in the smart cities market to move on for energy-efficient and conservation-related solutions in North America will possibly directly influence the market of electrochemical sensors from the early adoption phase to mass-adoption.
- The market in the region will further benefit from the continued growth of light vehicle production, coupled with advancements towards fuel efficiency and performance with the usage of advanced, high-cost universal exhaust gas oxygen sensors (UEGO).
- Moreover, with the incidences of industrial explosions increasing in recent times, US safety organizations are trying to

implement the regulations strictly, contributing to the increased demand for electrochemical gas sensors for monitoring and quality control.
- The consumer segment is small, but one of the fastest-growing market segments. Consumer applications are driving the development of new electrochemical sensors to reduce cost, power consumption, and size with MEMS technologies. The medical and clinical research laboratories present a plethora of opportunity in the country for point of care applications and enhance safety monitors of patients.in the region.

Electrochemical Sensor Industry Overview

The Global Electrochemical Sensor Market is very competitive in nature. The market is highly concentrated due to the presence of various small and large players. Some of the significant players in the market are Thermo Fisher Scientific, Inc., MSA Safety, Emerson Electric Co., Honeywell Analytics (Honeywell International Inc.), Conductive Technologies Inc., Delphian Corporation, SGX Sensortech Ltd, among others. The companies are increasing the market share by forming multiple partnerships and investing in introducing new products to earn a competitive edge over other players.

- August 2022 - Thermo Fisher Scientific, in technical collaboration with National Forensic Sciences University (NFSU), has set up the Centre of Excellence for DNA Forensics in India. Thermo Fisher Scientific has equipped the facility with the entire DNA workflow, including sophisticated extraction systems, real-time PCR instruments, DNA sequencers/ genetic analyzers, next-generation sequencers, and rapid DNA technologies. Versatile electrochemical DNA/RNA sensors are a promising technological alternative for PCR-based diagnosis.
- February 2022 - Thermo Fischer Scientific and Moderna partnered to enable dedicated large-scale manufacturing in the U.S. of Spikevax, Moderna's COVID-19 vaccine, and other investigational mRNA medicines in the pipeline. Thermo Fisher has partnered with Moderna to support the development pipeline with clinical research and contract manufacturing services. Electrochemical sensors are widely used in the fields of drug delivery. Thermo Fisher continues to bring a full range of products that have enabled Moderna to deliver innovative medicines at an unprecedented speed and scale.

Additional Benefits:

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

Table of Contents:

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