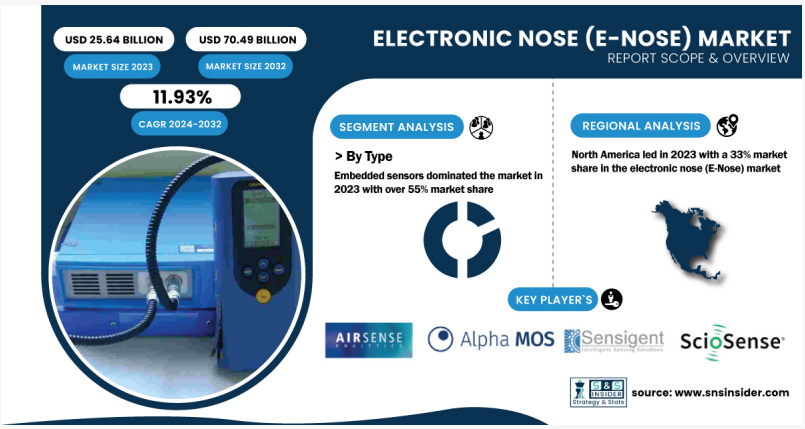
E-Nose Market Set to Cross USD 70.49 Billion by 2032, Driven by Growing Demand for Advanced Sensors in Key Industries

The demand for advanced sensors across sectors such as food and beverages, healthcare, and environmental monitoring is fueling the growth of the E-Nose Market



E-Nose Market Size & Growth Report

AUSTIN, TX, UNITED STATES, January 28, 2025 /EINPresswire.com/ -- Market Size & Industry Insights

According to the SNS Insider Report,"The Electronic Nose (E-Nose) Market Size was valued at USD 25.64 Billion in 2023 and is expected to reach USD 70.49 Billion by 2032, growing at a CAGR of 11.93% over the forecast period 2024-2032."

E-Nose Technology Revolutionizes Healthcare and Security Sectors with Non-Invasive Diagnostics and Detection

E-Nose technology is gaining traction in healthcare, particularly in diagnosing respiratory diseases like COPD and lung cancer, where it can distinguish between conditions using patterns of exhaled volatile organic compounds (VOCs) with impressive accuracy. For instance, it achieves a cross-validation value (CVV) of 85% in differentiating COPD from non-small cell lung cancer (NSCLC). In asthma and COPD, E-Nose reaches a remarkable 96% accuracy in distinguishing between patient profiles. Beyond respiratory conditions, E-Nose is also proving valuable in diagnosing obstructive sleep apnea syndrome (OSAS) and infectious diseases, with sensitivity rates of 78% and 88% respectively. In the security sector, E-Noses are effectively used to detect explosives and hazardous substances, enhancing safety in airports and military settings. This growing application in both healthcare and security positions E-Nose technology as a key player in non-invasive diagnostics and threat detection.

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SWOT Analysis of Key Players as follows:
- Airsense Analytics
- Enose Company
- Alpha MOS
- Odotech
- Sensigent
- eNose Technology
- SCIOsense
- Cambridge Sensotec
- G.A.S. Sensing
- ScentDetect
- Sensing Solutions
- Tellspec
- Sensory Analytics
- eNose Lab
- Airsense
- Cortexica
- Platometrics
- Molecular Vision
- Fruity Fresh
- Vairus

Embedded Sensors and MOS Technology Lead the E-Nose Market in 2023, with Portable Devices and QCM Set for Rapid Growth

By Type

In 2023, embedded sensors led the market with over 55% share, integrated into systems for applications like air quality monitoring, food evaluation, and industrial safety. Their precision in detecting volatile organic compounds (VOCs) makes them ideal for industries such as agriculture, pharmaceuticals, and manufacturing. Companies like Alpha MOS and Airsense Analytics use embedded sensors in automated food quality control systems.

Portable devices are expected to grow faster from 2024 to 2032, their mobility and ease of use in agriculture, environmental monitoring, and medical diagnostics. Aryballe Technologies and Plasmion develop portable E-Nose devices for field and diagnostic use.

By Technology

In 2023, Metal Oxide Semiconductor (MOS) Sensors led the Electronic Nose (E-Nose) market with a 41% share, owing to their strong performance, affordability, and capability to detect various volatile organic compounds (VOCs). These sensors, which detect changes in resistance from gas

adsorption, are widely used in food quality assessment, environmental monitoring, and healthcare. Companies like Figaro Engineering Inc. supply MOS sensors for air quality systems.

Quartz Crystal Microbalance (QCM) is projected to be the fastest-growing segment from 2024 to 2032 due to its high sensitivity in detecting small mass changes, making it ideal for medical, environmental, and food safety applications.

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KEY MARKET SEGMENTS:

By Type
Embedded Sensors
Portable Devices

By Technology
Metal Oxide Semi-Conductor Sensors (MOS)
Quartz Crystal Microbalance (QCM)
Conducting Polymers (CP)
Surface acoustic wave (SAW)
Others

By End User
Military and Defense
Healthcare
Food and Beverage
Waste Management (Environmental Monitoring)
Others

North America Leads E-Nose Market in 2023, While Asia-Pacific Poised for Rapid Growth through Industrialization and Health Focus

In 2023, North America held the largest share of the electronic nose (E-Nose) market at 33%, driven by advanced technological infrastructure and significant investments in research and development. Major companies like Smiths Detection integrate E-Nose technology into security systems for threat detection, while Airocide uses it in air purifiers to enhance safety across various environments. This growing demand for E-Nose applications in food quality monitoring, environmental safety, and healthcare solidifies North America's leadership.

Asia-Pacific is set to experience the fastest CAGR from 2024 to 2032, fueled by rapid industrialization and an increasing focus on environmental and health concerns. Countries like China and India are adopting E-Nose technologies for food safety, with initiatives like NanoSensors in agriculture and Tsinghua University for medical diagnostics. The rising demand

for scent identification in industries such as pharmaceuticals and petrochemicals further propels growth in the region.

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Recent Trends

20 Nov 2024: "New E-Nose Can Sample Odors 60 Times Per Second, Mimicking Mouse's Olfactory Speed" A new electronic nose developed by researchers can detect odors 60 times per second, matching the speed of a mouse's olfactory system. This rapid sensor can track odor changes in real-time, making it ideal for hazardous environments like wildfires, where swift detection of smoke or other hazards is critical.
6 Nov 2024: "Miniaturized E-Nose Achieves High-Speed Odor Sensing at 60 Hz A new miniaturized high-speed electronic nose introduced by researchers can detect and classify odors at an unprecedented 60 Hz, matching the temporal resolution of animal olfaction. This breakthrough enables faster and more precise odor sensing in low-power robotic systems, offering promising applications in environmental monitoring, security, and neuroscience.

TABLE OF CONTENT - Key Points

Chapter 12. Use Cases and Best Practices

Chapter 13. Conclusion

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