

Advanced Carbon Dioxide (CO₂) Sensors Market Size Worth \$7.14 Billion by 2029 - The Business Research Company

*The Business Research Company's
Advanced Carbon Dioxide (CO₂) Sensors
Global Market Report 2025 – Market Size,
Trends, And Global Forecast 2025-2034*

LONDON, GREATER LONDON, UNITED KINGDOM, November 27, 2025
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Advanced Carbon Dioxide (CO₂) Sensors Global
Market Report 2025

How Much Is The [Advanced Carbon Dioxide \(CO₂\) Sensors Market](#) Worth?

The market size for advanced carbon dioxide (CO₂) sensors has experienced significant growth in the recent past. The industry is predicted to expand from a size of \$5.25 billion in 2024 to \$5.60 billion in 2025, reflecting a compound annual growth rate (CAGR) of 6.6%. The earlier growth can be traced back to regulations for indoor air quality in workplaces and educational premises, codes for energy efficiency in buildings demanding ventilation monitoring, safety standards for workplaces in industrial sectors, the broadening of environmental air monitoring programs by municipalities, plus developments in the quality control and packaging compliance within the food and beverage sector.



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The market for advanced carbon dioxide (CO₂) sensors is anticipated to witness robust expansion in the coming years, reaching a market value of \$7.15 billion in 2029 with a compound annual growth rate (CAGR) of 6.3%. Factors such as net zero commitments and carbon accounting regulations, stricter building codes related to indoor air quality, governmental support for upgrading school ventilation and filtration systems, expansion of ambient air monitoring networks in smart cities, and health and safety compliance programs in workplaces

and manufacturing units are contributing to this growth. Forecasted trends encompass improvements in non-dispersive infrared sensitivity and stability, miniaturization of photoacoustic spectroscopy for devices with lower power requirements, tunable diode laser absorption spectroscopy becoming more affordable, IoT cloud connected sensors with remote firmware updates, and edge AI analytics for immediate anomaly detection.

Download a free sample of the advanced carbon dioxide (CO₂) sensors market report:

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What Are The Factors Driving The Advanced Carbon Dioxide (CO₂) Sensors Market?

The escalation in automotive manufacturing and possession is projected to fuel future expansions in the advanced carbon dioxide (CO₂) sensor industry. Automobiles, which include passenger cars and light commercial vehicles, are designed for road transportation to transfer individuals or commodities. This surge in automobile numbers can be attributed to the bounce-back in registrations and the growth in the inventory of road vehicles in 2023, as compared to the year prior. With the influx of more service vehicles, automobile manufacturers and tier-1 providers are integrating advanced CO₂ sensors into cabin air-quality components. This upgrade aims to regulate the fresh-air intake, reduce CO₂ accumulation and sleepiness, and comply with comfort and security standards, causing sensor units per vehicle to rise. For instance, GOV.UK, a UK executive agency, reported in May 2024 that there were 41.2 million registered vehicles in the UK. This figure presents a 1% upturn compared to the conclusion of 2022, indicating yearly expansion in the vehicle park. Consequently, this growth in automotive production and ownership propels the advanced carbon dioxide (CO₂) sensor market.

Who Are The Major Players In The Advanced Carbon Dioxide (CO₂) Sensors Market?

Major players in the Advanced Carbon Dioxide (CO₂) Sensors Global Market Report 2025 include:

- Siemens AG
- Asahi Kasei Corporation
- Infineon Technologies AG
- Murata Manufacturing Co. Ltd.
- Vaisala Oyj
- Sensirion AG
- KMC Controls Inc.
- Winson
- Building Automation Products Inc. (BAPI)
- AZoSensors.com

What Are The Key Trends And Market Opportunities In The Advanced Carbon Dioxide (CO₂) Sensors Sector?

Key players in the advanced carbon dioxide (CO₂) sensor market are concentrating on technological innovations such as photoacoustic spectroscopy to improve sensor precision, minimize size and cost, and facilitate effective integration in heating, ventilation, and air

conditioning; building automation systems; and the internet of things. Photoacoustic spectroscopy (PAS) is a method of sensing and measuring where light absorbed by a gas or material results in localized heat and pressure variations, creating sound waves. These sound waves are identified by delicate microphones to accurately determine the concentration of specific gases like carbon dioxide (CO₂). For example, Infineon, a semiconductor company based in Germany, introduced the XENSIV PAS CO₂ 5V sensor, an advanced photoacoustic spectroscopy-based solution, in November 2024. This solution allows smart buildings to continuously track indoor air quality and optimize the energy consumption of heating, ventilation, and air conditioning, offering accurate, dependable, and energy-saving climate management while supporting decarbonization objectives.

Which Segment Accounted For The Largest [Advanced Carbon Dioxide \(CO₂\) Sensors Market Share](#)?

The advanced carbon dioxide (CO₂) sensors market covered in this report is segmented –

- 1) By Product: Non-Dispersive Infrared (NDIR) Advanced Carbon Dioxide (CO₂) Sensors, Chemical Advanced Carbon Dioxide (CO₂) Sensors
- 2) By Sensor Fitting: Retrofit, Wall Mount
- 3) By Connectivity: Wired Carbon Dioxide (CO₂) Sensors, Wireless Carbon Dioxide (CO₂) Sensors
- 4) By Application: Heating, Ventilation, And Air Conditioning (HVAC) Systems, Smart Homes And Buildings, Safety And Fire Detection, Industrial Processes, Quality Control, Other Applications
- 5) By End-Use Industry: Healthcare, Petrochemical, Building Automation, Automotive, Consumer Electronics, Other End-Users

Subsegments:

- 1) By Non-Dispersive Infrared (NDIR) Advanced Carbon Dioxide (CO₂) Sensors: Single Beam Single Wavelength, Single Beam Dual Wavelength, Dual Beam Reference Configuration, Long Optical Path Multi Pass, Short Optical Path Compact Module, Thermopile Detector Based Module, Pyroelectric Detector Based Module
- 2) By Chemical Advanced Carbon Dioxide (CO₂) Sensors, By Type: Colorimetric Dye Based Optical Sensor, Metal Oxide Semiconductor Chemiresistive Sensor, Ion Selective Field Effect Transistor With Bicarbonate Membrane, Polymer Nanocomposite Chemiresistive Sensor, Metal Organic Framework Sorption Sensor, Severinghaus Electrode Sensor

View the full advanced carbon dioxide (CO₂) sensors market report:

<https://www.thebusinessresearchcompany.com/report/advanced-carbon-dioxide-co2-sensors-global-market-report>

What Are The Regional Trends In The Advanced Carbon Dioxide (CO₂) Sensors Market?

In the Advanced Carbon Dioxide (CO₂) Sensors Global Market Report 2025, North America held the most substantial market share in the year 2024. However, Asia-Pacific is projected to exhibit the highest growth rate in the projected timeline. The report takes into account several regions, including Asia-Pacific, Western Europe, Eastern Europe, North America, South America, the Middle East, and Africa.

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