OIZOM®
REDEFINING RESOURCES

Polludrone®

Ambient Air Quality Monitoring System

About Polludrone®

Polludrone® is a continuous ambient air quality monitoring system (CAAQMS). It monitors up to 9 gas pollutants and particulate matter, along with meteorological parameters simultaneously, providing continuous and real-time data on ambient air. Its IP66-rated enclosure protects it from harsh weather, while a wide range of communication protocols ensures uninterrupted, 24/7 accurate data transmission, no matter the location.

It is an ideal solution for understanding and managing ambient environmental health. With its multi-parameter monitoring capabilities, Polludrone® empowers industries, smart cities, airports, construction sites, seaports, campuses, schools, highways, tunnels, and other locations to accurately track real-time environmental data and take timely, informed action.

Product Features

Patented Technology
Works on innovative e-breathing technology for higher data accuracy.

Retrofit Design
Designed for seamless integration and easy deployment in existing infrastructure.

Compact
Lightweight and compact system that can be easily installed on a pole or wall.

Internal Storage
Internal data storage capacity of up to 16 GB or 90 days.

On-device Calibration
On-site device calibration capability using devices' built-in calibration software.

Identity And Configuration
Geo-tagging enables users to determine the exact location of their device, consisting of latitude and longitude coordinates.

Tamper Proof
Comes with a secure system to avoid tampering /malfunction/sabotage.

Over-The-Air Update
Automatically upgradeable from a central server without any on-site visit.

Network Agnostic
Supports a wide range of connectivity options like GSM / GPRS / WiFi / LoRa / NBIoT / Ethernet / Modbus / Satellite.

Real-Time Data
Continuous monitoring and real-time data transfer at configurable intervals.

Weather Resistant (IP 66)
IP66 Grade (certified) enclosure for endurance against harsh weather conditions.

Fully Solar Powered
The system works 100% on solar power, making it ideal for off-grid locations.

Key Benefits

Detect Pinpoints
Help industries track pollution levels and the sources of toxic pollutant emissions.

Monitor Multi-parameter
Compatible with a wide range of parameters including PM, Gases and Meteorological parameters

Seamless Connectivity
A wide range of options for wired and wireless connectivity.

Secure Cloud Platform
Secure platform for visualising and analysing data, with easy API integration for immediate action.

Accurate Data
Gives accurate readings in real-time to detect concentrations in ambient air.

Easy to Install
Effortless installation with versatile mounting arrangements.

Polludrone® Usecases

Industrial Fenceline
Pollution monitoring at the industry fenceline helps to monitor air pollution levels and ensures that industries comply with policies and safety regulations.

Smart City and Campuses
Pollution monitoring at strategic locations in smart cities and campuses empowers authorities to obtain actionable insights for pollution control and citizen welfare.

Roads, Highways and Tunnels
Pollution monitoring at roads and tunnels can help create pollution mitigation action plans to control vehicular emissions.

Airports
Pollution and noise monitoring at taxiways and hangars facilitate analysing the impacts on travellers and surrounding neighbourhoods.

Polludrone® Variants

Variants	Applications	Parameters
Polludrone® Lite	General Purpose, Smart campus	PM_1, $PM_{2.5}$, PM_{10}, PM_{100}, CO_2, CO, Noise, Light, UV-Radiation, Temperature, Humidity, Pressure
Polludrone® Smart	Extensive, Smart cities	PM_1, $PM_{2.5}$, PM_{10}, PM_{100}, CO_2, CO, SO_2, NO, NO_2, O_3, Noise, Light, UV - Radiation Temperature, Humidity, Pressure
Polludrone® Pro	Critical, Industrial fenceline	PM_1, $PM_{2.5}$, PM_{10}, PM_{100} (TSP), CO_2, CO, SO_2, NO, NO_2, O_3, H_2S, Noise, Light, UV-Radiation, Temperature, Humidity, Pressure
Polludrone Custom	As per request	Choose up to 9 Gases, Particulate Matter, THP and Noise with Optional External Modules

Parameters

Sensors		ID	Range	Resolution	Min. Detection	Drift	Working Principle	Expected Sensor Life
Suspended Particulate Matters with size less than 2.5µ ($PM_{2.5}$)		OZPM_1*	Upto 5000 µg/m^3	0.1 µg/m^3	1 µg/m^3	N.A.	Laser Scattering	18 Months
Suspended Particulate Matters with size less than 10µ (PM_{10})								
Ultra Fine Particulate Matters with size less than 1µ (PM_1)								
Total Suspended Particulates (TSP) (PM_{100})			Upto 30 mg/m^3					
Carbon Monoxide (CO)		OZCO_1*	0-5 ppm	0.01 ppm	0.01 ppm	< 1ppm / year	Electrochemical	2 years
		OZCO_4	0-50 ppm	0.05 ppm	0.05 ppm	< 2% / Month		
		OZCO_2	0-100 ppm	0.1 ppm	0.1 ppm	< 2% / Month		
		OZCO_3	0-1000 ppm	0.75 ppm	0.75 ppm	< 2% / Month		
Carbon Dioxide (CO_2)		OZCO2_2*	0-5000 ppm	1 ppm	400 ppm	±5 ppm / Year	Non Dispersive Infrared	
Nitric Oxide (NO)		OZNO_1*	0-5 ppm	0.001 ppm	0.01 ppm	±50 ppb / Year	Electrochemical	
		OZNO_2	0-100 ppm	0.5 ppm	0.5 ppm	< 2% / Month		
Nitrogen Dioxide (NO_2)		OZNO2_1*	0-10 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year		
		OZNO2_2	0-100 ppm	0.2 ppm	0.2 ppm	< 2% / Month		
		OZNO2_3	0-500 ppm	0.5 ppm	0.5 ppm	< 2% / Month		
Ozone (O_3)		OZO3_1*	0-10 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year		
Oxygen (O_2)		OZO2_1	(0-25) %VOL	0.1 %VOL	0.1 %VOL	< 2% / Month		
Hydrogen Sulfide (H_2S)		OZH2S_1*	0-1.5 ppm	0.001 ppm	0.01 ppm	±100 ppb / Year		
		OZH2S_2	0-50 ppm	0.05 ppm	0.05 ppm	< 2% / Month		
		OZH2S_3	0-200 ppm	0.2 ppm	0.2 ppm	< 2% / Month		
		OZH2S_4	0-2000 ppm	2 ppm	2 ppm	< 2% / Month		
Sulfur Dioxide (SO_2)		OZSO2_1*	0-10 ppm	0.001 ppm	0.01 ppm	±20 ppb / Year		
		OZSO2_2	0-100 ppm	0.2 ppm	0.2 ppm	< 2% / Month		
		OZSO2_3	0-2000 ppm	5 ppm	5 ppm	< 2% / Month		
Ambient Noise		OZN_2*	Upto 140 dB	1 dB	0.5 dB	N.A.	Capacitive	
Temperature		OZTEMP_1*	-40 to 125°C	0.01°C	-40 °C	N.A.	Resistive / Photoacoustic	
Humidity		OZHUM_1*	100% Rh	0.10%	0.10%	N.A.		
Barometric Pressure		OZPRES_1*	300-1100 hPa	0.18 Pa	300 hPa	N.A.		
Pyranometer Solar Radiation 300 - 1100 nm	Light Intensity	OZUV_1	Up to 1,00,000 Lux	1 Lux	1 Lux	N.A.	Photoconductivity	2 Years
	Visible Light		Upto 5000 Lux	0.1 Lux	0.1 Lux	N.A.		
	UV Radiation		0.1-100,000 uW/cm²	0.1 uW/cm²	0.1 uW/cm²	N.A.		
	UV Index		0-12 Index	-	-	-		

Note: Expected Sensor Life can vary, subject to actual concentration on-site. In the interest of continued product improvement, we reserve the right to change design features and specifications without prior notification.The data contained in this document is for guidance only, Oizom® accepts no liability for any consequential losses, injury or damage resulting from the use of this document or the information contained within.

External Modules

Anemometer
OZWSD_1*, OZWSD_2
Wind Speed: 0-40 m/s; 0-80 m/s
Wind Gust: 0-40 m/s
Wind Direction: 0-359°
Working Principle: Ultrasonic

Rain Gauge
OZRAIN_1, OZRAIN_2*
Resolution: 0.25 mm; 0.10 mm
Working Principle: Tipping Bucket

Vibration Sensors
PPV: +/- 2G
Range frequency: 0.5 - 250 Hz
Range velocity: ±50 mm/s (±2 in/s)
Working Principle: MEMS

** Indicates standard delivery timeline*

Specifications

Mechanical

Size	360mm (H) x 328mm (W) x 200mm (D)
Weight	8 Kg (instrument weight)
Material	Aluminum Magnesium Alloy, Mild-steel (With Powder Coating), FRP
Certifications	CE, FCC, NEMA 4X, IP66, RoHS, PTCRB

Electrical

Avg. Power Consumption	Up to 7 Watt (Actual consumption will vary upon the number of parameters)
Power Input Options	AC : External 110-240V AC, 50-60Hz DC : Uninterrupted 24V DC, 2 Ampere 100 Watt 24V Solar Panel
SMPS Specs	24V, 2Amps output UL-62368 & CAN/CSA C22.2 Certified
Battery Backup Time	Up to 24 Hours
Battery Specs	Lithium iron phosphate (LiFePO4) battery with rated voltage 12.8V Capacity

Technical

Processor	Quad Core ARM Cortex
Memory	2GB RAM / 16 GB eMMC ROM
Device Interface	On-device Software / API / Cloud Platform
Internal Data Storage	Upto 16 GB or 90 days

Environmental

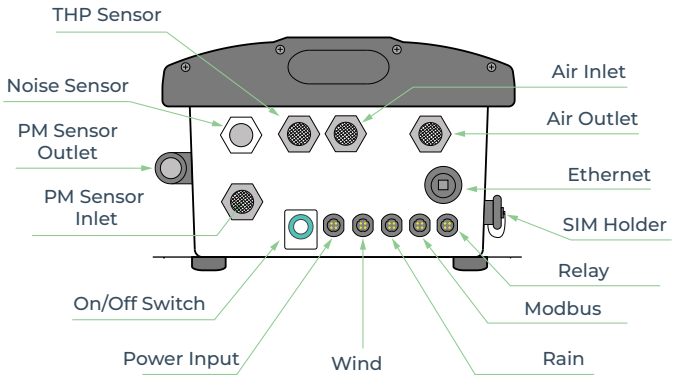
Operating Temperature	-20 °C to 60 °C
Operating Humidity	0-93% RH
Recommended Temperature	-20 °C to 45 °C
Recommended Humidity	20-90% RH
Storage Conditions	10 - 40°C

Sensing

Gas Measurement Principle	Active Sampling with sampling rate of 325 mL/Sample
Dust Measurement Principle	Active Sampling with sampling rate of 1 L / min
Warm up time	< 48 hours for data stabilisation

Communication

Data Interval	5-30 minutes (configurable)
Data-push Protocol	HTTPS post request to host server
Data-pull	HTTPS request on device IP
Firmware Updates	Over-The-Air Firmware Update
Standby Connectivity	GSM (2G/3G/4G) for remote diagnosis, FOTA updates, and cloud calibration

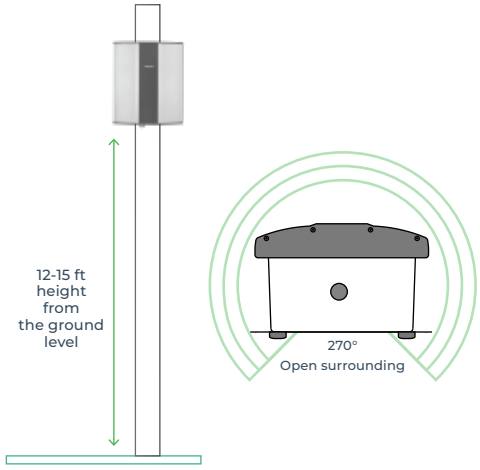


	Connectivity Options	Specification
Wireless	GSM	Global 2G / 3G / 4G
	LoRa	868 MHz / 915 MHz
	LTE	CAT-M1
	NB-IoT	CAT-NB1
	sigfox	868 to 869 MHz, 902 to 928 MHz
	Wi Fi	AP Mode and Station Mode
		Satellite
Wired	ETHERNET	Static / DHCP Configuration
	Modbus	RS485 RTU / TCP
	RELAY	2 Channel Relay Output

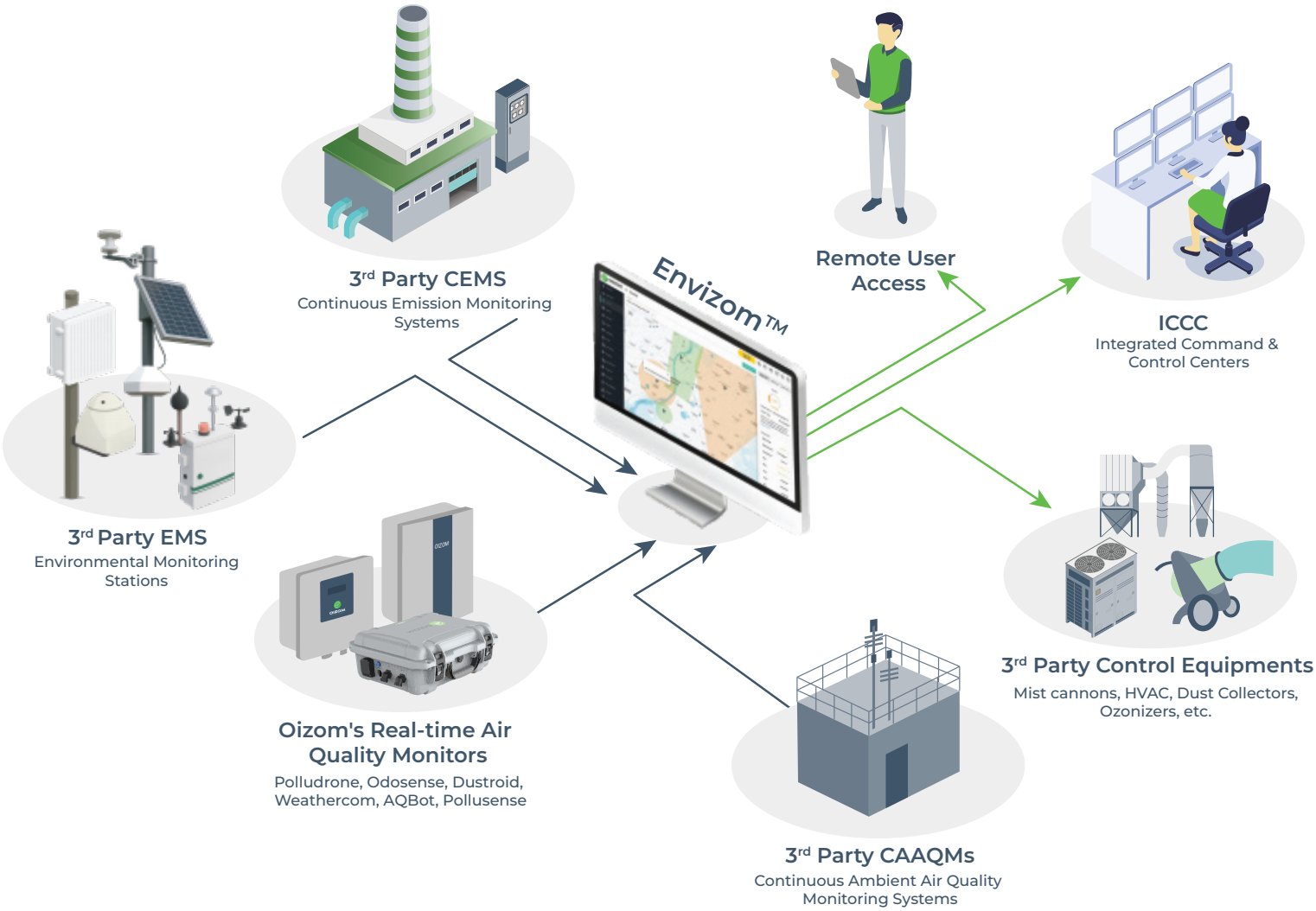
Functional Specifications

Selecting the proper installation location is crucial for accurate and optimized data collection. It should align with the project's specific objectives. According to the U.S. EPA QA handbook (Vol II, Section 6.0 Rev.1), the selection of locations should be based on monitoring purposes.

Preferred Mounting	Pole / Wall (preferably 270° open surrounding)
Installation Height	12-15 feet (4-5 meters)
Direction	As per maximum direct sunlight exposure
Power Availability	Constant AC / DC supply within a 2-meter range from the unit or solar panel
Network Availability	Uninterrupted network connection

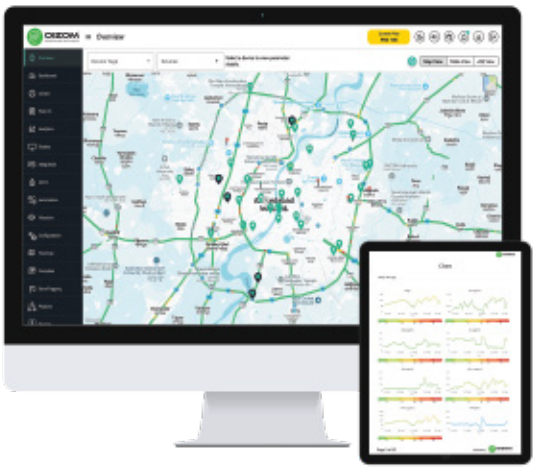


Solution Architecture



Envizom™

Data Visualisation and Analytics Platform



Envizom™ is Oizom's Environmental visualisation & analytics platform, built to turn complex air quality data into actionable insights. Providing remote visibility & control, it consolidates data from multiple sites, parameters, & devices into a single, intuitive dashboard. Our Environmental Data Interpretation Engine, powered by Artificial Intelligence & Machine Learning algorithms, provides accurate, real-time data, helps identify pollution sources, & understands directional trends. From city-wide comparisons to site-specific trends, smart multi-dimensional analytics enable comparisons across locations, parameters, & time spans. Envizom™ uses secure servers for data storage and on-premise storage is also supported.

With the Report module, users can receive immediate and automated daily/weekly/ monthly reports via SMS and Email. The Analytics module provides comparative and detailed data on changes in air quality over time. Together, they help users understand what drives pollution and make more informed decisions.

Envizom™ Capabilities

- Historical Data & Trend Analysis
- Process Automation
- Smart Alerts
- AI-Based Forecasting
- Pollution Heatmaps
- Automated Reports

Privacy First Platform

Data Privacy

The data shared with the client uses an encryption server through Secure Socket layers. Envizom™ also uses AES encryption for connection that adds to data safety.

Data Ownership

Envizom™ creates a secure and encrypted password combination for the user login. Oizom® ensures 100% privacy of the data and doesn't share without relevant permissions.

Data Transparency

Data collected from Oizom® equipment runs through the Environment Data Interpretation Engine. It processes various algorithms and eliminates environmental impact interferences on the sensors.

SANS | OWASP | IEC IEC 62443-4-1 | Security Tested | 100w Cybersecurity Practices | TCM SECURITY

Case Studies

Smart City Air Quality Monitoring in Agra, India

Air pollution in Agra is impacting historic landmarks, including the Taj Mahal. To support better environmental management, Oizom® deployed Polludrone® systems across the city, providing actionable air quality data to local authorities.

India | Polludrone Custom | Smart City

Nanova Co. Ltd. Improving Air Quality in Myanmar with Oizom

To address industrial emissions in Myanmar's coastal Tanintharyi region, Oizom® installed Polludrone® devices near seafood processing zones. This initiative supports cleaner air and informed environmental decisions.

Myanmar | Polludrone Custom | Smart city

Ensuring Safety During Skanska's Tunnel Construction in Norway

Skanska installed Oizom's Polludrone® to closely monitor air quality during tunnel construction. This helped improve safety, optimize explosive usage, and set higher standards for construction air monitoring.

Norway | Polludrone Pro | Construction

Case Studies

A City in Texas Monitoring The Air Quality with Oizom to Ensure Citizens' Safety

The city of Galena Park adopted Oizom's Polludrone® to monitor and manage air quality affected by nearby oil refineries. This step helped improve public safety and regulatory compliance.

Texas | Polludrone Pro | Smart City

Almabani Chose Polludrone to Monitor Air Quality for Smarter Urban Planning

At The Sports Boulevard Project in Riyadh, Almabani deployed Oizom's Polludrone® for real-time air quality tracking. This supports sustainable development and improved urban living.

Saudi Arabia | Polludrone Custom | Construction Monitoring

Oizom's Polludrone Improves Air Quality at Ahmedabad Railway Station

To enhance passenger safety and meet compliance goals, Ahmedabad Railway Station installed Polludrone® for continuous air monitoring. This contributes to a healthier, more sustainable travel environment.

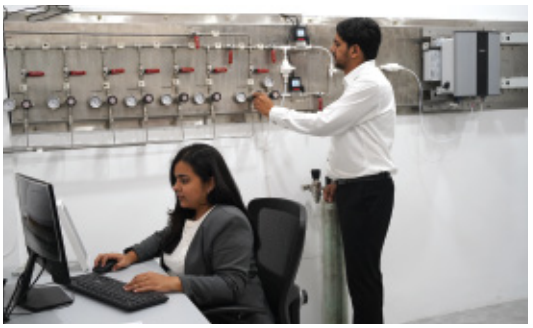
India | Polludrone Smart | Railway Station

Oizom® Gas Sensor

The Oizom® Gas Sensor (OGS) module is designed to accurately measure low concentrations of various gases at ppb, and ppm levels in the ambient air. The sensor is capable to monitor the point source gases on real-time basis. Each sensor is integrated into a metal casing along with the ultra-low-noise support electronics, which makes it compact and reliable. This allows accurate gas detection even at very low concentrations in the atmosphere.

1. Proprietary gas sensing technology
2. Independent calibration of each sensor
3. Low-noise electronic design

Data and Calibration



1 Laboratory Calibration

All air quality monitoring systems are calibrated at the ISO/IEC 17025:2017 certified calibration laboratory using standard NIST traceable calibration gas standards as per the international guidelines by U.S. EPA. (Vol II, Section 6.0 Rev.1)

2 Collocation Calibration

Post lab calibration, the monitors are operated adjacent to a custom-built reference station housing U.S. EPA-designated Federal Equivalent Method (FEM)/Federal Reference Method (FRM) for collocation calibration to ensure optimum data quality.

3 On-site Calibration

On-site calibration of Oizom® devices can be performed using standard calibration gas cylinders of known concentration or by co-locating with a reference standard.

About Oizom®

Leader in sensor based air quality monitoring

Monitors designed for easy and quick setup

Low powered solutions for multiple applications

Oizom® is an environmental company that offers accurate air quality monitoring solutions designed to deliver air quality insights for better decision-making. Using our patented e-breathing technology, we measure key environmental parameters including air quality, noise, odour, weather, radiation, etc. Our AI-enabled data analytics platform can derive various actionable insights and predict data for authorities, communities, and industries.

With a strong focus on data accuracy and reliability, our devices are powered by advanced technology and smart algorithms. From fixed installations to portable monitors, Oizom® offers scalable solutions that fit a wide range of applications, including construction, mining, industrial safety, smart infrastructure, and environmental compliance. Over the past decade, Oizom® has deployed over 3,500 environmental monitoring devices across 90+ major cities, helping track the environmental health of over 250 million people through a strong partner network in 80+ countries.

Other Oizom® Products

Dustroid®
Real-time Dust Monitor

Dustroid® is an online particulate monitoring system to measure various particulate matter sizes.

AQBot™
Single Parameter Air Quality Monitor

AQBot™ is an industrial-grade single-parameter air quality monitor with automation capabilities.

Weathercom®
Automatic Weather Station

Weathercom® is an automatic weather station designed to measure various meteorological parameters.

Odosense®
Odour Monitoring System

Odosense® monitors various odourful and toxic gases and provides insight into odour dispersion.

Pollusense™
Portable Air Quality Monitor

Pollusense™ is a portable air quality monitor that measures multiple toxic gases and particulates.

OIZOM®
REDEFINING RESOURCES

Trusted by
80+ Countries

Solutions Installed in
90+ Cities

Total Devices Installed
3500+

Total Population Covered
250 million+

Oizom Customers

ANGLO AMERICAN · TEMBO NICKEL · BARRICK · مطار الملك خالد الدولي king khalid int'l airport · adani Power · adani Realty · Reliance Industries Limited · GFL · TORONTO · Hewlett Packard Enterprise · nepa · RĪGAS DOME · GLENCORE · CISCO · ARSC · ARISTOTLE UNIVERSITY OF THESSALONIKI · UNIVERSITÉ DE MONTPELLIER · NMDC · HITACHI · GODREJ & BOYCE · BARC · HIRA · BRIGADE GROUP · emami · medanta

Changing the way Industries monitor air quality

Get in touch

OIZOM REDEFINING RESOURCES

House No.2, Garden View Corporate House,
Opp. Bodakdev Auda Garden, Ahmedabad, India
contact@oizom.com / connect@oizom.com
+91 88666 60025 / 39

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