OIZOM®
REDEFINING RESOURCES

Polludrone®

Ambient Air Quality Monitoring System

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About Polludrone®

Polludrone® is a Continuous Ambient Air Quality Monitoring System (CAAQMS). It is capable of monitoring various environmental parameters related to Air Quality, Noise, Odour, Meteorology, and Radiation. Polludrone® measures the particulate matter and gaseous concentrations in the ambient air in real-time.Using external probes, it can also monitor other auxiliary parameters like traffic, disaster, and weather.

Polludrone® is an ideal choice for real-time monitoring applications such as Industries, Smart Cities, Airports, Construction, Seaports, Campuses, Schools, Highways, Tunnels, and Roadside monitoring. It is the perfect ambient air quality monitoring system to understand a premise's environmental health.

Product Features

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

Retrofit Design
Plug and play design for ease of implementation.

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

Internal Storage
Internal data storage capacity of upto 8 GB or 90 days.

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

Identity And Configuration
Geo-tagging allows you to get the exact location of the device, consisting of latitude and longitude coordinates.

Tamper Proof
IP 66 Grade certified secure system to avoid tampering / malfunction / sabotage.

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

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

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

Weather Resistant (IP 66)
Durable enclosure designed to withstand extreme weather conditions.

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

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Key Benefits

Robust And Rugged
Durable enclosure to sustain extreme climatic conditions.

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.

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Polludrone® Variants

Variants	Applications	Parameters
Polludrone® Lite	General Purpose, Smart campus	$PM_{2.5}$, PM_{10}, CO_2, CO, Noise, Light, UV-Radiation, Temperature, Humidity, Pressure
Polludrone® Smart	Extensive, Smart cities	$PM_{2.5}$, PM_{10}, 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, and Noise with Optional External Modules

Parameters

Sensor	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.	Optical Particle Counter	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_1*	0-5000 ppm	1 ppm	400 ppm	±5 ppm / Year	Non Despersive Infrared	
Nitric Oxide (NO)	OZNO_1*	0-5 ppm	0.001 ppm	0.01 ppm	< 2% / Month	Electrochemical	
	OZNO_2	0-100 ppm	0.5 ppm	0.5 ppm	±50 ppb / Year		
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_1*	Upto 140 dB	1 dB	0.5 dB	N.A.	Capacitive	
Temperature	OZTEMP_1*	-40 to 125°C	0.01°C ppm	-40 °C	N.A.	Solid State Semiconductor Sensing	
Humidity	OZHUM_1*	100% Rh	0.10% ppm	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	3 Years
Visible Light		Upto 5000 Lux	0.1 Lux	0.1 Lux	N.A.		
UV Radiation		0.1-100,000 uW/cm^2	0.1 uW/cm^2	0.1 uW/cm^2	N.A.		
UV Index		0-12	-	-	N.A.		

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*
Wind Speed: 0-40 m/s
Wind Direction: 0-359°

Rain Gauge
OZRAIN_1*
Resolution: 0.25 mm
Working Principle: Tipping Bucket

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

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Specifications

Mechanical

Size	360mm (H) x 328mm (W) x 200mm (D)
Weight	7.2 Kg (instrument weight)
Material	Aluminum Magnesium Alloy, Mild-steel (With Powder Coating), FRP
Certifications	CE, FCC, NEMA 4X, IP66, RoHS

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 60 Watt 24V Solar Panel
SMPS Specs	24V, 2Amps output UL-62368 & CAN/CSA C22.2 Certified
Battery Backup Time	Up to 12 Hours
Battery Specs	Lithium iron phosphate (LiFePO4) battery cell with rated voltage 12.8V Capacity 6Ah

Technical

Processor	Quad Core ARM Cortex
Memory	2GB RAM / 8GB eMMC ROM
Device Interface	On-device Software / API / Cloud Platform
Internal Data Storage	Upto 8 GB or 90 days

Environmental

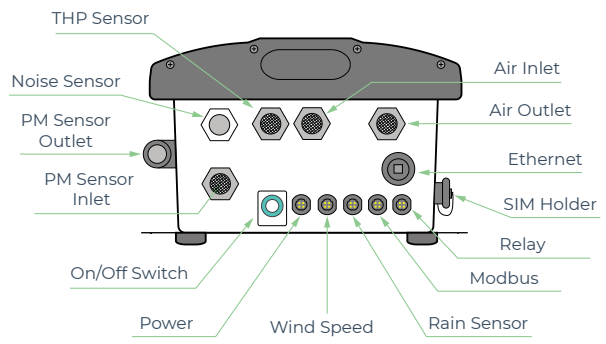
Operating Temperature	-20 °C to 60 °C
Operating Humidity	0-93% RH
Recommended Humidity	15-90% RH
Storage Conditions	10 - 40°C

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	HTTP post request to host server
Data-pull	HTTP 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
Certification	PTCRB, CE, FCC, RoHS, ICASA



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

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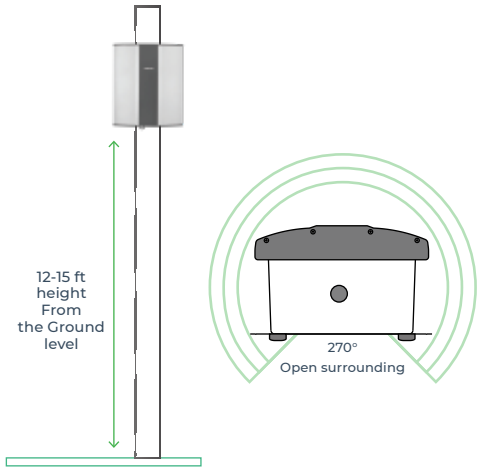
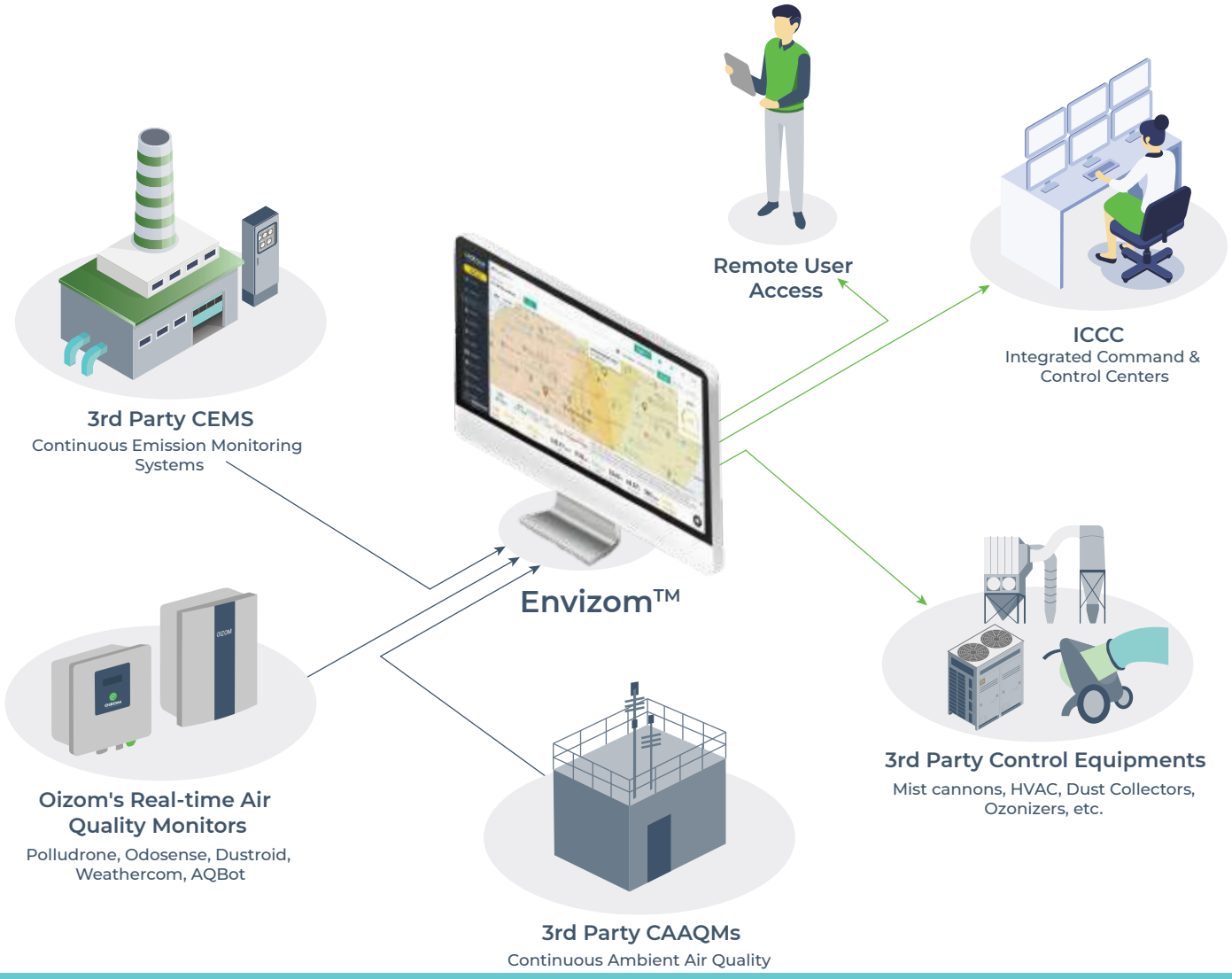
Functional Specifications

Proper location selection is critical for optimised data collection. It varies as per the purpose of the project. According to 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



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Envizom™

Data Visualisation and Analytics Platform

Envizom™ is an Environmental visualisation and analytics platform for real-time air quality data acquisition. Our Environmental Data Interpretation Engine, powered by Artificial Intelligence & Machine Learning algorithms, provides highly accurate data and actionable insights, empowering users to make well-informed decisions. Envizom™ uses secured HTTPS servers for data storage. Alternatively, this data can also be stored on-premise local servers.

With the Report module, users can get immediate and automated daily / weekly / monthly reports through SMS and Email to gain comprehensive insights into the air quality of their areas or industrial zones. The Analytics module provides comparative detailed data on changes in air quality data over time, enabling a clear understanding of the factors contributing to pollution.

Envizom™ Capabilities

- Real-time Data
- Easy to Integrate API
- Smart alerts
- Advanced Analytics
- Pollution Rose Charts
- Automated Reports

Privacy First Platform

Data Privacy

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

Data Ownership

Envizom™ creates a secured 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 | API Security Tested | 100w Cybersecurity Practices | TCM SECURITY

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Case Studies

Smart city air quality monitoring in Agra, India

The pollution in Agra is affecting historic sites, including the Taj Mahal. To assist authorities in gaining insights into the city's atmosphere with air quality, Oizom deployed Polludrone® systems throughout the city.

India | Polludrone Custom | Smart City

Ensuring environmental safety and reassuring communities at Dangote Cement Plant

Oizom's Polludrone® systems are monitoring pollution and dust levels at the Dangote Cement Plant, addressing the environmental safety and air quality concerns raised by neighboring communities that confirm the air quality at sites is safe for all.

Ethiopia | Polludrone Smart | Fenceline Monitoring

Ensuring safety during Skanska's Tunnel Construction in Norway

Skanska improved safety and efficiency using the Oizom® instrument to monitor the air quality minutely, enabling better explosive use decisions and new industry standards.

Norway | Polludrone Pro | Construction

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Case Studies

Riyadh Airport authorities analyse the pollution trend in the airport region with Polludrone®

At Riyadh Airport, Oizom's Polludrone® is monitoring the pollution due to frequent dust storms to ensure the safety of flights while taking off and landing.

Saudi Arabia | Polludrone Custom | Airport

Air Quality monitoring in smart cities for Arunachal Pradesh Pollution Control Board

APSPCB monitors the various parameter levels of air pollution in Namsai and Kharsang of Arunachal Pradesh in real-time with Polludrone®. Air quality data is displayed on an LED screen to assure citizens' safety.

India | Polludrone Smart | Smart City

A City in Texas monitoring the air quality with Oizom to ensure citizens' safety

Galena Park deployed Oizom's Polludrone® to improve its city's air quality management methods by monitoring the impact of oil refinery emissions.

Texas | Polludrone Pro | Smart city

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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) 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.

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About Oizom®

Leaders in sensor based air quality monitoring

Plug and play monitors for hassle free setup

Low powered solutions for multiple applications

Oizom® is an environmental monitoring company that offers accurate air quality monitoring solutions for better decision-making. Using our patented monitoring technology, Oizom's system monitors various environmental parameters related to Air Quality, Noise, Odour, Weather, Radiation, etc. Our data analytics platform derives various actionable insights for authorities, communities, and industries. With smart environmental solutions, Oizom® aims to empower future cities with reliable and accurate environmental monitoring.

Over the past decade, Oizom® has focused on environmental monitoring technology and solutions, and till now, we've deployed 3000+ devices. We are monitoring the environmental health of more than 200 million people worldwide. The solutions we provide are in 65+ major cities worldwide. With a network of partners, Oizom® has expanded its reach and made a strong presence in over 70 countries worldwide.

Other Oizom® Products

Odosense®

Odour Monitoring System

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

Dustroid®

Real-time Dust Monitor

Dustroid® is an online particulate monitoring system to measure a wide spectrum of particulate matter sizes.

Weathercom®

Automatic Weather Station

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

AQBot™

Single Parameter Air Quality Monitor

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

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Trusted by
70+ Countries

Solutions Installed in
65+ Cities

Total Devices Installed
3000+

Total Population Covered
200 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 · CITY OF GALENA PARK · nepa · RĪGAS DOME · GLENCORE · CISCO · ARSC · GENOVA · ARISTOTLE UNIVERSITY OF THESSALONIKI · UNIVERSITÉ DE MONTPELLIER · एन एम डी सी NMDC · HITACHI · Godrej | GODREJ & BOYCE · भा प अ के BARC · HIRA · BRIGADE GROUP · emami · medanta · INDIAN RAILWAYS

///CERTS · NABCB · TÜV INDIA · ISO 9001:2015 · ISO 14001 · MAKE IN INDIA

Changing the way Industries monitor air quality

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