

Enhancing Air Quality at Ahmedabad Railway Station with Oizom's Polludrone Smart



INTRODUCTION: Ensuring Compliance And Passenger Safety At Railway Stations

At Ahmedabad Junction, one of Gujarat's busiest railway stations—millions of passengers pass through every day, making it essential to provide them with a safe and healthy environment. Understanding the impact of fluctuating pollution levels, the Western Railway Ahmedabad Division took a proactive step by deploying a real-time Air Quality Monitoring System (AQMS) to ensure cleaner air for everyone at the station.

As a critical transportation hub connecting major cities and industrial zones, Ahmedabad Junction experiences high passenger movement and vehicular emissions, contributing to air pollution. With future plans for construction and renovation to enhance the station's infrastructure, the authority of Ahmedabad railway station was committed to creating a cleaner, healthier space for commuters, employees, and the surrounding community. By integrating advanced environmental monitoring and LED Display for real-time data, it reaffirms its commitment to passenger safety, sustainability, and a better travel experience for all.

THE CHALLENGE: Rising Pollution and Health Concerns

Ahmedabad Junction, a major railway station under Western Railway, experiences high emissions from multiple sources, including:

- 1. High Emissions from Trains:** Braking friction in trains releases fine metallic particulates (PM10 & PM2.5), while electric rail systems contribute to secondary pollution through power generation emissions.
- 2. Vehicular & Traffic-Related Pollution:** Carbon monoxide (CO) and NO₂ from auto-rickshaws, taxis, and buses further degrade air quality.
- 3. Dust Resuspension & Maintenance Activities:** Passenger movement, construction, and cleaning led to airborne particulate matter, worsening air quality.
- 4. Health Hazards for Passengers & Employees:** Continuous exposure to fine particulate matter and toxic gases posed serious risks, including respiratory illnesses and cardiovascular problems.
- 5. Future Renovation:** Anticipating future construction and renovation work at Ahmedabad Junction to enhance the station's infrastructure can increase dust and emissions, impacting air quality for passengers, employees, and the surrounding community.
- 6. Lack of Public Awareness:** Without real-time data, passengers and railway staff could not know when pollution levels were high, limiting their ability to take necessary precautions.

To mitigate these risks and manage the air quality around and inside the railway station, an accurate, real-time air quality monitoring solution was required to track pollution sources and implement effective mitigation measures at Ahmedabad Railway Station.

THE SOLUTION: Oizom's Polludrone Smart, an Advanced AQMS

To tackle these challenges, AB Enterprise deployed Oizom's Polludrone Smart, an advanced, sensor-based Ambient Air Quality Monitoring System (AQMS) at Ahmedabad Railway Station that provides real-time data on key air pollutants. The solution included:

- 1. Advanced Air Quality Monitoring:** The AQMS tracks key pollutants like PM1, PM2.5, PM10, PM100, and toxic gases like SO₂, NO, NO₂, O₃, CO, CO₂, along with meteorological parameters Noise, Light, Temperature, and Humidity in real-time, ensuring precise and continuous monitoring.
- 2. LED Display for Public Awareness:** A real-time LED display on the platform informs passengers and staff about live air quality updates, ensuring transparency and promoting a healthier environment.
- 3. Data-Driven Decision-Making:** The collected air quality data enables railway authorities to analyze trends, optimize ventilation, and implement dust suppression measures.



INSTALLATION DETAILS

**1 UNIT of
POLLUDRONE
SMART**

- 4. Seamless Integration:** Oizom's Envizom platform provides automated data reporting and supports Indian Railways' vision for sustainable and green stations.
- 5. Ensuring a safe construction:** The system provides real-time air quality data, helping the authorities maintain a clean environment at Ahmedabad Junction during construction and renovation activities at the station.
- 6. Sustainability & Green Railways:** The deployment aligned with Indian Railways' efforts towards electrification, green stations, and emission reduction.

By integrating real-time monitoring, public awareness, and regulatory compliance, Oizom's solution empowered Western Railway Ahmedabad Division with actionable insights to create a cleaner railway environment.

THE TRANSFORMATION: Enhancing station environments with data-driven actions

Since the installation of Oizom's Polludrone Smart AQMS at Ahmedabad Junction, the Western Railway Ahmedabad Division has observed significant improvements in air quality management:

- 1. Accurate Air Quality Insights:** Oizom's Polludrone AQMS provides real-time data, helping railway authorities identify pollution sources. These include emissions from diesel locomotives, traffic, passenger movement, and maintenance activities.
- 2. Targeted Mitigation Strategies:** The railway division uses the data to reduce pollution exposure. They adjust train schedules, optimize ventilation, and improve cleaning to minimize dust resuspension.
- 3. Enhanced Safety for Passengers & Workers:** A real-time LED display provides live air quality updates, helping passengers and staff stay informed and take necessary precautions, such as wearing masks or avoiding high-pollution areas.
- 4. Safer Work Environment:** Employees benefited from better air quality. Real-time data help schedule maintenance and cleaning, reducing exposure to harmful pollutants. These steps improve health and safety while promoting environmental awareness.
- 5. Safer Construction:** The AQMS helps maintain safe air quality around the station as Indian Railways plans future construction. It also supports cleaner, sustainable initiatives like the National Clean Air Programme (NCAP).

Installing Polludrone Smart at Ahmedabad Railway Station improved air quality management, increased safety, supported sustainability, and upheld the right to information by keeping the public aware of the air they are breathing. By integrating real-time monitoring, data-driven decision-making, and public awareness tools, the initiative successfully addressed pollution concerns and is continuously enhancing the overall passenger experience.

BROADER IMPACT: A Step Toward Smarter & Greener Railways

By continuously tracking pollution levels, the Ahmedabad railway station could manage air quality effectively and display its air quality data transparently to the passengers, reinforcing Indian Railways' commitment to sustainability. The insights gained from the AQMS helped drive long-term sustainability initiatives, such as encouraging the electrification of railway operations to reduce the pollution level during construction work, focusing on air quality improvements, and supporting policy recommendations for better air quality management across Indian railway stations. Over time, these measures help stabilize pollution levels and improve the air quality at Ahmedabad Railway Station.

CONCLUSION: Paving The Way For Greener, Safer, And Smarter Travel

The installation of Oizom's Polludrone Smart at Ahmedabad Junction railway station marks a significant milestone in Indian Railways' journey towards sustainable, smart, and health-conscious railway infrastructure. By integrating technology-driven solutions like real-time air quality monitoring, Western Railway Ahmedabad Division has set a benchmark for environmental responsibility in India's railway sector. The improvements observed at Ahmedabad Railway Station serve as a blueprint for other major railway stations, showcasing how data-driven strategies can lead to cleaner, safer, and more sustainable transportation hubs.

Oizom is a company specializing in environmental monitoring solutions. They offer products to monitor air quality, weather conditions, and other environmental factors. Utilizing advanced sensor technology and data analytics, Oizom aims to provide actionable insights for construction, industrial compliance, and community awareness. Their solutions can be applied in various sectors including government, industries, and community initiatives.