

L&T PES Chose Polludrone to Track and Manage Emissions at Its Manufacturing Plant



INTRODUCTION: Smart Air Quality for L&T PES Visakhapatnam

L&T Precision Engineering & Systems (PES) is a key division of Larsen & Toubro focused on developing indigenous, high-performance platforms for land and sea applications. At their Visakhapatnam dockyard, a critical manufacturing hub, the team handles a wide range of precision processes, including full-metal finishing, custom fabrication, and system integration activities that inherently generate particulate emissions and are sensitive to local climate conditions.

Being located in a coastal zone, the facility faces constantly high humidity, variable wind patterns, and intense industrial activity, all of which create a complex air quality environment. These factors can impact not just compliance with environmental regulations but also affect the quality and reliability of engineering processes. To address these challenges, L&T PES required a monitoring solution that provided accurate, real-time environmental data, seamless integration with their existing SCADA system, and the flexibility to automate responses, such as dust suppression.



THE CHALLENGE: Tackling Coastal Conditions and Process Complexity

As a precision engineering hub for systems used across land and sea, L&T PES operates under strict process requirements. The dynamic nature of dockyard activities brought forward several environment-linked challenges:

- 1. High Humidity and Coastal Conditions:** The dockyard's proximity to the sea means consistently high humidity, which was affecting process efficiency and material integrity.
- 2. Need for Real-Time Emission Tracking:** Pinpointing specific sources of pollutants like PM_{2.5}, PM₁₀, CO, CO₂, SO₂, NO₂, NH₃, and O₃ along with temperature and humidity, was difficult without continuous, localized data..
- 3. Emission Source Identification:** With various operations happening simultaneously, pinpointing exact emission contributors became difficult without real-time data.
- 4. Integration Needs with SCADA Systems:** L&T PES needed a solution that could be directly integrated into their in-house SCADA system via Ethernet for seamless control and monitoring.
- 5. Manual Triggering of Dust Suppression:** Their dust suppression relied on periodic checks and manual activation, which was inefficient and resource-intensive.

These challenges required a smart, rugged, and integration-ready monitoring solution that could deliver actionable data in real-time.

THE SOLUTION: Polludrone with Smart Integration and Automation

L&T PES chose Oizom's Polludrone, a compact, industrial-grade ambient air quality monitor, installed on 20th December 2024. The decision was influenced by several critical advantages:

- 1. Advanced E-breathing Technology:** Ensures consistent and accurate sampling even in fluctuating dockyard conditions.
- 2. Multi-Parameter Monitoring:** Polludrone tracks PM₁, PM_{2.5}, PM₁₀, CO, CO₂, SO₂, NO₂, NH₃, O₃, along with temperature and humidity, giving L&T a full view of environmental variables.
- 3. Direct SCADA Integration via Ethernet:** Polludrone's plug-and-play compatibility allowed seamless integration with L&T's existing SCADA infrastructure without external loggers.
- 4. Relay-Based Automation Capabilities:** The device's relay output was linked with dust suppression systems, automating activation based on real-time PM thresholds.
- 5. Envizom Software for Smart Monitoring:** With modules like Alerts, Automation, and Analytics, Envizom allows for threshold-based notifications, historical data analysis, and custom automation triggers.

This tailored deployment allowed L&T to monitor, automate, and optimize processes based on live air quality data.

THE TRANSFORMATION: Smarter Processes, Cleaner Outcomes

Post-installation, L&T PES saw immediate improvements in its operational efficiency and environmental control.

- 1. Pinpointing Emission Sources:** Real-time pollutant data helped the team identify and control emission hotspots across the dockyard.
- 2. Automated Dust Suppression:** Polludrone's integration with suppression systems eliminated manual oversight, ensuring proactive dust control.
- 3. Process Scheduling:** Insights from temperature and humidity data allowed L&T PES to optimize when and how specific processes were initiated.
- 4. Impact Assessment of Humidity:** Continuous monitoring helped the team study how high humidity levels affected certain operations, enabling them to introduce preventive measures.
- 5. Data-Driven Sustainability:** Access to continuous data and trend analysis supported better decision-making and demonstrated compliance with environmental norms.

L&T PES has successfully turned environmental monitoring into a strategic tool, using Oizom's system to drive both compliance and operational improvement.

BROADER IMPACT: Enabling Data-Led Environmental Strategy

The integration of Oizom's Polludrone at L&T Precision Engineering & Systems goes beyond operational improvement. It represents a shift towards long-term environmental accountability and smarter industrial practices.

- 1. Strengthening ESG Initiatives:** The availability of air quality insights supports L&T PES in aligning with Environmental, Social, and Governance (ESG) goals, which are increasingly valued by global stakeholders and clients.
- 2. Cross-Team Collaboration:** With the help of Envizom's centralized dashboard and modules, various departments can now collaborate better, using unified environmental data to inform decisions.
- 3. Support for Regulatory and Audit Readiness:** With continuous monitoring, automated reporting, and data backup, L&T PES is always ready for internal reviews, environmental audits, and compliance reporting.

INSTALLATION DETAILS

**1 UNIT
of
POLLUDRONE**

CONCLUSION: Precision Meets Sustainability

L&T Precision Engineering & Systems' collaboration with Oizom shows how industrial precision and environmental responsibility can go hand-in-hand. By choosing Polludrone, L&T PES has moved from manual, reactive processes to automated, data-driven operations that are safer, more efficient, and environmentally sound.

With real-time monitoring, smart automation, and SCADA integration, they've not only gained control over their dockyard emissions but have also taken a measurable step towards sustainable manufacturing. This partnership reflects the growing trend of industries using technology not just to comply, but to lead.

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.