

117 Restrooms at an Indian International Airport Go Smart

Real-time monitoring delivers data-driven restroom management for higher efficiency & passenger satisfaction.



Technology Partner
Tynatech

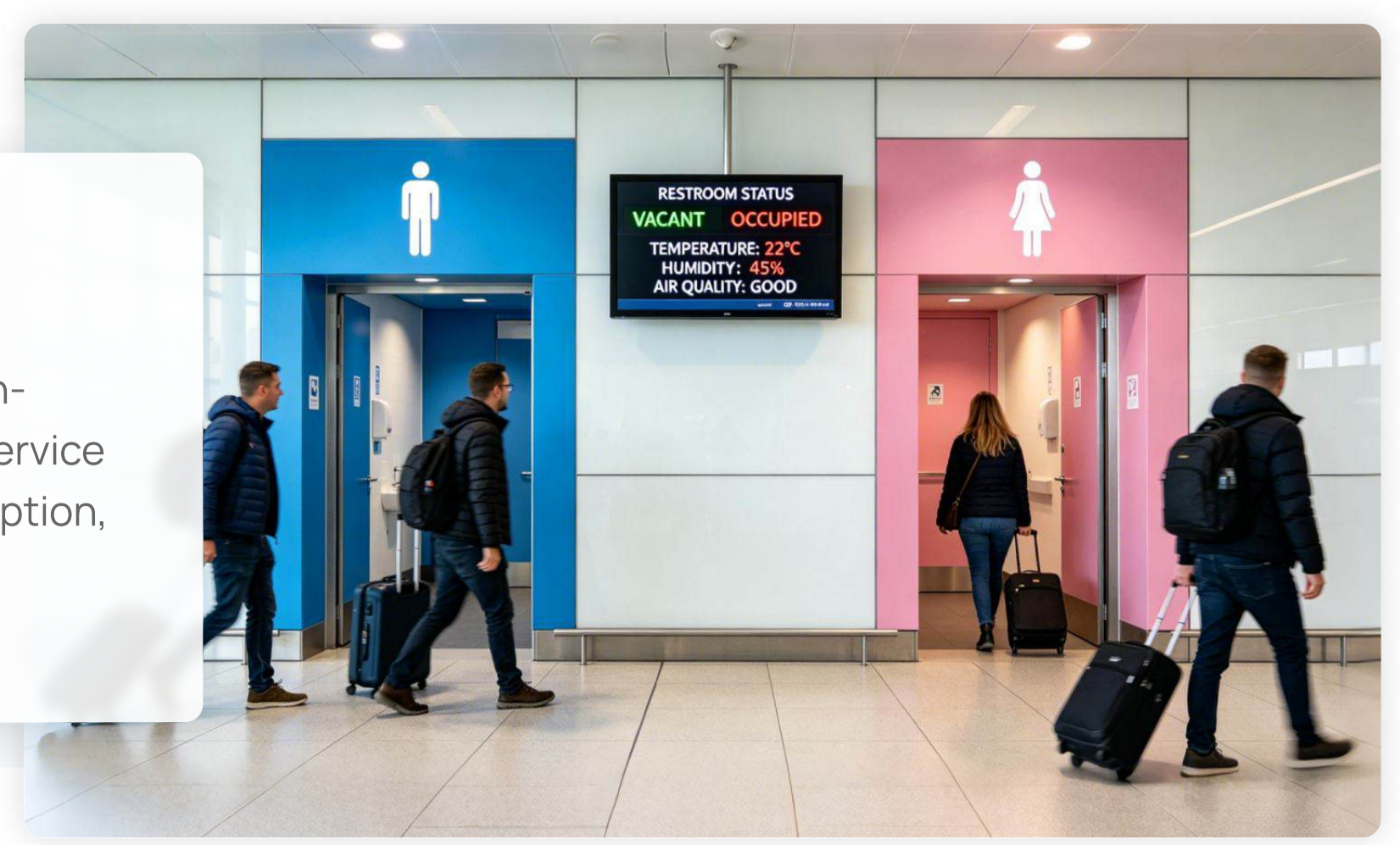
Location
India

Applications
People Counting/Occupancy/
Infrastructure Management

Related Product
WS201*1700, UC300*500, VS341*700,
UG65/67 *30, GS301*90, VS351*90

Background

In recent years, India airports have been implementing a comprehensive Smart Airport strategy, aiming to enhance passenger experience, optimize operational efficiency, and enable intelligent facility management. Among the high-traffic areas, restrooms are essential public facilities, with their management playing a key role in shaping overall service quality and passenger satisfaction. The level of hygiene and timely maintenance directly impacts passenger perception, making restroom management a critical focus in smart airport upgrades.



Challenges



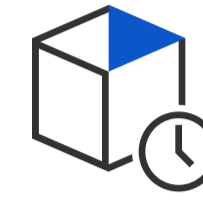
Manual Inspection Dependency

Traditional restroom management relies heavily on manual inspections, which leads to inefficiencies and delays, especially during high-traffic periods.



Severe Congestion During Peak Hours

During peak hours, airport restrooms face severe congestion, resulting in long waiting times and a poor passenger experience.



Delayed Consumables Replenishment

The replenishment of consumables such as toilet paper, soap, and hand sanitizers is often delayed, affecting the overall quality of service.



Lack of Data-Driven Cleaning Schedules

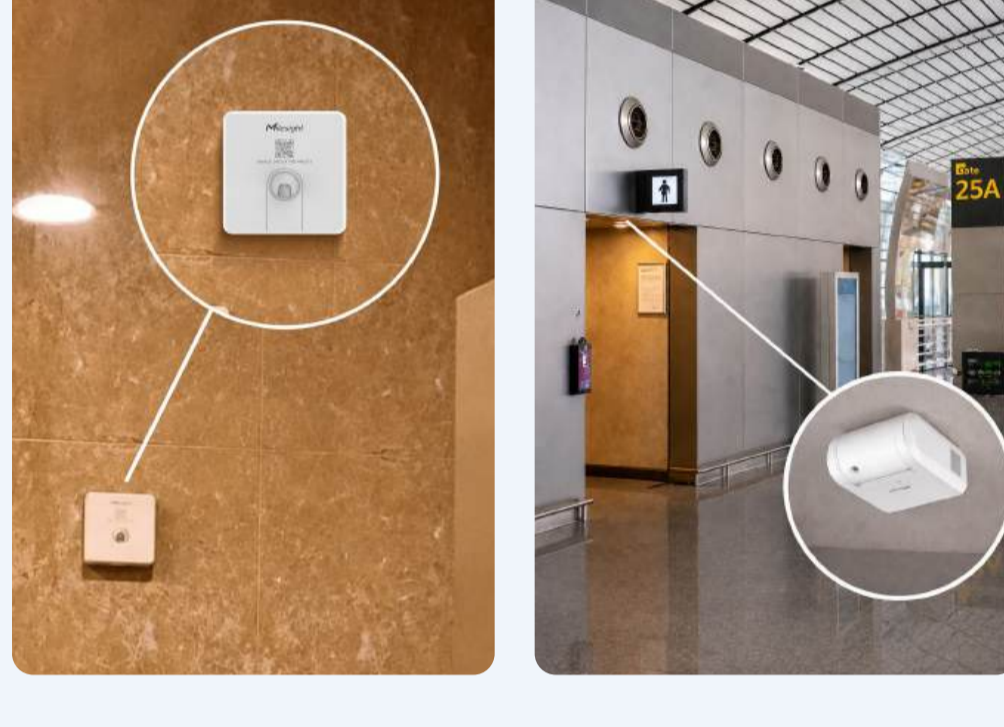
Traditional methods lack real-time data, making it difficult to optimize cleaning schedules, leading to either overstaffing or undercleaning.

Solution

To address the challenges of restroom management at one of India's busiest international airports, a comprehensive Smart Washroom Solution was deployed using Milesight devices and an advanced LoRaWAN®-based IoT system. This system integrates a variety of sensors and gateways to provide real-time monitoring of restroom occupancy, hygiene levels, and consumable management.

Flow Management:

VS341 Desk & Seat Occupancy Sensor tracks real-time occupancy of individual toilet stalls to pinpoint occupied or vacant cubicles. **VS351 Mini AI Thermopile People Counter** counts overall restroom passenger flow instead, allowing airport operators to flexibly arrange cleaning staff amid peak visiting hours. Data from both sensors jointly realizes data-driven washroom flow management.



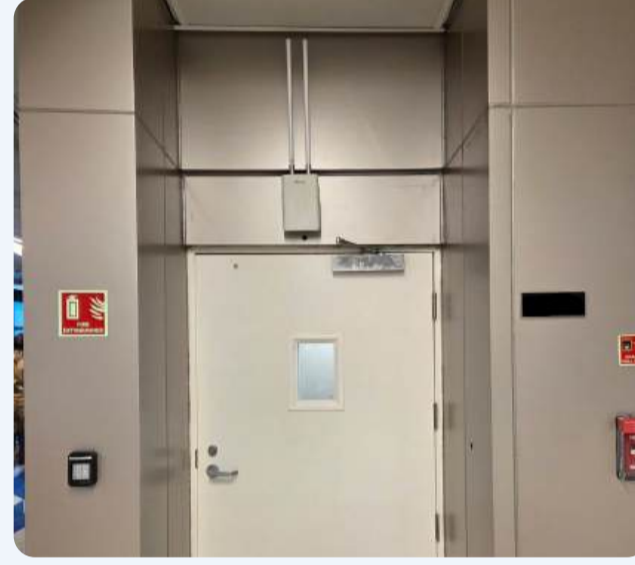
Hygiene Monitoring:

WS201 Smart Fill Level Monitoring Sensor keeps real-time tabs on remaining toilet paper levels to alert staff for timely restocking before shortages happen, while **GS301 Bathroom Odor Detector** continuously detects abnormal odors within restroom spaces. All collected real-time data helps the site team carry out targeted hygiene maintenance efficiently. **UC300 LoRaWAN® Controllers** work in combination with third-party sensors like hand sanitizer levels and soap dispensers.



Communication Network:

All sensors connect to **UG65 Indoor LoRaWAN® Gateways** and **UG67 Outdoor LoRaWAN® Gateways**, which forward collected sensor data to the central monitoring platform. The gateways deliver long-distance, stable communication throughout the airport's extensive facilities and enable uninterrupted data transmission even amid potential signal interference.



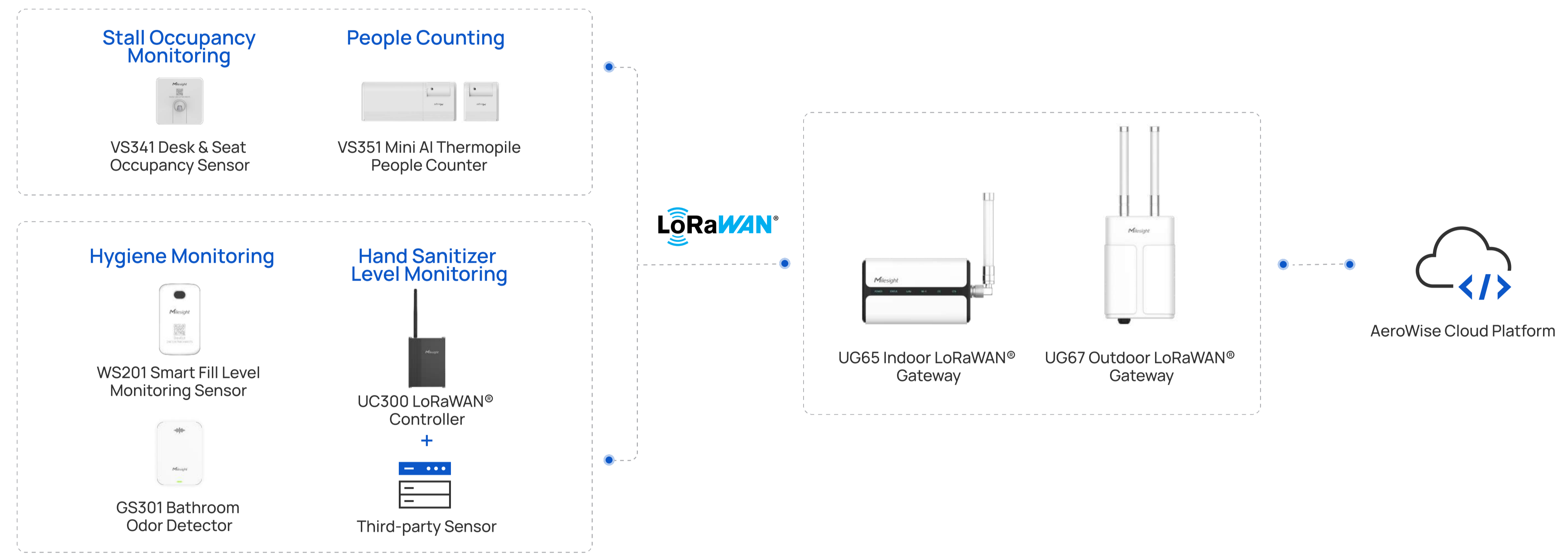
Operational Action:

Based on the real-time data, janitor staff are notified to clean or replenish items in specific restrooms, ensuring timely maintenance and improving the overall experience for passengers. The system eliminates the need for manual inspection and fixed schedules, allowing for data-driven operational decisions.

Data Analysis and Control:

Data is forwarded to the AeroWise Platform, which analyzes the collected data in real-time. The platform provides insights and triggers automatic actions when certain thresholds are met, such as:

- Cleanliness alerts when hygiene levels drop.
- Occupancy and flow optimization based on restroom usage.
- Resource replenishment alerts when consumables (e.g., soap, toilet paper) need restocking.



Results

This solution has streamlined operations, saved resources, and greatly improved the overall airport experience.

Reduced Manual Inspections:

Real-time data minimizes the need for manual checks, enhancing operational efficiency.

Optimized Consumables Supply:

Replenishment is triggered by actual usage, reducing waste and preventing shortages.

Improved Cleaning Schedules:

Cleaning is now based on real-time usage, ensuring efficiency and better resource allocation.

Enhanced Passenger Experience:

Real-time stall occupancy data and optimized restroom upkeep cut passengers' toilet-hunting and queuing durations, effectively easing peak-hour washroom congestion and lifting passenger satisfaction.

Discover More about Milesight Products



Smart Restroom Kit



VS341
Desk & Seat Occupancy Sensor



VS351
Mini AI Thermopile People Counter



UG67
Outdoor LoRaWAN® Gateway

Why Choose Milesight



Milesight products were chosen for their comprehensive solutions, offering everything from occupancy sensors to hygiene monitoring devices, ensuring seamless integration for the airport's smart restroom management. The hardware performed accurately during the POC phase, and the LoRaWAN® wireless solution is ideal for the airport's upgrade plans, offering long-range communication with minimal cabling.



Partner

About Tynatech

Tynatech Ingenious Private Limited, founded in 2022, is an Indian private tech company specializing in the design, manufacturing, and implementation of IoT solutions. Its core business focuses on industrial automation and building/facility monitoring systems, utilizing LoRaWAN and smart sensor technologies. They offer solutions for smart buildings and IoT data platforms, among other applications.

Milesight Technology Partner >



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