# SY-KLONE® INTERNATIONAL

## CASE STUDY

### Transforming Industrial Air Quality

## Customer Challenge

As a pioneer in industrial air filtration, Sy-Klone International sought to enhance operator safety within industrial cabins, where air quality plays a vital role in health and productivity. Their goal was to develop a reliable pressure monitoring system capable of detecting $CO_2$ levels and protecting operators from harmful particles, dust, and chemicals. These pollutants pose significant health risks, such as respiratory issues and chronic conditions, while also threatening regulatory compliance and operational efficiency.

In addition, Sy-Klone faced technical challenges with sensor accuracy at varying elevations and an outdated system interface that hindered usability. To overcome these obstacles, they required a trusted partner to deliver innovative IoT solutions capable of setting a new benchmark for industrial air quality monitoring.

## Solution Overview

Sy-Klone sought to enhance their original model to address inconsistencies in pressure sensor responsiveness. Oxit conducted extensive testing with units placed both inside and outside the cabin to validate sensor accuracy under real-world conditions. Advanced algorithms were developed to process sensor data, ensuring reliable performance even with elevation changes. Additionally, Oxit upgraded the system's touchscreen interface, delivering a more intuitive and enhanced user experience.

## The Result

Oxit and Sy-Klone successfully collaborated to develop the RESPA Advisor+, an advanced cabin air monitoring device designed to enhance operator safety and air quality in industrial settings. This system integrates a high-performance filtering mechanism that significantly reduces harmful particulates and ensures compliance with safety standards. The device features a proactive alarm system that activates when elevation-induced pressure changes are detected, allowing operators to take timely corrective actions.

Extensive field testing validated the system's ability to maintain stable $CO_2$ levels under varying conditions, including simulated elevation changes in a pressurized enclosure. By leveraging Sy-Klone's existing materials, the project remained cost-efficient while delivering cutting-edge functionality. Additionally, Oxit implemented automatic filter identification and over-the-air (OTA) updates, enabling seamless maintenance, adaptability to future needs, and long-term reliability in dynamic environments.

# Key Innovations Delivered by Oxit

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| **Enhanced User Interface** | Upgraded the touchscreen for improved usability, offering operators an intuitive interface to monitor air quality effectively. |
| **Optimized Design** | Redesigned and optimized interface elements to enhance usability, ensuring a seamless user experience while maintaining the integrity |
| **Future-Proof Maintenance** | Integrated over-the-air (OTA) updates, enabling real-time software improvements and reducing downtime for maintenance. |
| **Streamlined Integration** | Designed a scalable system architecture that ensures long-term adaptability, supporting future feature expansions and industry needs. |

## About Sy-Klone

Sy-Klone International is a manufacturing and technology company that creates industry-leading air filtration solutions that protect heavy equipment engines and operators, and address other specialty industrial and commercial applications. Established in 1986, Sy-Klone is a global distributor who creates industry solutions and specializes in creating air filtration solutions that protect heavy equipment engines and operators.

For more information, please visit www.sy-klone.com or call (904)448

## About Oxit

Oxit Engineering Services empowers companies to achieve their innovation goals by prioritizing partnerships over transactions. With deep expertise in IoT technologies, our team delivers solutions that give clients a competitive edge—accelerating time-to-market and optimizing development costs.

This case study highlights Oxit's ability to deliver impactful, tailored solutions while showcasing our unwavering commitment to quality, collaboration, and long-term success for our clients.

Want to know more?
www.oxit.com

# Why Oxit?

## Hardware Development

Oxit's engineering team specializes in designing IoT hardware that combines reliability, scalability, and performance. With expertise in RF systems, low-power design, and long-range technologies like LoRa, we deliver solutions that meet today's challenges and anticipate tomorrow's needs.

## Software Development

Oxit bridges today's proven technologies with emerging trends, offering expertise in Wi-Fi, Cellular, Bluetooth, Zigbee, LoRa, and edge machine learning. Our approach ensures scalable, innovative solutions that keep our clients ahead in an ever-evolving market.

## IoT Experience

With over a decade of IoT development experience, Oxit provides clients with secure, cost-effective, and adaptable architectures. We minimize risks, avoid costly mistakes, and empower our partners to scale confidently.

## Comprehensive Ecosystem Understanding

Our knowledge of competitors, suppliers, and research partnerships enables us to streamline processes, avoid delays, and ensure efficient collaboration across all stages of development.

## Defined Roles & Responsibilities

Oxit works closely with partners to balance priorities and clearly outline responsibilities. This structured approach creates alignment and maximizes the partnership's success.

## Collaborative Interdependence

We prioritize mutual trust, recognizing that successful outcomes depend on seamless collaboration. By fostering interdependence, we ensure that every contribution aligns with the shared vision.

## Matrixed Relationship Management

Our team engages at multiple levels, offering diverse perspectives and services to address every need. This dynamic approach ensures clear communication and smooth execution across all initiatives.

## Open and Transparent Communication

We maintain consistent communication to align immediate goals with long-term objectives. This clarity ensures trust and keeps all stakeholders informed at every stage.

## Self-Awareness

Oxit recognizes its strengths and adapts to overcome challenges, ensuring we remain a dependable and forward-thinking partner in delivering transformative solutions.