SWAN
AIR COMPRESSORS

IoT REMOTE INTELLIGENT SERVICE SYSTEM

Smart Intelligence to Enhance Management Efficiency

Challenges You May Be Facing

Energy saving and carbon reduction have become global trends. How can you accurately obtain electricity consumption and carbon emission records, and evaluate whether energy usage is reasonable?

When air compressor system issues an alarm, how can you immediately identify the cause and resolve it to maintain production line efficiency?

Production department involves complex tasks. How can equipment be managed, maintained, and serviced more efficiently and conveniently?

All mechanical components have a service life. How can lifespan prediction be quantified and managed scientifically to reduce the risk of unexpected failures?

Why You Need an IoT Remote Intelligent Service System

Remote management allows you to detect potential issues in your air compression equipment at an early stage. By preventing failures in advance, you can ensure optimal system performance.

In automated production systems, compressed air is the second most important power source after electricity. Traditionally, air compressor systems rely on scheduled maintenance and reactive troubleshooting after alarms or abnormalities occur.

With the SWAN IoT Intelligent Air Compressor Management System, you can easily build a smart manufacturing situation room. Monitor operational status across devices, receive real-time maintenance alerts, and access traceable energy consumption records—an ideal solution for smart manufacturing.

SWAN IoT Remote Intelligent Service System

Your Trusted Smart Manufacturing Partner

Real-Time Monitoring System

Monitor pressure, temperature, current, voltage, energy consumption (kWh), vibration, and other operational data in real time to quickly identify abnormalities and reduce maintenance time.

Smart Maintenance Notifications

Based on actual operating data, the system intelligently predicts optimal maintenance timing, helping extend equipment lifespan and reduce downtime-related losses.

Optional: Vibration early warning diagnostic system.

Operation Status Reports

Our professional technical team provides regular data analysis reports to clearly present equipment usage and energy performance, supporting optimized maintenance and energy strategies.

Cloud-Based Historical Records

All operational data is securely stored in the cloud, enabling trend analysis and long-term tracking to support accurate energy-saving decisions.

A Comprehensive Upgrade to Air Compressor Management

The SWAN Dashboard integrates all air compressor data into visualized charts, displaying key indicators such as pressure, temperature, power, energy usage, electricity cost, current, operating hours, load ratio, carbon emissions, and vibration—transforming maintenance from reactive repair to proactive prevention.

From Passive to Proactive
Bearing Life Detection Module Optional

The SWAN IoT Remote Intelligent Service System integrates high-frequency three-axis vibration monitoring technology. Combined with air compressor operational expertise, the system performs in-depth analysis of dynamic characteristics of critical bearings and converts vibration values into quantifiable condition indicators.

Monitoring Point

Multi-Dimensional Vibration Data

The system analyzes vibration features in three orthogonal directions, providing precise condition monitoring for critical components of air compressor equipment.

Predictive Vibration Diagnostic Function

The module incorporates multiple damage energy calculation models to analyze vibration caused by bearing imbalance, shaft misalignment, and loose foundations.

Intelligent Alert Function

The system shifts from passive monitoring to proactive prevention. When vibration levels exceed predefined values, instant alerts are triggered to reduce the risk of unexpected equipment failure.

※Monitoring is conducted based on three-axis vibration measurement criteria defined in ISO 10816 and ISO 20816. Frequency spectra and feature values are compared across four major failure modes (bearing , imbalance, misalignment, and looseness) to accurately identify fault sources and perform appropriate maintenance actions.

※Bearing energy: The Crest Factor is defined as the ratio of the waveform's instantaneous peak value to its root mean square (RMS) value and is a critical parameter for evaluating vibration waveform characteristics.

Smart Management for Energy Efficiency

In addition to ensuring stable operation of the air compression system, the SWAN IoT Intelligent Air Compressor Management System supports the evaluation of abnormal pipeline leakage levels, efficiency degradation of the compressor main unit, and the overall effectiveness of compressed air supply operation strategies.

Multiple leakage points in compressed air pipelines, resulting in energy and air usage waste.

Aging air compressors with long service life lead to reduced operational efficiency.

Outdated air compressor system configurations result in unnecessary power consumption.

Case Study :

A customer originally operating a mixed compressed air supply system using three air compressors from different brands optimized the system configuration and replaced it with a single TMV Series air compressor certified with top-tier energy efficiency, significantly improving operational efficiency while reducing energy consumption and maintenance costs.

TMV75TU

- **Annual electricity saving: 112,603 kWh**
- **Annual electricity cost saving: NT 563,015**
- **Annual CO_2e reduction: 55.625 tCO_2e**

A Remote Intelligent Service System Designed for You

The SWAN IoT Remote Intelligent Service System is not merely a system, but a continuous service delivered by a professional technical team. Beyond providing a monitoring solution, we act as your energy efficiency consultant and maintenance partner. Through ongoing data analysis and expert recommendations, we support the establishment of an optimized air compressor management.

- Improve air compressor operation efficiency
- Comprehensively enhance equipment safety
- Reduce operational costs through intelligent alert mechanisms
- Strengthen management and decision-making capabilities through data-driven insights

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