Conveyor belt safety system for Indian chemical manufacturer

This project won the IoT project of the year 2024 award in the Compact Fleets category. Explore the article and learn more about all the winners.

Challenge

Archean Chemical Industries is India's leading marine chemical manufacturer, producing and exporting bromine, industrial salt, and potassium sulfate to customers worldwide. These chemicals play an important role in various industries, including pharmaceuticals, agriculture, construction, and water treatment.

In chemical production, the smooth operation of conveyor belts is crucial for worker safety, efficient production, and overall operational reliability. However, empty belt running — when a conveyor operates without carrying any materials — can sometimes occur. This issue may result from improper raw material feeding, equipment failures, incorrect installation, or natural wear and tear over time. If left unaddressed, it can increase the risk of sudden breakdowns, reduce efficiency, cause production losses, and create potential safety hazards.

Read on to discover how the conveyor belt monitoring system powered by Wialon helped the manufacturer track conveyor operations, quickly detect empty belts running, and automatically notify operators, allowing them to take immediate action.

This project goes beyond the traditional use of Wialon for fleet digitalization and demonstrates its successful application in industrial IoT and remote automation.

Solution

HeadMan Labs, a company specializing in industrial IoT systems and a Wialon partner, developed and implemented the smart conveyor monitoring system for Archean Chemical Industries.

The specialists installed compact Galileosky 7.0 GPS devices and integrated them with sensors. Photoelectric sensors detect the load on the conveyor belt, while current transformer sensors determine whether the belt is running. The solution also includes speakers with hooters for sound alerts when empty belt running occurs. Additionally, experts installed a relay board that automatically shuts off the conveyor if it operates without a load for a specified duration.

All the equipment sends data to the Wialon telematics platform, which provides a comprehensive view of conveyor operations. Wialon ensures conveyor efficiency tracking in real time and generates daily reports on efficiency and downtime. Wialon's Sensolator application provides a graphical visualization of belt status. The API enables seamless data transfer from Wialon to the customer's ERP system.

The HeadMan Labs team faced significant challenges when implementing the solution, due to the demanding production environment. The conveyors operated 24/7, exposed to constant moisture and chemicals. Besides, the remote location added complexity, requiring several hours of travel each day. Despite these obstacles, the team successfully deployed the conveyor belt monitoring solution, ensuring stable performance.

Conveyor belts, several hundred meters long, operate 24/7

The integrated solution fully met the customer's needs, operating reliably even in extreme conditions. This project also demonstrates how Wialon can be effectively applied in industrial IoT and remote automation.

Results

The conveyor belt tracking system has led to significant improvements, particularly in operational efficiency, safety, and maintenance management.

Extended conveyor lifespan

Real-time and historical data, along with predictive analytics, helps assess conveyor wear and schedule maintenance on time, preventing early failures.

Optimized maintenance scheduling

Wialon's data-driven insights help schedule maintenance during non-peak hours, reducing disruptions to production plans and ensuring servicing is performed only when necessary.

Minimized risks of breakdowns

Continuous monitoring enables early detection of empty belts running. It allows workers to prevent serious breakdowns that could influence production or lead to costly repairs.

Improved resource management

With detailed reports on conveyor belt efficiency and performance provided by Wialon, the customer can effectively plan belt operations and minimize unnecessary belt running or downtime.

Enhanced safety measures

Automatic conveyor belt tracking system eliminates the need for manual inspections, reducing worker exposure to potential hazards.

Cost savings

By minimizing risks of breakdowns, extending equipment life, and streamlining maintenance, the solution delivers significant cost savings for the company.

Company profile

IoT project of the year nomination: Compact fleets

Country: India

Industry: Stationary

Solutions

Wialon

Hardware

Galileosky 7x

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