

CUSTOMER CASE STUDY

Smart Pump Operations: From Manual Checks to Predictive Intelligence

BKOAI transformed pump maintenance from reactive to proactive, enabling engineers to use smart alerts and diagnostics to identify potential failures earlier.

Solution: Predictive Maintenance & Machine Learning

Industry: Midstream

Use Case Focus: Smart Pump Monitoring & Diagnostics

GOALS

- Transition from manual checks to predictive intelligence.
- Centralize real-time monitoring across pump assets.
- Optimize the deployment of field engineering resources.
- Prevent asset performance degradation and downtime.

SOLUTIONS

- Created a centralized real-time monitoring dashboard.
- Implemented automated alerts for anomaly detection.
- Applied machine learning models to analyze sensor data.
- Established targeted intervention protocols for early anomalies.

CHALLENGES

- Detected pump failures after performance drop occurred.
- Relied on rigid, routine field inspection schedules.
- Deployed field resources inefficiently without real-time data.
- Lacked insight into root causes of anomalies.

RESULTS

- Enabled proactive maintenance before asset failures occurred.
- Eliminated unnecessary and costly routine field visits.
- Optimized resource allocation for field engineering teams.
- Provided actionable, data-driven root cause diagnostics.

EXECUTIVE SUMMARY

BKOAI helped a client move from labor-intensive, reactive pump maintenance to a predictive, data-driven operating model. By centralizing real-time monitoring, automating anomaly alerts, and applying machine learning diagnostics to sensor data, engineers can identify performance deviations earlier, focus field resources on the sites that need attention, and investigate likely root causes before issues escalate into failures.

From Routine Field Checks to Condition-Based Awareness

Historically, pump issues were often recognized only after performance had already declined or a failure had occurred. Field teams followed routine inspection schedules regardless of actual asset condition, which created unnecessary visits while still leaving limited visibility into emerging problems. Without centralized real-time data, engineers also had less context for understanding why a pump was deviating from normal behavior.

Centralizing Pump Visibility and Prioritizing Alerts

BKOAI created a centralized operations dashboard that brings real-time pump information into one monitoring environment. Automated alerts highlight abnormal behavior and help engineers prioritize the most urgent sites instead of treating every asset the same. This shifts daily operations from fixed inspection cycles toward condition-based attention driven by what the equipment is actually doing.

Applying Machine Learning to Diagnostics

Machine learning models analyze sensor data to detect small performance deviations and identify likely causes of abnormal behavior. The diagnostic layer turns raw operating signals into actionable guidance, helping engineers determine where targeted inspection is needed and what conditions should be investigated first. Early anomalies can then trigger focused intervention before they grow into larger operational problems.

Operational Impact

The new operating model supports proactive maintenance before asset failures occur. Centralized visibility and automated alerts reduce unnecessary routine field visits, while targeted diagnostics improve the speed and accuracy of issue resolution. Field engineering resources can be directed where they create the most value, and pump performance can be managed with earlier, data-driven intervention.