


 > Solution Brief

Business Impact

SAS enables us to accurately predict, manage, optimize and plan the performance of our artificial lift systems on some of our most important assets.

Remote Services Manager
Multinational Oil and Gas Company



Challenges

- **Lack of data-driven, early-warning systems.** Without automatic notifications, potential failures are more easily overlooked.
- **High volumes and velocities of sensor data.** Integrating and managing sensor data and adding operational context has become increasingly difficult.
- **Inconsistent views across multiple monitoring systems and assets.** Key parameters are monitored separately for each type of equipment, overwhelming users.
- **Planning complexity.** Due to increased scale, it's difficult to schedule resources, supplies and workflows across thousands of assets simultaneously.

Improve artificial lift strategy, reliability and efficiency with predictive analytics

The Issue

With decreasing margins from every barrel of oil and gas produced, the industry is focused on managing operational costs to maintain incremental profit margins and cash flow. Artificial lift systems are one way to extend the useful life of a production well without incurring additional development costs, but they introduce additional equipment risk and process volatility. Minimizing deferment and operational costs associated with artificial lift system failures has become crucial.

Artificial lift optimization is a complex process that involves many resources and substantial operational expenses. Unplanned maintenance can also result in long outages that reduce cash flow.

Reliability engineers must plan maintenance schedules that are proactive and enhance the operational effectiveness of the lift system. Meanwhile, upstream companies are challenged to gather data from disparate systems, enrich it with operational intent, and analyze it for meaningful insights.

Our Approach

Our solution reduces unscheduled downtime, optimizes maintenance cycles, helps identify root causes and prescribes operational parameters that extend the mean time to failure. We help you:

- **Identify** the precursors of unplanned adverse events, maximizing asset efficiency.
- **Verify, enrich and govern** asset data for analysis with our comprehensive data management software.
- **Predict** when maintenance will be required through data mining and predictive modeling so you can alert stakeholders to minimize or prevent operational disruptions.
- **Optimize** maintenance resources, supplies and fleets - as well as aging and degrading assets - using resource optimization and scenario analysis tools.

SAS® gives you the power to predict anomalies and failures in artificial lift systems, improving the quality and productivity of your operations.

The SAS® Difference:

Identify process improvements or emerging patterns of pending lift system failure.

Other solutions rely on condition-based alerts to identify potential asset failures. SAS identifies and tests multivariate, multidimensional, and stochastic conditions, and then standardizes problem resolution through case management. With SAS you get:

- Advanced analytics and machine learning to continuously monitor your lift system's health and send alerts if equipment or assets are likely to fail. Test sensor data and operational conditions using defined rules, thresholds and models in real time and determine the root cause of a failure.
- Sophisticated linguistic rules that uncover insights hidden in unstructured text data. SAS transforms your unstructured data into organized information about the intent, procedures and activities related to lift data.
- An asset management dashboard with enhanced visualization and mobile self-service reporting of current KPIs from different dimensions, locations, functions, asset types, etc.
- An enterprise maintenance data model that integrates all relevant data from sensors for a comprehensive, reliable view of asset performance regardless of source or format.

Case Study:

A multinational oil and gas company

Situation

The company's remote artificial lift surveillance team needed to improve the profitability of deep-water assets. Vendor-supplied models for electrical submersible pumps (ESPs) were not matching actual pump performance. Liquid carryover (LCO) in the gas riser was causing frequent shut-ins in order to drain the lines, deferring production and affecting the bottom line.

Solution

The company used SAS to build more accurate models of pump efficiency for enhanced oil recovery (EOR) planning. These models help monitor pump failures and LCO events across thousands of wells. A dashboard alerts engineers to anomalies in pump performance.

Results

The company was able to identify the operational cause of well backpressure and was able to reduce:

- Operating costs from unexpected ESP failures on deep-water assets by \$3 million per event.
- LCO prevention chemical costs by \$1.2 million per year.
- Nonproductive time associated with LCO by 75 percent.

What if you could ...

Improve data for analysis

What if you could quickly assemble and verify artificial lift performance data in order to scale your operational surveillance models across all of your global assets?

Shorten time from problem discovery to resolution

What if you could use your data to understand the complex relationships between operational targets and physical capabilities to identify inefficient EOR strategies?

Use more data and analytics for planning

What if you could rely on what-if scenarios to predict outcomes from various EOR strategies, and then rapidly create production forecasts?

You can. SAS gives you **THE POWER TO KNOW®**.

SAS Facts

- SAS helps customers at more than 75,000 sites improve performance and deliver value by making better decisions faster.
- SAS has more than 200 customers worldwide in the oil and gas industry.
- SAS is a leader in *The Forrester Wave™: Big Data Predictive Analytics Solutions*.

Learn more at: sas.com/oilgas