SENSIA
Rockwell Automation + SLB

+ CASE STUDY

Maximizing Production with Intelligent Gas Lift Optimization: A Success Story from an Asian NOC

Cutting OPEX and boosting oil output through data-driven workflows and sustainable energy solution for reliable, proactive well management.

Key highlights

+ Real-Time Monitoring

One-second frequency data monitoring for critical parameters such as:

- Tubing Head Pressure (THP)
- Casing Head Pressure (CHP)
- Gas Injection Pressure (GI Pressure)
- Flow Line Pressure (FLP)
- Gas Injection Volume (GI Volume)

+ Optimized Gas Injection

Electronic Time Cycle Controller (ETCC):

- Controls and measures gas injection cycles.
- Suggests optimal cycle times, enhancing efficiency and performance.

+ Cost Reduction

Reduced gas usage leads to:

- Increased revenue per well.
- Lower operational expenditures (OPEX) through proactive, real-time monitoring.

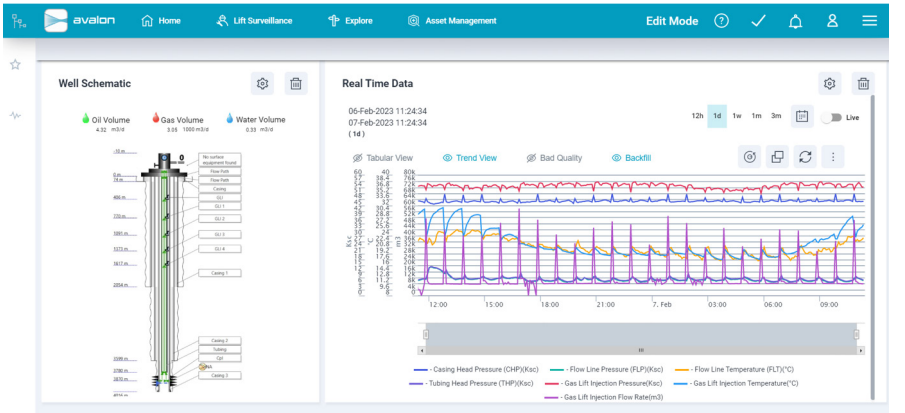
+ Renewable Energy Integration

Solar rooftops power field devices like:

- Scanners
- Remote Terminal Units (RTU)
- Cone meters
- ETCC, ensuring sustainable operations with renewable energy.

Achievements:

Through the implementation of our solution for Intermittent Gas Lift wells, we achieved a reduction in unattended gas injections, leading to increased oil production and higher revenue per well. Operational costs (OPEX) were reduced by enabling just-in-time attention to HSE incidents and shifting from reactive to proactive practices. We developed workflows for Wax Risk Identification, Virtual Flow Metering, and Time-cycle synchronization, optimizing production efficiency. Despite challenges with power availability, we overcame this by installing solar rooftops, ensuring reliable power for key instruments like RTUs, Cone Meters, and ETCCs, further enhancing system performance and sustainability.



Challenges:

In implementing Digital Oilfield (DOF) solutions, several challenges arise that complicate operations. One of the primary difficulties is integrating high-frequency data from a wide array of sensors and field instruments into a cohesive monitoring system. This involves addressing data compatibility issues, managing large volumes of information, and ensuring seamless communication. Remote control of processes, such as gas injection cycles, also presents hurdles, as it depends on reliable communication systems, which can be affected by connectivity problems in remote locations. Furthermore, transitioning from traditional reactive practices to proactive operating methods requires significant adjustments in workflows and retraining of operators to align with new technologies.

+ Advanced Workflows

New workflows to enhance gas lift operations:

- Wax Risk Identification
- Virtual Flow Metering
- Time-Cycle Synchronization

+ PIPESIM™ Legacy workflows for gas-lift well design and operations powered by SLB technologies.
+ Enhanced Safety

Real-time data improves safety by enabling:

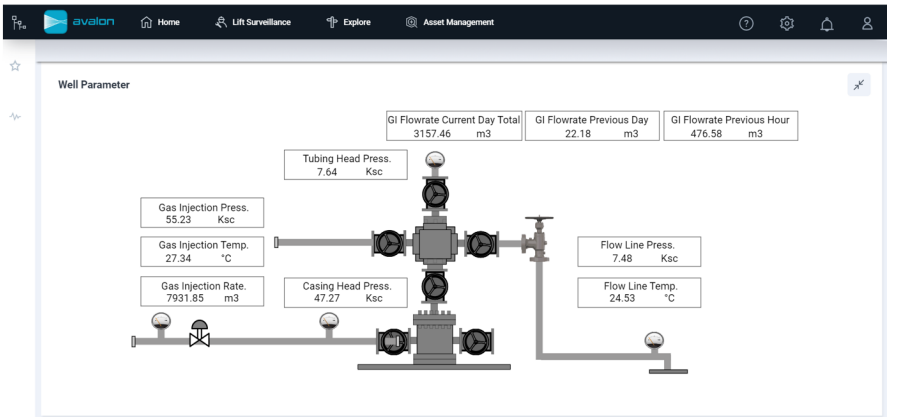
- Immediate response to Health, Safety, and Environmental (HSE) incidents.
- Compliance with environmental regulations.

+ Benchmark for Digital Operations

ISens sets a new standard for digital oilfield operations with:

- High-frequency data ingestion.
- Radio communication.
- Solar power integration for sustainable, advanced technology deployment

System reliability is another key concern, particularly in harsh field environments where extreme conditions can jeopardize the performance of digital oilfield solutions. Processing and analyzing high-frequency data in real-time within seconds necessitates advanced computational capabilities, adding further complexity to the technology stack. At the same time, ensuring compliance with health, safety, and environmental (HSE) regulations is critical when integrating new technologies into the field. Power availability remains a persistent challenge, as consistent energy sources are required to keep instruments functioning in remote locations, often necessitating backup power solutions to prevent operational interruptions. These challenges underscore the need for a robust infrastructure, skilled personnel, and reliable systems to successfully implement DOF technologies.



Solution Used:

To address the challenges in implementing a Digital Oil field (DOF), several solutions were employed. For real-time data processing, Avalon and Avocet technologies were leveraged, utilizing their powerful hardware and processing capabilities to efficiently manage the ingestion and analysis of real-time data. Data integration was streamlined by utilizing the Avalon interactive user interface, enabling seamless monitoring and analysis of real-time data across various systems.

To facilitate remote control, robust radio communication technology was implemented, ensuring reliable data transmission and effective control of operations from a distance. In terms of operational transition, detailed workflows were developed, and comprehensive training was provided to ensure the smooth adoption of proactive monitoring and decision-making practices. Specific workflows like Wax Risk Identification, Gas Lift Optimization, Depth of Operating Valve, Virtual Flow Metering, and Well Head Performance were adopted to enhance operational efficiency.

System reliability was ensured by using durable, weather-resistant equipment, capable of maintaining consistent performance even in harsh field conditions. For health, safety, and environmental (HSE) compliance, just-in-time monitoring and response mechanisms were introduced, allowing for prompt and effective handling of any incidents. To address the challenge of power availability, solar rooftops were installed to supply the necessary DC voltage for critical instruments like scanners, RTUs, cone meters, and ETCC, ensuring continuous operation in remote locations.