

Automated gas lift drives 5-10% production uplift and 80% hydrate mitigation in Libya's Zelten Field

Key highlights

- + Achieved an average production uplift of 5–10% across optimized wells
- + Reduced hydrate-related issues by 80%, ensuring smoother winter operations
- + Measured a 15% estimated improvement in gas lift utilization efficiency
- + Minimized 50% on-site intervention, cutting HSE exposure and costs
- + Achieved 85% reduction in manual gas lift adjustments during peak hydrate months (Jan - Mar)
- + Achieved an average of 55% improvement in wellhead delta pressure stability, enhancing flow profile consistency

The Zelten Mature Oil Field, operated by Sirte Oil Company—an affiliate of Libya's National Oil Corporation (NOC)—is one of the country's largest and most historically significant oil fields. With 300 gas lift wells equipped with Barton Chart Recorders, the field relies on gas lift assistance to sustain its 500,000 bbl/d liquid production. To enhance efficiency, the operator has implemented an automated closed-loop solution that integrates wellsite control, communication infrastructure, and remote surveillance with advanced data analytics powered by Avalon.

Product used: Avalon, Automated Gas Lift Choke, Scanner, IXC2, iSens, Gas Lift Optimisation

Challenges

Past strategies for gas lift optimization had limitations in effectively managing fluctuating well conditions. Manual gas injection adjustments increased operational risks and incurred higher costs, while previous methods lacked adaptability to evolving well characteristics—such as changes in completion designs, new well test parameters, and enhancements in productivity indexes. Additionally, without an automated approach, defining the optimal gas lift rate for each well remained an ongoing challenge.

Seasonal production losses due to hydrate formation during colder months. Hydrate formation within the gas lift systems became a critical issue, obstructing flow and leading to significant production losses. Hydrates formed in high-pressure, low-temperature environments within the gas injection lines, disrupting operations and requiring costly interventions. Addressing this problem necessitated a proactive solution capable of mitigating these seasonal inefficiencies.



Solution

To overcome the challenges, the Sirte Oil Company implemented a fully automated gas lift optimization strategy—seamlessly connecting wellsite infrastructure with office-based digital platforms for real-time control and decision-making.

Integrated solution includes the strategic deployment of advanced gas lift sub-assemblies and supporting systems:

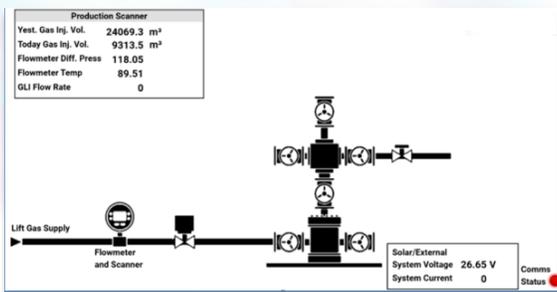
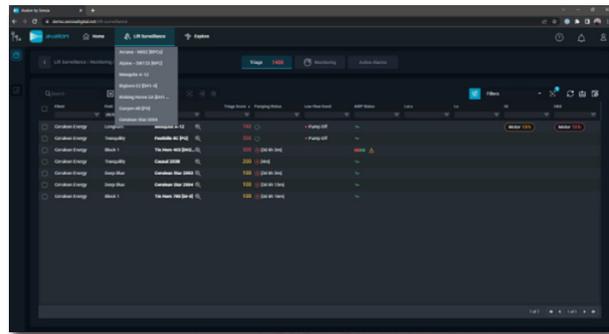
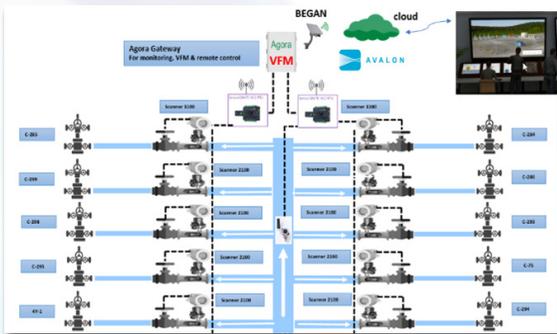
- + Gas lift sub-assemblies featuring Scanner 3100 as the master controller, paired with NuFlo Cone meters and electric-actuated choke valves, enabling high-precision flow regulation and dynamic response to changing well conditions.
- + Additional assemblies utilizing Scanner 2100, also equipped with NuFlo Cone meters and electric chokes, ensure consistent and accurate gas injection control across a wide range of well profiles.
- + Solar Power Packages supply sustainable and reliable energy to six remote gas lift stations, ensuring uninterrupted operation in off-grid environments and reducing dependency on conventional power sources.
- + Avalon as the digital layer provides a scalable and secure central foundation platform. It brings the collection, diagnosis, control, surveillance, performance analysis, and reporting.

This closed-loop solution delivers automated choke control, high-frequency data collection via RTUs, and remote visualization and optimization – enabling dynamic well-by-well injection management based on live performance.

Results

The automation initiative at Zelten Field delivered measurable performance gains – boosting oil output, reducing gas consumption, and streamlining operations. It has also significantly lowered HSE exposure and maintenance costs.

With advanced surveillance and control now in place, the Sirte team can make faster, smarter decisions from any location – maximizing uptime while minimizing manual intervention.



Impact & Future Prospects

As the first digital gas lift system of its kind in North Africa, this project demonstrates the scalable potential of Sensia's closed-loop automation.

The success at Zelten Field lays the groundwork for further deployment across Libya's upstream assets. Sirte Oil Company now plans to extend this intelligent infrastructure to additional fields – advancing their operational efficiency, winter reliability, and digital transformation goals.