

Iraq Well Logging Fiber Optic Technology



Overview

The conventional approach for down-hole communication deploys traditional copper wire into an oil and gas well.

Key Takeaways

Fiber-optic technology is revolutionizing well logging in Iraq, enabling real-time, high-resolution monitoring of horizontal wells and complex reservoirs. Recent Implementation in Iraq

In June 2026, CNLC Iraq Branch, in collaboration with CNLC Huabei Branch, successfully completed the first fully autonomous coiled tubing fiber-optic logging operation at the AD-XXX well in the Ahdab Oilfield. This operation addressed a long-standing challenge: performing production logging in horizontal wells where conventional wireline PLT tools were ineffective. The operation was completed safely within one week, delivering high-quality data and closing a critical technology gap in horizontal well production logging .

Fiber-Optic Well Logging Technology

Fiber-optic well logging uses thin strands of glass or plastic fibers to transmit data as light signals, enabling distributed sensing along the entire wellbore. Unlike traditional single-point sensors, fiber optics provide continuous, real-time measurements of temperature, acoustic signals, and strain, offering a comprehensive view of well conditions . Key technologies include:



- Distributed Temperature Sensing (DTS): Measures temperature variations along the fiber to detect flow patterns, leaks, or thermal anomalies in real time .
- Distributed Acoustic Sensing (DAS): Captures acoustic vibrations along the wellbore to identify leaks, monitor cement integrity, and detect mechanical issues .
- Distributed Strain Sensing (DSS): Monitors deformation and stress in the wellbore, optimizing completion design and hydraulic fracture performance .

Advantages Over Conventional Logging

Fiber-optic systems provide several benefits compared to traditional methods:

- Real-time data acquisition: Eliminates delays associated with station-based measurements and memory tools .
- Full coverage: Monitors the entire logged interval, capturing events that single-point sensors may miss .
- Enhanced diagnostics: Enables precise localization of anomalies, improving well integrity assessment and production optimization .
- Operational efficiency: Reduces diagnostic time by over 85% and allows safer, autonomous operations in challenging horizontal wells .

Applications in Reservoir and Completion Optimization

Fiber-optic technology supports smart well operations by providing high-resolution monitoring for:

- Hydraulic fracture stimulation: Optimizing cluster efficiency and stage performance using real-time DAS, DTS, and DSS data .
- Reservoir surveillance: Continuous monitoring of tubing, casing, and reservoir integrity, including CO₂ injection profiling and microseismic activity .
- Production logging: Accurate flow profiling in horizontal wells, enabling better decision-making for production optimization .

Conclusion

The adoption of fiber-optic well logging in Iraq represents a significant technological advancement, particularly for horizontal wells and complex reservoirs. By providing real-time, distributed measurements, fiber-optic systems enhance operational safety, improve diagnostic accuracy, and optimize production and completion strategies, marking a shift toward smart well management in the region .

Article Content

Bazaid et al No 1

Common well integrity problems where fiber optics can be effectively deployed include identifying sources of sustained annulus

Pioneering Well Logging: The Role of Fiber Optics in Modern

These results demonstrate that fiber optics represents a paradigm shift in well integrity assessment, transitioning from

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Optiq Fiber-Optic Solutions | SLB

Optiq solutions can be seamlessly integrated with any existing fiber-optic infrastructure (such as in pipeline integrity monitoring) or by

Well and reservoir surveillance | FOWell | FEBUS Optics

Our FOWell solution is a Measurement, Monitoring, and Verification (MMV) technology based on distributed fiber optic sensing, that

Pioneering Well Logging: The Role of Fiber Optics in Modern

The integration of fiber-optic sensing not only delivered superior diagnostic clarity but also reduced the diagnostic timeline by over

Application of fiber optics in oil and gas field development

The conventional approach for down-hole communication deploys traditional copper wire into an oil and gas well. This approach has

Fiber-Optic Technology Allows Real-Time Production Logging Well ...

This paper will identify these critical factors and address proper candidate well selection and job preparation. It will

Optiq Seismic Fiber-Optic Borehole Seismic Solution | SLB

Harnessing the power of light via optical fiber, it leverages distributed acoustic sensing (DAS) technology; digital workflows; cloud

Fiber Optic Technology Allows Real-Time Production Logging Well ...

An optical fiber has been utilized to continuously acquire liquid production profiles in horizontal well in X oilfield. The

Production logging via coiled tubing fiber optic ...

According to the optical fiber production profile testing technology with continuous tubing as the carrier, the main production layer

Distributed Fiber-optic Sensing Based Production Logging ...

The goal of the experiments is to understand the potentials of using fiber-optic sensing technology for production logging purposes,

Optiq Seismic Fiber-optic borehole seismic solution

The solution's optical interrogator unit at surface is connected to any optical-fiber cable deployed in a well, from hybrid wireline

Well Logging with Carina 100Xlog Fiber Optic | Silixa Ltd.

Carina 100Xlog is a high-efficiency retrievable fibre optic well logging service that visualizes entire well dynamics in real-time much

Distributed Fiber

1 Introduction Fiber-optic sensing technology has long been used in single-well hydraulic fracturing analysis, and its focus has been

Research on the processing and interpretation methods of distributed ...

Distributed fiber optic vibration signal logging technology, utilizing fiber optics as sensing elements, captures vibration

Production Logging

The three applications of using fiber optics as a production logging tool revolves around production and injection profile, diagnoses of

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

