

Principle of High-Temperature Well Logging Optical Cable in Tajikistan



Summary of Content

High-temperature well logging optical cables operate by transmitting light through protected optical fibers to measure temperature, acoustic signals, and strain along the wellbore in real time.

Core Principle

High-temperature well logging optical cables use optical fibers as distributed sensors to monitor downhole conditions continuously. The fibers are typically made of silica with dopants to modify the refractive index, allowing precise light transmission even under extreme temperatures exceeding 300°C . The principle relies on light scattering phenomena:

- Raman scattering for Distributed Temperature Sensing (DTS): A laser pulse is sent down the fiber, and the backscattered light is analyzed to determine temperature variations along the wellbore .
- Rayleigh scattering for Distributed Acoustic Sensing (DAS): Acoustic vibrations along the well cause phase changes in the backscattered light, enabling detection of leaks, cement integrity issues, and mechanical anomalies .
- Strain sensing (DSS): Changes in fiber length or tension are measured to monitor wellbore deformation and stress.

Cable Design for High Temperatures

To withstand harsh downhole conditions, the cables are engineered with multiple protective layers:

Article Content

Research on Key Technologies of 260 °C/210 MPa Ultra-Deep Logging

This paper introduces the key technologies of ultra-deep measurement logging equipment, including high-strength

Oil Well Load Bearable Detecting Cable-Well Logging Cable

These robust cables are used with mobile closed-circuit TV inspection systems to explore subterranean sewer lines and storm

Application of optical-fiber temperature logging

One cable with two DAS fibers, two DTS fibers, and one fiber for a downhole fiber optic pressure/temperature gauge

[pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov)

Hier sollte eine Beschreibung angezeigt werden, diese Seite lässt dies jedoch nicht zu.

The High-Temperature Resistant Well Logging Optical Cable

The range of cables for direct buried installation includes all our four basic designs: concentric core, grooved core tape, DryTech and

New wellbore temperature control design for preventing failure and

The aforesaid prompted this work to invent the “New Wellbore Temperature Control Design” for protection of logging

Production Logging and its Implementation: A Technical Review

Besides, individual sensors are used in production logging for appraisalment of various properties. This paper provides a technical

Dakota--Temperature Logging 1--Introduction

For the application of continuous, high-resolution temperature logging for scientific purposes, two major types of logging tools are

New methods in geophysical exploration and monitoring with DTS and

In the HE-35 high-temperature geothermal well (Iceland), a cable with a “hermetic” carbon/polyimide-coating fiber was installed, also

GB2333610A

Direct substitution of electrical conductors with optical fibres to provide a logging cable having optical fibres can result in the cable

Optical fiber logging cable Special cable

Optical fiber logging cable enables the transmission of detailed data over long distances,

Optical fiber logging cable Special cable

Optical fiber logging cable is a type of cable used in oil and gas well logging applications. It is designed to provide

Design and Experimental Research of a Fiber-Optic Communication

The ability to provide reliable transmission systems in the harsh environments like high temperatures is the key driver

Research on the Data Interpretation Model of Optical Fiber Profile ...

Abstract: Fiber optic cables have the advantages of high temperature resistance, high pressure resistance, corrosion resistance, and

Principle of High-Temperature Well Logging Optical Cables in Australia

Overview Principle: Utilizes Raman scattering to measure the temperature along the wellbore. Reinsch 1 1 GFZ German Research

477523_1_En_171_Chapter 1807..1815

First, in view of the slow transmission rate of the logging cable, an advanced high-speed cable transmission module is adopted.

Distributed optical fiber temperature sensor and its application in ...

Download Citation | On Oct 25, 2017, Xiaofei Zhu and others published Distributed optical fiber temperature sensor and its

A High Data Rate Fiber Optic Well Logging Cable

This development has led to a new logging cable with superior mechanical properties, containing eight electrical wires and three

Feasibility investigation and design study of optical well logging ...

The objective of this project was exploration of a novel approach to high temperature well logging, based on a system of optical

(PDF) Fibre-optic temperature measurements in shallow boreholes ...

Abstract The Distributed Fibre-Optic Temperature-Sensing Technique (DTS) represents a new physical approach for

US6392151B1

In the preferred embodiment, the tube is surrounded by an elastomeric jacket, and is filled with hydraulic oil or the like to prevent

The High-Temperature Resistant Well Logging Optical Cable

The High-Temperature Resistant Well Logging Optical Cable Adaptable para pozos de petróleo, pozos de gas, minas de carbón o

Development and Application of Visual Logging Equipment

This article introduces its system composition, working principle, and transmission characteristics. Field application

Optical Fiber Logging System for Multiphase Profile ...

Download Citation | Optical Fiber Logging System for Multiphase Profile Analysis in Steam Injection Wells | In a steam

High Pressure-High Temperature Well Logging and Measurements as

In this work, high temperature and high pressure logging tools were firstly reviewed; not only that are currently available on the

Downhole Logging

Wireline cables for downhole logging applications, delivering reliable power and data in high-pressure, high-temperature wells.

1 Well Logging Optical Cable Manufacturer in Tajikistan

BlazingFast Photonics delivers high-speed optical transceivers, silicon photonics, co-packaged optics, OSFP 1.6T modules, laser

Production logging via coiled tubing fiber optic ...

However, a number of shale gas wells need to be evaluated in the effects of well drilling and completion and fracturing, providing the

New methods in geophysical exploration and monitoring with DTS and

Here we outline some new technologies in this context within case studies from different research projects including permanent

Bazaid et al No 1

ABSTRACT Maintaining well integrity is a critical aspect of safe, efficient, and economically viable oil and gas production. Traditional

Application of fiber optics in oil and gas field development ...

The application of optical fiber aids data quantification, which facilitates the real-time monitoring of oil reserves, asset

Well Logging: Principles, Applications and Uncertainties

Well logging is a means of recording the physical, acoustic and electrical properties of the rocks penetrated by a well. It is carried out

Geophysical Load Bearable Detecting Cable-Well Wireline Logging

These double-armored cables containing multiple conductors in various gauge sizes and constructions are customized for use in

Distributed optical fiber temperature sensor and its application in ...

This paper analyzes the demand of temperature measurement for high temperature wells of oilfields and demonstrates the unique

Production logging via coiled tubing fiber optic ...

In the development of a shale gas horizontal well, gas production profile logging can provide the critical fluid-carrying

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