

Asia Downhole Temperature Measurement Fiber Optic Cable Splicing



Article Overview

Distributed Temperature Sensing (DTS) using fiber optic cables enables continuous, high-resolution downhole temperature monitoring, with splicing critical for reliable long-term operation.

Overview of Downhole Fiber Optic Temperature Measurement

Distributed Temperature Sensing (DTS) systems use multi-mode fiber optic cables to measure temperature along the entire length of a wellbore in real time . A laser pulse is sent through the fiber, and the Raman backscatter (Stokes and anti-Stokes signals) is analyzed to generate a continuous temperature profile . This allows operators to detect thermal anomalies, monitor well integrity, and optimize production processes . DTS systems are widely deployed in Asia, including oilfields in China, Southeast Asia, and the Middle East, for both production monitoring and well integrity diagnostics .

Fiber Optic Cable Types and Construction

Downhole fiber optic cables are typically armored and corrosion-resistant, designed to withstand high temperatures, pressures, and chemical exposure . Common configurations include:

- Single-mode fibers for Distributed Acoustic Sensing (DAS)
- Multi-mode fibers for DTS applications
- Metallic armor (e.g., corrosion-resistant alloy) to protect fibers from mechanical and chemical damage

Article Content

SPE-199938-MS Fiber Optics Application for Downhole Monitoring

Higginson et al. (2017) presented five types of fiber optics installation all of which fall into the categories mentioned above. Based on

Downhole Cables

TEF cable is the sensor element for modern distributed fiber optic sensing technologies of DTS and DAS, which have become

DISTRIBUTED FIBER OPTIC SENSING

It provides many benefits, such as the ability to perform different measurement types (e.g., temperature, acoustic, strain) using a

Smart Fibres DPTS Brochure

Smart Fibres'' Distributed Pressure and Temperature Sensing (DPTS) is based on a fiberoptic sensor called the fibre Bragg grating

Traditional Downhole Cable | AFL EMEA

AFL's Traditional Downhole Cable is designed to perform in the well and withstand elevated temperatures, high pressure and

A Module of Fiber Optic Communication for High-Temperature Downhole ...

Compared to traditional downhole transmission methods, fiber optic communication enables real-time, high data rate transmission.

Distributed Temperature Sensing (DTS) | AP Sensing

Distributed Temperature Sensing (DTS) systems provide temperature information for accurate thermal monitoring, fire detection, and

Malaysia's First Real-Time Fiber Optic Logging with High-Fidelity ...

The method of simultaneously distributed fibre optic measurement of temperature and acoustics was used for the first time and

Permanent fiber-optic cable

One optical fiber provides temperature measurements every 0.5 m [about 1.6 ft] along its length, producing a profile of temperature

Downhole Cables

TEF (Fiber Optic Cables) TEF - LOW TEMPERATURE < 150° C A typical TEF cable is a tube in tube design. The inner tube is a

Multiplexed Fiber-Optic Pressure and Temperature Sensor System for

Multiplexed Fiber-Optic Pressure and Temperature Sensor System for Down-Hole Measurement Abstract: A fiber Fabry-Perot (F-P)

Fiber optics

Our proven fiber optics technologies also support point measurement pressure/temperature gauges to monitor downhole pressure

Applications of Distributed Fiber Optic Strain Sensing for Real-Time ...

This contribution focuses on the potential of real-time downhole monitoring techniques along fiber optic cables which are

High-Temperature Downhole Cable

High-Temperature Downhole Cable As the leading supplier of downhole fiber optic cable used in the oil and gas industry, AFL

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