

Morocco High-Temperature Logging Fiber Optic Cable System



AI Overview

High-temperature fiber optic cable systems in Morocco enable precise, real-time monitoring of temperature, strain, and seepage in critical infrastructure such as dams and energy wells. Overview of High-Temperature Fiber Optic Technology High-temperature fiber optic cables are designed to withstand extreme conditions, including elevated temperatures, mechanical stress, and hydrogen permeation. These cables typically feature single-mode or multimode cores with single or dual coatings, often including a hermetic carbon layer and a high-temperature acrylate layer to ensure durability and reliable signal transmission under harsh conditions. Such fibers are essential for applications where conventional sensors cannot survive, such as deep boreholes, geothermal wells, or dam embankments. Distributed Sensing Methods Modern fiber optic systems in Morocco utilize Distributed Temperature Sensing (DTS) and Distributed Acoustic Sensing (DAS) technologies. DTS measures temperature along the entire length of the fiber using Raman optical scattering, while DAS detects vibrations and acoustic signals via Rayleigh scattering. These systems provide real-time, high-resolution monitoring over kilometers of cable, enabling early detection of leaks, structural strain, or thermal anomalies. Case Study: Dar Khrofa Dam, Morocco At the Dar Khrofa earth-fill dam, a high-temperature fiber optic system was installed for seepage monitoring. The sensor cable combines glass fibers with copper strands, allowing the use of the Heat-Pulse Method to determine thermal conductivity, zero temperature, and temperature differences along the dam structure. Cables were installed at critical locations, including the "Barrage Principal" and "Digue de Col," providing continuous monitoring of temperature changes and potential seepage paths. This system demonstrates the practical application of high-

Article Content

Distributed Temperature Sensing (DTS) | AP Sensing

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

Permanent fiber-optic cable

Our standard fiber is rated 347 degF [175 degC]. We also offer a high-temperature version; designed for challenging applications with high heat (up to 572 degF [300 degC]) and hydrogen, this fiber is

Fiber Optics | GEO PSI

By pairing fiber optics with gauge sensing technology, we give you a more complete picture of downhole conditions than either technology can

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 optical fibers with a data rate of at least 10 Mbits/second each. This fiber

Production logging via coiled tubing fiber optic ...

The characteristics of optical fiber used in ACTIVE optical fiber transmission system are as follows: 1. Includes four optical fibers 2. Does not

New methods in geophysical exploration and monitoring with DTS and

Apart from boreholes, fiber-optic sensing also opens up new possibilities for geophysical measurements at surface, especially since extensive networks of fiber-optic cables for telecommunication and data

Bazaid et al No 1

These results demonstrate that fiber optics represents a paradigm shift in well integrity assessment, transitioning from interpretive and reactive methodologies to real-time, high-resolution, and proactive

Distributed Fiber

In the past 10 years, with the improvement of cable reliability, the feasibility of long-term sensing of transient production logging has been ensured . This paper argues that the fiber optic sensing

Innovative World Class Downhole Fiber Optics

Monitoring systems include custom fiber optic cables suitable for any downhole environment; along with cable protection and a variety of temporary and

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

Also, fiber optics cables can be prone to damage, especially at high-temperature high pressure (HPHT) zone, which could provide tremendous data transmissibility.

Bazaid et al No 1

Specifically, we highlight the diagnostic power of distributed temperature sensing (DTS) and distributed acoustic sensing (DAS) in two real-world field applications. In each case, traditional tools failed to

Fiber Optic Distributed Temperature Sensing | US EPA

Basic Concepts Analogous to how thermal infrared is used to identify and map bank and water-surface temperature anomalies, fiber-optic distributed

Real-time fiber-optic interpretation and analysis

At the heart of this system is Optiq real-time (RT) fiber-optic interpretation and analysis, which transforms raw distributed temperature, acoustic and strain

Distributed Temperature Sensing (DTS) | AP Sensing

Distributed Temperature Sensing Technology Distributed Temperature Sensing (DTS) systems provide temperature information for accurate thermal monitoring,

Fibre Optic Seepage monitoring system at Dar Khrofa Dam, Morocco

2 Further, a customized software for the monitoring system was installed, which is able to automatically monitor the temperatures at “Barrage Principal” and “Digue de Col” and to detect anomalies.

Design and Experimental Research of a Fiber-Optic ...

The experimental results demonstrated that this fiber-optic communication system is capable of working steadily over a long period of time in harsh environments around 155°C to realize

Borehole Optical Fibre Distributed Temperature Sensing

This expertise helps to locate and monitor geothermal installations as well as observe diverse aspects of natural and man-made thermal effects.

SUBSEA FIBER OPTIC SYSTEMS MEET THE CHALLENGES OF

Jérémy Calac, Product Manager – Optic & Signal Systems TE Connectivity – Aerospace, Defense & Marine Subsea Fiber Optics Systems AS OFFSHORE PETROLEUM EXPLORATION AND

Optical fiber logging cable Special cable

Optical fiber logging cables are also designed to withstand high temperatures and pressures, making them suitable for use in deep and high

Wireline Fiber Optic Cable | Fibercore

Fibercore, in conjunction with selected partners, offer wireline logging cables that utilize Fibercore's hydrogen resistant, high temperature fibers. The optical fibers

Well Integrity Leak Diagnostic Using Fiber-Optic Distributed ...

Request PDF | Well Integrity Leak Diagnostic Using Fiber-Optic Distributed Temperature Sensing and Production Logging | Fiber optics has many applications in the oil and gas industry. In

Cable Installation Considerations for Structure Monitoring

The most prevalent sensing technology for structure monitoring applications is DSS, which monitors strain related to mechanical loads of structures. Cables for DSS must be designed and installed in a

CT logging service leverages powers of fiber-optic

A natural evolution of e-coil, the replacement of the armored logging cable with a thin fiber-optic data conduit resulted in the development of Fiber

Fiber Optic Sensor

Fiber optic sensors are defined as devices that utilize optical fibers to measure a variety of stimuli, including mechanical, thermal, electromagnetic, radiation, chemical, and flow characteristics. They

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 for the continued use of fiber-optic communication for in-well applications.

The High-Temperature Resistant Well Logging Optical Cable

The range of cables includes metallic and dielectric cables that cover the fiber up to several hundred fibers. Resistant to high temperatures. Prevents loss of hydrogen in the optical cable. Excellent

Wireline Fiber Optic Cable | Fibercore

Wireline Fiber Optic Cable Fibercore, in conjunction with selected partners, offer wireline logging cables that utilize Fibercore's hydrogen resistant, high

FBR CABLES – Fibre Optic Cable Manufacturer in

FBR CABLES designs and manufactures high-performance fibre optic cables in Morocco for operators, integrators and FTTH projects. Backed by advanced

Fiber Optic Model Based Flow Quantification Enhancing Geothermal Systems

The glass fiber itself acts as a dense sensor array, exhibiting high sensitivity to minute variations in strain or temperature fields, enabling it to withstand the harsh conditions encountered in geothermal wells.

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.introspec.co.za>

Email: info@introspec.co.za

Phone: +27 73 849 2156

Address: 25 Riebeek Street, Cape Town, 8001, South Africa

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