

Principle of Lao Multimode Well Logging Optical Cable



Overview

This study presents the evolution of downhole fiber optics to a new hybrid electro-optical cable for coiled tubing (CT) applications. The optical fibers enable optical communication and distributed measurements such as distributed temperature and acoustic sensing. Paper presented at the SPE/ICoTA Well Intervention Conference and Exhibition, The Woodlands, Texas, USA, March 2020. The location of petroleum reserves requires an understanding of the nature of the rocks in which these reserves occur, and well logs are one of the primary sources. Permanent downhole fiber-optic cables are critical infrastructure in wellbore monitoring systems, ensuring reliable transmission of data for applications such as distributed temperature, acoustic, and strain sensing (DTS, DAS, and DSS)—all with one 1/4-in control line. These monitoring systems help. Highlights □ DAS uses optical fiber cable as distributed sensors for borehole seismic signals □ DAS is a viable alternative to downhole geophone arrays for borehole seismic survey □ It can dramatically reduce operating time required for a borehole seismic survey □ It can achieve much higher spatial. Well logging, also known as borehole logging is the practice of making a detailed record (a well log) of the geologic

formations penetrated by a borehole. DAS, as fiber optic technology examining.

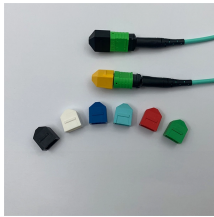
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Distributed acoustic sensing (DAS) is a novel technology that uses an optical fiber cable as a sensor for acoustic signals and can take almost any downhole fiber-optic installation or deployment and turn the ...



This review examines the most widely used fiber optic cables employed for DAS acquisition, namely Single-Mode Fiber (SMF) and Multi-Mode Fiber (MMF), with the different ...



Well logging is a means of recording the physical, acoustic and electrical properties of the rocks penetrated by a well. It is carried out by service companies, which work under contract for the oil ...



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This technique provides similar well information to conventional wireline logging but instead of sensors being lowered into the well at the end of wireline cable, the sensors are integrated into the drill string ...



To further enhance reliability, the cable is manufactured with controlled overstressing. Designed to prestress the cable assembly during fabrication, this process ensures that the fibers remain strain ...



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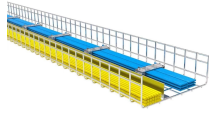
Signal transmission over the cable may be in analog or digital form. The cable is also used to transmit the electrical power from the surface to the downhole tools.



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The ability to deploy optical fibers into a well, either as a cable based intervention or as part of a completion string, allows for the entire wellbore to be surveyed with every source activation.



This study proposes a borehole zone feature alignment framework to perform cross-modality registration between the point clouds of the borehole walls and their corresponding intensities.

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