

## **Next Generation Electrical and Optical Cable Termination Systems for the Drilling Industry**

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### **Abstract**

The use of deepwater drilling systems has increased dramatically over the last few years and with this so has the need for ultra-high reliability of the control and monitoring systems. The cost of deepwater drilling operations is very high and the time taken to install or retrieve failed equipment has a huge impact on the schedule and hence cost.

The cables and terminations required for subsea control and monitoring systems can be vulnerable to the rigorous operations involved and various operators have seized many initiatives to optimize designs and minimize operational variations of inventory in order to maximize up-time and reduce operational costs for repair.

Drilling in deeper waters pushes the limitations of existing umbilical cable and connectors. The demand for smaller cable connectors that are capable of passing fiber optic communications with very low loss, as well as electrical power and communications, at increased levels of reliability, has driven the development of the next-generation of cable termination systems.

This paper presents an outline of work conducted in optimizing existing field-proven designs by working closely with drilling contractors and drilling controls manufacturers to produce next-generation cable-termination technology suitable for electrical, optical and hybrid cable solutions. It includes connectorization of terminations, use of positive pressure compensation systems, field installable, testable and deployable systems and break-way units. Also included is a universal joint bend restrictor that allows cable bending and strain-relief through restricted-space areas and proper selection of materials.

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