OneSubsea
A Schlumberger Company

Tree Instrumentation Horizontal Electrical Feedthrough System

Diamould electrical connectors

APPLICATIONS

- HPHT electrical feedthrough for subsea horizontal trees

ADVANTAGES

- Protected male pin for corrosion protection when demated
- Electron-beam-welded electrical pressure barriers that eliminate requirement for O-rings
- Tertiary electrical insulation system for improved insulation and temperature
- Crimp termination technology that eliminates soldering
- Lower tubing hanger connections rated to 350 degF [177 degC]
- Design based on proven vertical electrical feedthrough system (EFS) technology used in more than 1,000 installed subsea trees
- Barriers qualified to API Spec 6A Product Specification Level (PSL) 3G

The tree instrumentation horizontal EFS in the OneSubsea portfolio of Diamould* electrical connectors has been developed with the highest pressure and temperature ratings in the market, providing an alternative to industry-standard horizontal single contacts. The technology addresses some of the temperature limitations of the lower tubing hanger and electrical feedthrough pressure barriers for well integrity.

Based on patented and field-proven wet-mateable technology and cable termination methods, the tree instrumentation horizontal EFS provides all the functionality expected from an industry standard plus some differentiating features, developed to improve reliability and long-term performance.

Protected male pins dielectric-filled wiper

Male pins are protected in dielectric-filled wipers, increasing the electrical tracking distance to earth as well as improving integrity and reliability. This feature provides mechanical and corrosion protection to the demated male contact pin.

Crimp termination technology

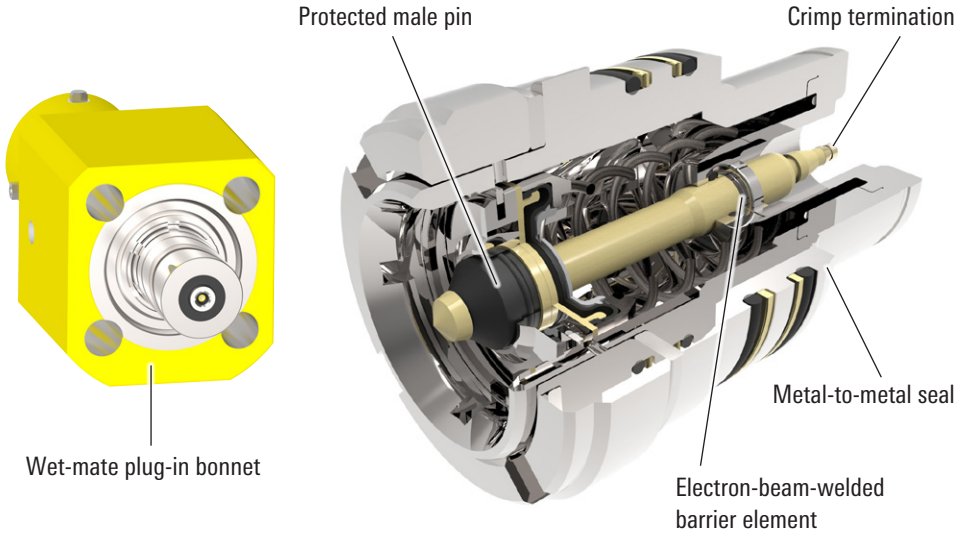
Unique and reliable crimp and latch boot technology provides a clean, repeatable means of cable termination, eliminating the requirement for soldered terminations and potential quality issues.

Electron-beam-welded pressure barrier

When used for long-term sealing, O-rings are subject to compression set and decompression damage. Electrical pressure barriers are qualified to API Spec 6A PSL 3G for well integrity, eliminating the need for O-rings and elastomers as a long-term seal solution in critical wellhead applications.

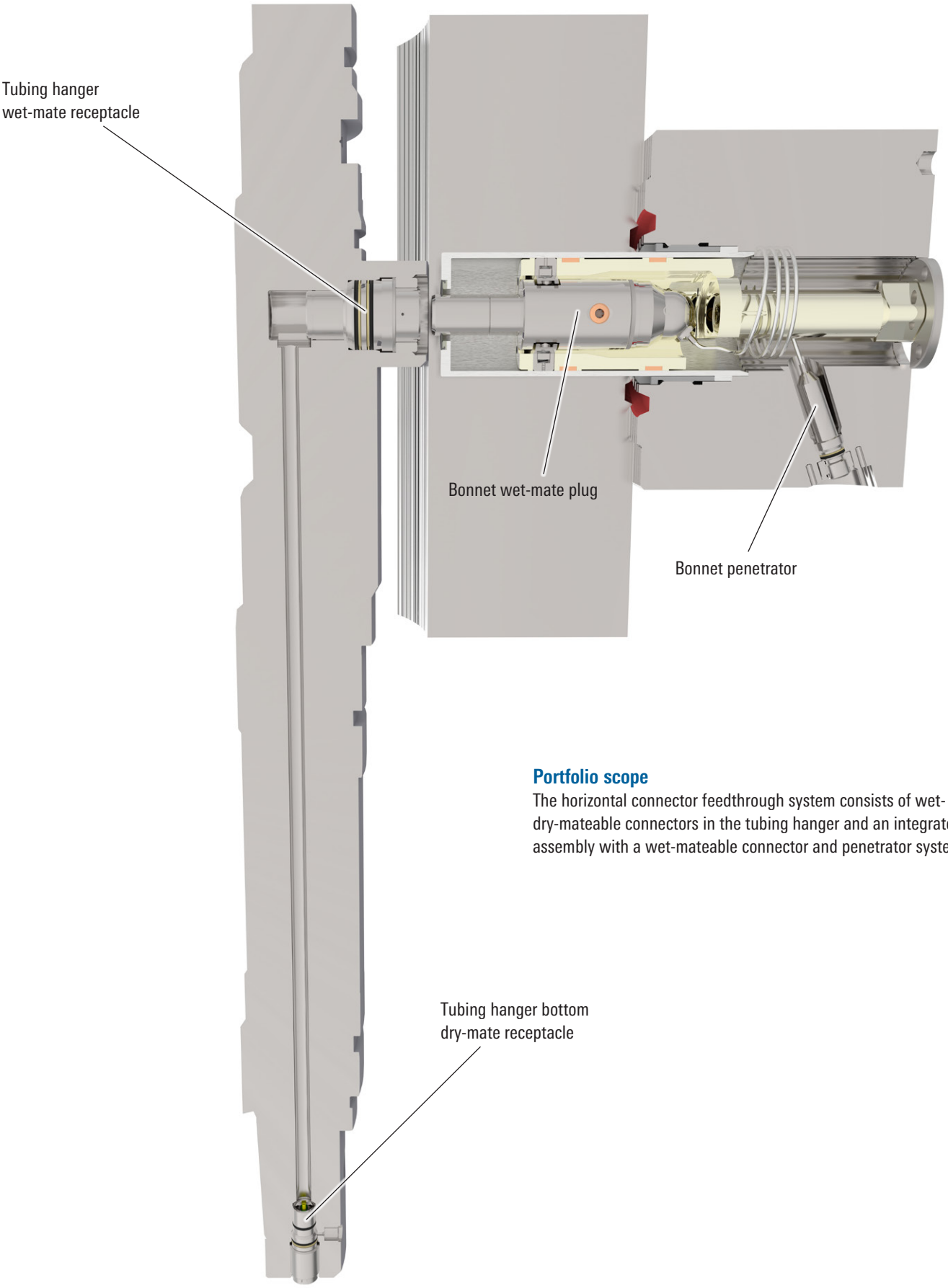
High-temperature tubing hanger connectivity

The dry-mate connection system at the bottom of the tubing hanger feedthrough is developed and qualified for 350-degF operation for scenarios with high-temperature production flow. Connector halves are individually packaged and supplied with protective caps and installation instructions.



Bonnet wet-mate plug system and tubing hanger wet-mate receptacle.

Tree Instrumentation Horizontal Electrical Feedthrough System



Portfolio scope

The horizontal connector feedthrough system consists of wet- and dry-mateable connectors in the tubing hanger and an integrated bonnet assembly with a wet-mateable connector and penetrator system.

Tree Instrumentation Horizontal Electrical Feedthrough System

Mechanical and Environmental Specifications	
Operating temperature range, degF [degC]	
Tubing hanger wet-mateable electrical connector and bonnet assembly	0 to 302 [–18 to 150]
Tubing hanger dry-mateable electrical connector	0 to 350 [–18 to 177]
Storage temperature, degF [degC]	–40 to 122 [–40 to 50]
Maximum operating pressure, psi [MPa]	15,000 [103]
Rated water depth, ft [m]	14,760 [4,500]
Number of mating cycles	100
Design life, yr	30
Electrical Specifications	
Voltage rating, V DC	1,000
Insulation resistance at 68 degF [20 degC], Gohm	>500
Materials	
Connector housings	Super duplex stainless steel and INCONEL® 625
Contacts	Gold-plated COLSIBRO® copper alloy
Insulation	Polyetheretherketone (PEEK-HT®)
Sealing systems	Bespoke FKM and FFKM compounds
Qualification Compliance	
Intelligent Well Interface Standardization Recommended Practice (IWIS RP) A2	
ISO 1368-4 (API Spec 17D)	
ISO 10423 (API Spec 6A)	

onesubsea.slb.com

OneSubsea
A Schlumberger Company