RMS pumptools

WellConnect™

Subsea WHO Electrical Penetrator - V1

The Wellhead Outlet (WHO) Penetrator is a Dry Mateable Subsea Electrical Connector designed to provide continuous electrical connection through Wellhead equipment. Typically this will be from a Tree mounted Wet mateable Connector to a Diver/ROV Connector situated at the Junction Box. The Connector is mounted to a Flange which is then mounted to a pre-machined face on the Wellhead equipment. The mating half of the Connector is terminated to an Oil Filled Subsea Jumper via an Omnitec Mk 2 interface or Subsea Connector.

Operational Requirements

Location within Completion:	Subsea, Wellhead
Rated Pressure:	15,000 Psi
Test Pressure:	22,500 Psi
Working Temperature Range:	0ºF to 300ºF (-18ºC to 150ºC)
Storage Temperature Range:	-40ºF to 158ºF (-40ºC to 70ºC)
Deployment Water Depth:	0-10,000ft (0-3,048m)

Mechanical Requirements

Crimp Termination Strength:	>75% UTS of Cable
Cable Pull Out Force:	>1300 lbf (5783N)
Connection Cycle Life:	>100
Sealing:	M-M Primary, Elastomeric Secondary
Orientation:	Keyed interfaces

Electrical Specification

Maximum Working Voltage:	1000 Vdc
Test Voltage:	2500 Vdc
Maximum Working Current:	5A
Max Contact Resistance at 20ºC:	<2.5m Ω
Insulation Resistance at 20ºC:	> 10G Ω
Insulation Resistance at 121ºC:	> 500M Ω
Number of Contacts:	2

Electrical Insulation Thermoplastic, Elastomer or Dielectric Fluid

Material Specification

Housing Options:	Stainless Steel 316 SAF 2205, 17-4PH Stainless Steel or HS Cupronickel in compliance with ISO15156/NACE MR0175 Contact Gold Plated Copper Alloy
Insulation:	PEEK 450G or Equivalent
Seal Options:	Hydrogenated Nitrile Rubber, Flurosilicone, Rubber or Silicone

Design Philosophy

Ease of Termination
Electrical Contacts: 1+1 (1 live +1 earth)
Crimp Termination
Pressure Testable
Independent Design Review Validation

Interfaces

WHO Interface API and Grayloc Sealing Flanges, as per customers requirements.
Including as minimum; 1-11/16", 2-1/16" - API BX 150, 152 Ring
Tree Cable Termination 1/8" Encapsulated/Hydraulic Tube or 1/4" Encapsulated/Hydraulic Tube
Oil Filled Jumper/Hose Termination Omnitec Mk 2 Fitting or Subsea Connector

Qualification Testing

Contact Resistance
Insulation Resistance
Proof Voltage
Hydrostatic Pressure Test
PR2 Test (Pressure & Thermal Cycle)
Vibration Test
Gas Test
Reverse Pressure Test
Individual Seal Test

Key Performance Features

Flexible Design Suiting any Wellhead Prep
Ease of termination
Earth Continuity
2 Live Contacts