

SEACON ADVANCED PRODUCTS, LLC PRODUCT DATASHEET

Introducing the Hybrid **HYDRALIGHT**

THE HYBRALIGHT

6 TO 48 CHANNEL APC OPTICAL & 1 TO 4 CHANNEL 1kVAC ELECTRICAL UNDERWATER MATEABLE CONNECTOR



THE HYBRALIGHT, 6 to 48 channel APC optical & 1 to 4 channel 1kVAC electrical underwater mateable connector

DESCRIPTION

The **HYBRALIGHT** is a combination of 2nd and 3rd generation underwater mateable technologies; the successful **HYDRALIGHT** APC optical connectors combined with the **CM2000** electrical connectors. The significant advantage of this hybrid design is that it uses the existing and field proven optical elements without compromising their design or integrity by adding the 2mm **CM2000** contacts (rated at 1kVAC pin-to-shell and 10 amps) to the outside of the **HYDRALIGHT** body. The connector body selected is the next generation 48-channel APC **HYDRALIGHT**, as we move forward into Angle Polished Contact (APC) technology with our wet-mate connectors.

KEY FEATURES

- Qualified to 450 bar (6,525psi)
- Field proven sealing mechanisms
- Oil-filled and pressure-balanced
- ROV operable interface
- Linear latch and de-latch
- Standard pressure balanced MKII oil-filled hose interface
- Minimum number mate-cycles of 100
- Patented design features

OPTICAL CONNECTOR ELEMENT

- Over 5,001 **HYDRALIGHT** connectors sold to over 25 customers
- Modular optical contacts from 6 to 48 Angle Polished Contacts (APC) optical channels
- Average Insertion Loss of better than 0.3dB (0.5dB maximum)
- Average Back Reflection of better than -65dB (-45dB maximum)
- Single-mode or multi-mode fiber
- Coupling with "joined chamber"

ELECTRICAL CONNECTOR ELEMENT

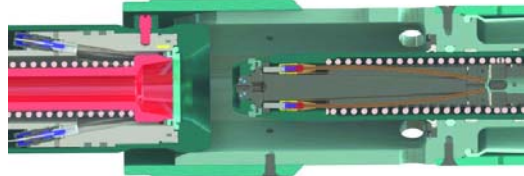
- Over 3,109 **CM2000** connectors sold to over 60 customers
- Modular electrical contacts from 1 to 4
- Voltage rating to 1kVAC pin-to-shell
- Current rating 10 amps

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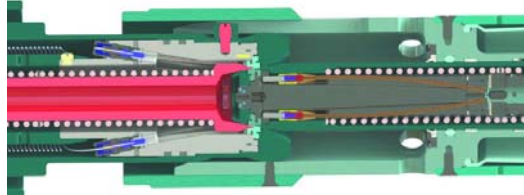
PRINCIPLE OF OPERATION OF WET-MATE OPTIC

The critical fiber-to-fiber joint is made without exposure to external contamination in a harsh subsea environment. This is achieved as both ends of the optical termination are protected from seawater, sand and silt by being enclosed within separate, oil-filled and pressure compensated chambers. The sequence of operation is as follows:

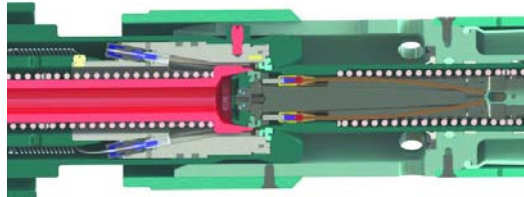
The first stage is the 'physical alignment' of the two connector halves. The receptacle is shown on the left and the plug on the right.



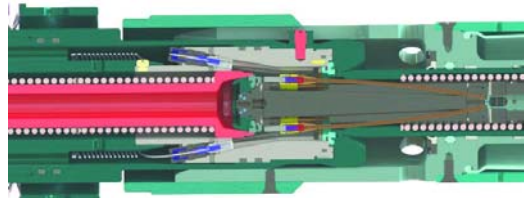
The next step is the 'front seals' of each connector half contact and engage on their respective other half.



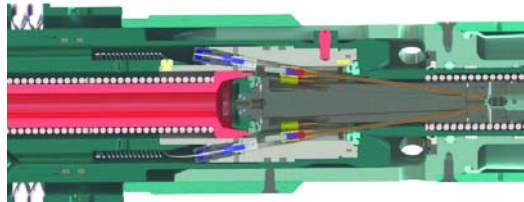
Continued mating 'squeezes out all external fluids and contaminants' as the connector halves seal against each other.



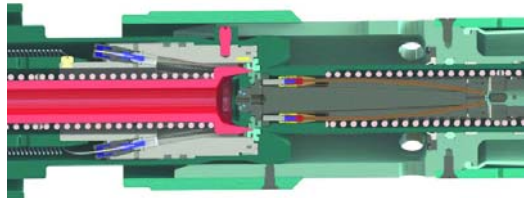
The two connector halves then open up into a single patented 'joined chamber'.



The connectors continue to move and the flexible contact guide tubes splay and align via guide-ways in their opposite half, which facilitates the coupling of the optical ferrules within the benign oil-filled environment.



The connector is fully mated.

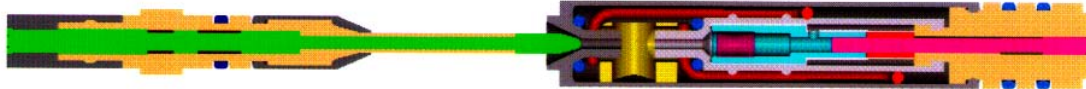


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PRINCIPLE OF OPERATION OF WET-MATE ELECTRIC

The critical electrical contact is made without exposure to external contamination in a harsh subsea environment. This is achieved as described by the following mating sequence:

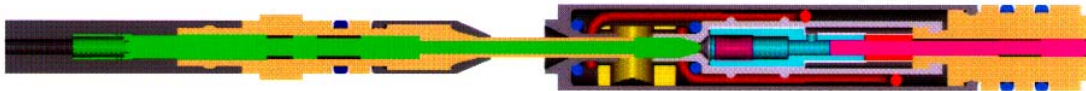
Step 1: The contact pin enters the outer bladder entry of the receptacle contact.



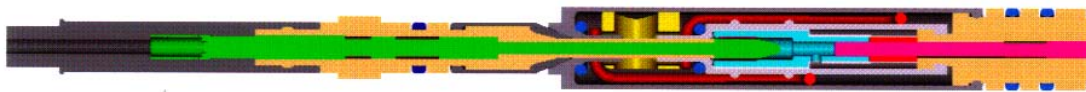
Step 2: The contact pin is wiped and bathed in dielectric fluid as the entry throat maintains a force around the pin ensuring a secure seal.



Step 3: The contact pin continues and enters a second inner bladder entry and is wiped and bathed in dielectric fluid again.



Step 4: The pin engages with the mating socket within the dielectric filled inner bladder enclosure.



Mated Contact: During and after the mating activity, two seals are created and maintained around the pin contact within the oil-filled and pressure-compensated bladders.

QUALITY

- SEACON Advanced Products, LLC operate a Quality Management System certified to ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007.



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