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New Product Developments Newsletter

SUMMER 2008

Welcome to this special edition of the SEA CON® Group newsletter which contains all of the latest product developments that have taken place across all divisions within the SEA CON® Group. We hope you enjoy reading this newsletter and would welcome any comments that you wish to make. If you would like to receive further information on any of our products or services then please contact us. Tel+1 (619) 562-7071 or e-mail seacon@seacon-usa.com

Successful Delivery for SEA CON (europe) Ltd

SEA CON (europe) Ltd were approached by a leading oil and gas products and services provider in downstream applications with an intriguing challenge.

SEA CON® were tasked with providing a connectorized solution for an electro-optic hybrid sub-sea umbilical with some very stringent requirements; one of which was that the optical terminations were to show zero degradation when subjected to deep sea pressures. The lead time for the whole project was subjected to very truncated timescales with the delivery date being of the essence. The customer was anxious that SEA CON (europe) Ltd take on the challenge as other connector suppliers had declined. The requirement was for 3 field installable connectors, each one containing 76 electrical and 8 optical contacts terminating to 4 separate interfaces along with associated test connectors and jumpers.

A series of project feasibility and risk assessment meetings were hastily convened by SEA CON®. The outcome of which was that by utilizing the highly successful MØØ and

OPTI-CON series of connectors combined within one large field installable connector, the task would be achievable but with no margin for error. Detailed planning, control and all party co-operation would be paramount to the project's success.

Each connector contained over 190 parts, 70% of which required modification, design and manufacture to meet the customer's require-

ments. With a purchase order placed on the 1st of November 2007 and a delivery date of 29th of January 2008 this gave SEA CON® just 12 weeks to complete the project.

It is with thanks to our design, machine shop, production, purchasing, quality control, stores and the SEA CON® supply chain that the project was delivered ahead of schedule on the 18th January 2008.



New Water Blocked All-Wet Connector

As electronics become more complex and have to withstand ever increasing pressures, SEA CON® has introduced a fully water blocked FAWL connector to its ALL-WET connector range.

Developed for a Tow Fish application, SEA CON Global designed the connector to accommodate accidental removal of the connector head in the unlikely event the Tow Fish was damaged or snagged during operation and not allowing for any water ingress into the Tow Fish electronics housing. Even though the Tow Fish was rated to 2,000 meters water depth, the connectors were tested to approximately 7,000 meters water depth (10,000 psi). The connector achieves this additional capability by incorporating a small water blocked GRE (Glass Reinforced Epoxy) insert into the connector body which acts as a physical water block even if the connector molding is sheared above the metal bulkhead.



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New MIN-D/MIN-E Connectors

Responding to customer requirements for smaller high reliability connectors, SEA CON® has recently introduced two new shell sizes to its extremely popular MINI-CON series.

The new MIN-D and MIN-E connectors fulfil the need for small diameter and light weight connectors whilst maintaining the design qualities of the well established MINI-CON range.

With many key features including proven reliability and a pressure rating of up to 16,000



MIN-D and MIN-E Connectors

psi, these connectors are suitable for many applications such as ROV systems and diver communications and have been subjected to a number of additional tests including:

Environmental

- Salt Spray (Corrosion) in accordance with MIL-STD-202, Method 101.
- Humidity (Steady State) in accordance with MIL-STD-202, Method 103.
- Thermal Shock - in accordance with MIL-STD-202, Method 107.
- Hydrostatic Pressure - in accordance with MIL-STD-1344, Method 1006.

Physical

- Underwater Explosion Shock in accordance with MIL-S-901, High Impact, Heavy Weight.
- Vibration (Mechanical) in accordance with MIL-STD-167, Type 1.

Electrical

- Dielectric Withstanding Voltage in accordance with MIL-STD-202, Method 301.
- Insulation Resistance in accordance with MIL-STD-202, Method 302.

Ethernet Connector Update

To fulfill an ever increasing need in the industry for Ethernet inter-connections, SEA CON® now offers a range of high integrity dry-mate and wet-mate connector solutions for Cat5, Cat5e and Cat6 applications.

These solutions utilize already established and widely used connector ranges that SEA CON® has been offering for many years, but now with the addition of specialized termination methods that enable their operation within Ethernet systems.

Whilst SEA CON® has identified harsh environment cables for use with the connectors selected as Cat5 and Cat5e compliant, SEA CON® is already working to develop a rugged,

harsh environment Cat6 cable. Please contact SEA CON® for further information.



Ethernet Connectors

New Rubber Molded 'T' Connector Series

SEA CON Global has developed a splash proof connector specifically for in-ground installations.

This new rubber molded 'T' connector utilizes some of our existing connector technology by incorporating extended Micro WET-CON sockets and 3 key ways to avoid mis-alignment when mounting the bulkhead. Designed for installation under asphalt, this series is currently being used on lights for crosswalks.

For further information please contact SEA CON Global Production at sales@seaconglobal.com



New Rubber Molded 'T' Connector Series

GLOBE-CON

Underwater Electrical Dry-Mate Connectors

SEA CON® is pleased to announce the release of a new connector range.

Originally developed for a major offshore development project, the GLOBE-CON series is a small diameter, dry-mate, metal shell connector. The Bulkhead Connector Receptacle (BCR) is manufactured from 316 Stainless Steel with a GRE (Glass Reinforced Epoxy) insert utilizing gold plated contacts and Viton o-rings. The Cable Connector Plug (CCP) is molded in Neoprene to standard or custom cable lengths upon request, although other component materials are available for high temperature and high pressure applications. This connector design also houses a spring ring which prevents the engaging nut from loosening under vibration.



GLOBE-CON Connector Series

The GLOBE-CON series is currently available in 2 shell sizes with up to 12 contacts, however more configurations are due to be added to the range at a later date. Sturdy and robust, this connector has the ability to withstand temperatures of up to 140 degrees Fahrenheit with a pressure rating of 10,000 psi (22,500ft/7,000m) making it suitable for many applications including ROV's, Underwater Cameras, Telecommunications or Broadcasting Systems, Sensors, Digital Data Transmission and Acquisition.

The GLOBE-CON series has undergone complete Qualification testing including:

- Insulation resistance testing at >200 meg-ohms @ 300 VDC.
- Pressure testing to 10,000 psi.
- Durability testing with 250 mate and de-mate cycles with no change in resistance or IR readings.

For further information please contact SEA CON Global Production at sales@seaconglobal.com

NEW FIELD INSTALLABLE, HIGH CURRENT, SINGLE CONDUCTOR CONNECTOR

SEA CON® is pleased to announce the release of its new high current single pin slip-on connector range.

Specifically designed to meet a requirement to connectorize high power applications in the field without the requirement of over-molding or potting compounds, this new connector features a dual gold plated ball spring and helically wound spring contacts for high current applications. Field installable and available with 1/0 contact rated to 200 amps, a pressure rating of 10,000 psi and a design life of 20 years, this new connector design is suitable for many high power applications including pump and motor assemblies or welding cables.



Single Pin, Slip-On, Field Installable Connector

LOW COST SINGLE FIBER OPTIC CONNECTOR NOW AVAILABLE

SEA CON® is pleased to be able to offer a new low cost single fiber optic connector.

Field installable and easy to terminate, this new connector can be used for infield and emergency repairs to existing systems resulting in reduced downtime and minimum disruption to equipment or operations. Available as single mode or multi-mode, it is suitable for many applications including AUV tethers, instrumentation, surveillance or contaminated environments where fiber optics are not normally susceptible.



Low Cost Single Fiber Optic Connector

CS-MSAJ Connector Series

With ever increasing demands being placed on many applications within the Oil and Gas industry, greater challenges are being placed on connectors used within these markets.

One application facing the biggest challenges is the ROV industry as many ROV's are now being required to operate at greater depths resulting in an increase for specialized equipment. This has driven connector manufacturers to push the limitations of existing connector designs as well as developing new connector solutions to meet the specific and varied requirements of the application.

The CS-MSAJ series is the result of a collaboration between SEA CON® and C.R. Encapsulation in providing a connector that is specifically developed to meet the needs of ROV manufacturers and their equipment suppliers. Available in a standard Aluminum shell, with 3, 5 and 9 pin configurations and oil filled hose, this series provides a high specification and high integrity connector that fits the industry standard 9/16" bulkhead interface. As well as the standard configurations, these connectors are also available in alternative materials and can be molded to many standard cables.

Pressure tested to 10,000 psi, the CS-MSAJ connector range is suitable for a variety of applications including underwater cameras and lights, diver communications, recreational submersibles, towed-array cable systems, current meters, animal migration and research and food processing equipment.

For further information please contact SEA CON Global Production on +52 (664) 686-8922 or sales@seaconglobal.com



CS-MSAJ Connectors

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Forthcoming Events



OCEANS 2008

www.oceansconference.org

Quebec, Canada
Sept. 15th - 18th, 2008
Booth #520



UUVs 2008

www.uuvs.net

Southampton
Sept. 23rd - 24th, 2008
Booth #406



Weftec 2008

www.weftec.org

Chicago, Illinois
Oct. 18th - 22nd, 2008
Booth #32146



EURONAVAL 2008

www.euronaval-show.com/

Le Bourget, Paris, France
Oct. 27th - 31st, 2008
Booth #A17



OCEAN BUSINESS 2009

www.oceanbusiness.co.uk

Southampton, UK
Mar. 31st - Apr. 2nd, 2009
Booth #N6

New Micro WET-CON Split Series Available

SEA CON® has now added a range of split connectors to its popular Micro WET-CON wet-mate series.

This series of connectors was originally developed to provide all the features of the ALL-WET split series, but in a miniature industry standard configuration. The introduction of the new split connector to the Micro WET-CON range will prevent costly 'Y' assemblies and will allow ease of replacement of break-outs by the customer. This smaller connector series offers the same flexibility and reliability as SEA CON's standard rubber molded connectors, in a lightweight and user-friendly model.

Currently available in six different configurations ranging from 6 to 16 contacts rated upto 600 VDC (dependent on cable) with a mated pressure rating of 10,000 psi, the Micro WET-CON split series is suitable for a variety of applications including underwater television and lights, diver communications, submersibles and towed-array cable systems.

WET-CON, Micro WET-CON and Micro WET-CON Split Series Connector Enhancements

As part of our continuous improvement process the SEA CON® Group consistently reviews its product range through both customer feedback and internal improvements.

It is via these processes that SEA CON® identified a design enhancement to the WET-CON and Micro WET-CON connector ranges. This new design improvement has now been implemented not only across these two connector ranges, but also the new Micro WET-CON Split Series.

The design change is associated with the male pin connectors only and has been introduced to improve and extend the life of the connectors by decreasing the stresses that are applied to the sealing interface between the male contact pin and the sealing rubber around the pin during the connectors mate and de-mate cycles.

The newly designed male contact has a 'lead in' as part of the contact pin itself which replaces the current rubber 'lead in'. The introduction of the new pin removes any potential wear to the sealing interface between the male contact pin and the sealing rubber around the pin which may occur with

many repeated make and breaks of the connector pairs. The new pin will maintain the full connector sealing properties and will provide a greater life expectancy of the connectors.

The incorporation of this design change to the male pin connectors will not affect the existing female socket connectors currently being used by SEA CON's customers and therefore full intermateability will be maintained. In addition, SEA CON® would also like to confirm that pricing will not be affected.

This new pin design concept has been fully tested and has been utilized in both the U-MATE and SEA-MATE connector ranges for a number of years. Please contact SEA CON® for more information.



New Pin Change

MCAT Attachable Micro WETCON

Due to global demand to terminate standard rubber molded connectors onto specialized or customer furnished cable, SEA CON® has introduced an MCAT version of the successful Micro WET-CON connector series.

This new connector can be terminated virtually anywhere eliminating the need for shipping bulky long lengths of cable. In addition the end user is able to produce a reduced length termination without the need for additional cable splices and have one continuous cable diameter for the total length of the cable. Manufactured at SEA CON Global's facility, the first of these units have been delivered to SEA CON (europe) Ltd for installing onto sub-

sea experimental equipment to be deployed in the Mediterranean in the coming months.

The MCAT connector is fully inter-mateable with like configured Micro WET-CON inline and bulkhead connectors. For further information and for cable jacket materials that can be accommodated please contact SEA CON®.



MCAT Connector