



Omniseal Solutions
SAINT-GOBAIN

BEYOND
the boundaries of possible

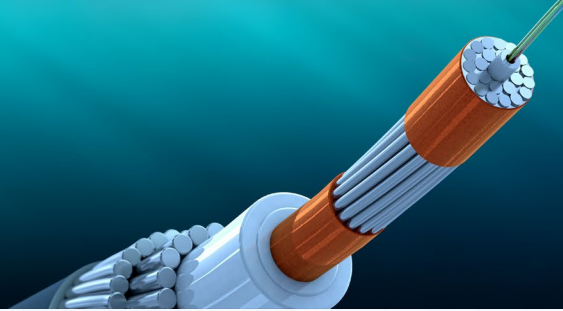


INDUSTRIAL CASE STUDY

SUBMARINE DATA CABLE SYSTEM

METAL SEALING COMPONENTS





OMNISEAL® METAL C-SEALS

Submarine Data Cable System Metal Sealing Components

Peter Horemans June 2024

INDUSTRIAL SEALING CONTROL LEAK RATE

Environment

Did you know that 99% of all data that moves around the world is operated undersea? Internet traffic is driving demand for submarine data cables, which are fiber optic cables laid on the seabed and act as a main link in data transfer between continents. Submarine or subsea cable connections can be several thousand kilometers long. Every 50 to 60 kilometers, the data signal running through the cable must be amplified by a repeater. Within these telecommunication systems, a submarine branching unit is also used to allow the cable to split and serve more than one destination, reducing network complexity and improving flexibility of the overall system and infrastructure.

Challenge

Repeaters and branch units consist of de-mountable parts and feed-throughs, which are hermetically sealed to prevent hydrogen ingress caused by seawater corrosion or electrolysis. Replacement or repair of these units are very expensive due to 8,000 meter water depth deployment, recovery and operation; and therefore should be maintenance free. The subsea telecon equipment is designed to achieve high reliability due to the following conditions:

- Minimum of 25 years service life is required
- Exposure to high levels of hydrogen, high resistance to water pressure of 8,000 meters water depth
- Helium gas testing at an equivalent pressure to the maximum depth of the submarine cable system
- Undersea impact and vibrations during the transportation and placement of the equipment on the seabed



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Solution

In the last decade, Omniseal Solutions has provided more than 1,000 metal sealing solutions to the industrial telecommunications industry – all without any failures using resilient metal C-Seals. These metal seals are custom designed for the extreme environment and manufactured in Inconel with tin or silver plating, achieving the required leak rate of 8×10^{-9} standard cc/s at 5 MPa (He).



Resilient Metal C-Seals Ensure Reliable Global Data Connections

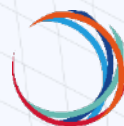
Benefits

- Hermetically sealing of removable parts , no welding needed
- Custom designed metal sealing solution, 100% in-house manufacturing
- Metal C-Seals engineered to provide reliable and high-performance sealing characteristics

Specification

- Solution** • Omniseal® Metal C-Seal
- Area** • Submarine data cables
- Material** • Inconel, with tin or silver plating
- Precision part** • Custom Metal Component
- Media Sea Water
- Temperature: 0°C to 35 °C
- Pressure: 803 Bar
- Counter face: metal to metal

Technical details



Design Expertise & Tailor-made Solutions for Your Critical Applications

Omniseal Solutions is a global engineering leader with over 65 years of historical legacy, relentlessly dedicated to the design and manufacture of precision sealing and wear control solutions that protect critical applications in the most demanding environments and passionately driven to push *Beyond the Boundaries of Possible*.



Contact Our Expert

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