



**COPPER BERYLLIUM APPLICATION:
TELECOMMUNICATIONS**

Profile: Undersea Repeater Housings

Producers of undersea cable for transcontinental fiber optic telecommunications provide infrastructure for reliable, secure, and cost effective voice and broadband transmission. Producers include Tyco Telecommunications, NEC Corporation, Alcatel-Lucent, and others. In addition to this commercial telecom work, these venerable manufacturers support the world's disaster support systems with oil and gas communication linkages, earthquake monitoring and early warning systems, undersea robotics, climate research support, and more. We highlight one example.

CHALLENGE:

Advance warning of a major undersea earthquake, in collaboration with other safety systems, can prevent the potential loss of life. Slowing or stopping trains, shutting down natural gas pipelines, cycling down machinery and coordinating traffic signals are some of the mitigating steps that can transpire with just 60 seconds warning of a seismic event. Undersea telecom companies have been contracted to design and install subsea seismic monitoring arrays near the boundaries of tectonic plates.

SOLUTION:

Materion Brush Performance Alloys' copper beryllium alloy is used in arrays to house sensitive electronic equipment as well as the photonic telemetry systems that provide the real time warning to onshore monitoring stations. With decades of service sheltering delicate optical amplification systems used in undersea fiber optic cables, copper beryllium provides unquestioned reliability for components immersed in seawater. This reliability comes from the alloy's ability to withstand all types of undersea corrosion while also providing the performance benefits of extremely high strength, excellent elastic properties and superior thermal management. When deployed on the seabed several thousand meters below the surface, the housings have the capability to transmit signals continually for more than 25 years without requiring any maintenance.

High strength undersea repeater housings made from copper beryllium alloys are packed with amplification equipment, loaded onto cable laying ships and deployed on the seabed.

(Photos courtesy of Tyco Telecommunications)