Artel's FiberLink Ensures Reliable Audio/Data Transport for Major U.S. Shipyard

Background

General Dynamics Electric Boat has been designing and building submarines since 1899, beginning with USS Holland, the U.S. Navy's first commissioned undersea warship. Since that time, the company has maintained its dedication to delivering the most capable submarines in the world by emphasizing technical excellence, innovation, and responsiveness to customer requirements. This emphasis enables Electric Boat to consistently develop and integrate complex systems and to deliver a long line of first-of-a-kind ships to the Navy.

Challenge

General Dynamics Electric Boat already uses fiber to enable audio and data transport for use in a large-scale 24/7 emergency system at its shipyard in Groton, Connecticut. The Casualty Control (CASCON) System is mandated by the U.S. Navy to be operational during a submarine's construction. Unsatisfied with the performance of its existing fiber transport equipment, however, the company sought another solution that would accommodate the unique signal types involved in this project — audio and RS data over multimode fiber — while improving signal integrity and overall system reliability.

Solution

Thanks to its high capacity, light weight, low loss, reliability over shorter distances, natural immunity to electrical interference, and high level of data security, multi-mode fiber is an ideal choice for data and audio transport across an ever-changing industrial environment.

To take full advantage of the multi-mode fiber backbone within its CASCON System design, General Dynamics Electric Boat upgraded its fiber transport systems with the installation of Artel's FiberLink 5200/5201 systems, which support bidirectional audio, RS-type data, Ethernet, and contact closure over a single fiber transmitter/receiver pair.

In addition to ensuring stable, predictable, long-term performance, the FL5200 series readily handles the multiple signal types being transmitted over fiber to support this vital, and mandated, shipyard safety system. General Dynamics Electric Boat has 16 pairs of FL5200/5201 units that handle audio and RS-485 traffic from a central controlling station to 16 independent worksites throughout the shipyard. Each worksite has up to 20 emergency alert boxes, for a shipyard potential of 320. These boxes allow anyone, in an emergency, to pull a fire alarm and communicate with a specially trained Central CASCON operator.

"The importance of this upgrade can't be stressed enough. When our original fiber transport system was failing regularly, all construction in the shipyard came to a halt. Not only did construction stop, but it put personnel and equipment safety in jeopardy," says Patrick Casey, Senior Systems Test Engineer at General Dynamics Electric Boat. "We have fully converted our system to all Artel components, and they are functioning great. We've seen a drastic improvement, and other engineers in our group have taken notice of the success we've had with Artel and are doing their own research into converting their fiber components."

Results

By incorporating the Artel FiberLink 5200/5201 systems into the onboard fiber transport network, General Dynamics Electric Boat has resolved the signal integrity challenges in moving audio and data across its shipyard facility. As a result, the company can be confident in its ongoing ability to meet the stringent requirements of modern submarine construction.

"The successful deployment of our FiberLink 5200 series by General Dynamics Electric Boat is another telling example of how Artel helps customers to address key requirements for projects in the government space," says Paul Seiden, Artel Sales Director. "We're committed to providing reliable, high-performance fiber solutions, and it's great to see FiberLink deliver on that promise for General Dynamics Electric Boat."