Wire and Cable Technology International — November/December 2016

Meeting Increasing Demands For Broadcast & AV Applications

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The wide use of HD video, emergence of 4K and 8K ultra-high broadcast standards and increasing popularity in the audio-video sector is placing greater demands on data transmission systems. Fiber optic technology, with its ability to deliver digital, high-bandwidth and low signal-loss streams, provides an ideal solution for coping with those demands.

However, when it comes to remote broadcasting from harsh conditions, the advanced needs of permanent broadcasting studio infrastructures and the increasingly popular use of audio-video technology among businesses and government agencies, a new set of demands is being placed on the fiber optic cable industry.

Field Deployment Applications

Sporting events are among broadcast's toughest venues, requiring the rapid pulling of miles of field-deployable fiber optic cable across fences, through water, around rough-hewn rodeo arenas and along frozen ski slopes or blazing racetracks.

Remote broadcasts demand brisk deployment of dozens of strands of cable to cameras that fly over football fields, hang from cranes and are regathered and tossed into crates to be shipped to the next tough venue. Most important, in all of these harsh broadcasting environments, the technology must survive again and again.

Remote broadcasting specialists such as IMS Productions are involved with such rigorous field environments

throughout the year. Headquartered across from the famed Indianapolis Motor Speedway, IMS Productions Mobile Unit Group travels the nation in heavy-duty trucks equipped with studios and satellite uplinks that provide live production services for national sports and entertainment broadcasts and events.

“Our fleet of mobile studios travels to hundreds of events across the country throughout the year, sometimes having to set up and tear down the same day before heading to the next venue,” said Paul Nijak, IMS Productions Director of Engineering. “Even with all the rigors of meeting this schedule, remarkably little fiber cable gets broken—perhaps one or two pieces a year.”

One of IMS Productions’ typical weeks includes providing broadcast production for the Verizon IndyCar Series, in locations such as St. Petersburg, FL, USA, where the 1.8 mile, 14-turn circuit incorporates city streets and a section of airport runway where 100,000' of broadcast cable are laid behind temporary walls and fences, flown across sections of track and sometimes pulled through swamps and waterways.

Immediately following the race, IMS Productions crew will gather up the cable and head cross-country to a PBR (Professional Bull Riders) Built Ford Tough Series event, where an average of 15,000' of cable is unspooled by hand around a ring where it is exposed to considerable grime and foot traffic.

The cable that IMS Productions utilizes for all the field events it covers is deployable broadcast-quality fiber manufactured by Optical Cable Corporation (OCC), Roanoke, VA, USA. Nijak says the cable looks and feels like OCC’s acclaimed MilTac, 12-strand, field-deployable tactical grade cable, but is somewhat lower in cost.

The broadcast quality of this fiber cable is high enough to meet the 4K ultra-high-definition broadcasting standard that IMS Productions is currently field testing with Time Warner Cable Sports.

“Our installations range from extremely hot to extremely cold temperatures,” Nijak explained. “For example, this year we covered the Alberta Alpine Ski event in Calgary, Canada. At that venue, we trenched down into the snow with a chain saw to bury the cable so that groomers could pack snow over the top to help protect the cable. In total, we laid about 50,000' of OCC fiber running all the way up the side of the mountain.”

Nijak added that OCC invests time with his group, going out into the field and seeing first hand how installers handled the cable.

“OCC has also begun making its cable specifically tailored for us so that we can deploy and connect it more quickly,” Nijak said. “So, they’re partnering with us, as opposed to just saying, ‘Here’s our product, go use it.’”

Permanent Broadcast Infrastructures

Permanent broadcast fiber installations such as TV production facilities, require the pulling of cable through a conduit that will stay in place as lasting infrastructures.

Diversified, a leader in custom media-related solutions, has a deep heritage in broadcast systems. It provides design and integration services for TV stations, broadcast and cable networks, professional and collegiate sports venues and mobile production units as well as production and post-production facilities.

Many facilities require unique cable infrastructure so Diversified has a strong appreciation of the advantages fiber optic cable offers for greater durability and ease of installation.

OCC's six and 12-strand DX Series indoor/outdoor distribution cables are often a good solution for many challenging installations.

"OCC's fiber cables are very easy to pull and manage," said Justin Guzman, Project Engineer. "This saves time and keeps our projects on track."

The OCC cable has the inclusion of a rigid central strength member, which is of vital importance in permanent installations. Fiber cable is pulled through conduit and is often exposed to ten times the tension that it would normally incur.

Guzman added, "Our team has total confidence in handling OCC cable and knows signal continuity is maintained in the toughest installations."

On one project, Guzman's team had a situation where the cabling in the building needed to be plenum rated. However, the final 200' of cable was in an underground conduit that was subject to flood-out.

"For our copper cable types, we had to run both an underground-rated cable and a plenum-rated cable," Guzman explained. "Where the conduits emerged from underground, we spliced them together. For the fiber, we were able to utilize the OCC DX indoor/outdoor cable series, which met the criteria for water blocking and plenum rating. This enabled us to forgo a lot of additional fiber splicing and management."

Guzman added that the unique capabilities of OCC cable met both criteria and saved much labor and unneeded

splicing.

Expediting AV Applications

Companies large and small are dependent on using AV applications for critical services ranging from training to teleconferencing. Many of these applications require the integration of a variety of different AV devices within facilities at many geographic points. This often requires staffing installation people with installation skillsets such as crimping and soldering, particularly when various types of AV gear are not configured to work together.

When the companies transition AV facilities from analog to digital, it requires a new type of cabling to carry digital signals. This means a different type of installation technician is needed—IT integrators. These technicians have the tools and skillset required to install fiber optic cable to transport packetized data, alongside cable to power the equipment. Performing this type of installation entails pulling both types of cable, cutting it to length, terminating it and then plugging it into AV gear.

However, if this process can be simplified, installation becomes more efficient and less expensive. In some instances, OCC has provided AV users hybrid cables that included both the fiber optic and power cable all in one. Additionally, OCC has provided the cabling in kit form, with each kit containing pre-terminated, pre-cut cabling for connecting specific equipment housed in each of multiple (sometimes hundreds of) AV rooms. Each “plug & play” hybrid cable is labeled with a specific part number and each cable box would be designated for a specific AV location such as a conference room, lab or command center.

This “kitting” of the plug & play cable for specific AV room locations has allowed standard installation contractors to handle the installation rather than requiring the expertise of IT or AV contractors. This result has been a reduction of as much as 25% in installation time as well as saving significant money on labor.

Additional savings on the plug & play cable can also be realized when it is pre-terminated at the factory, which means it has also been pre-tested by factory technicians. This also provides a greater degree of reliability and reduces the time to certify the installed system.

OCC’s comprehensive line of SMPTE 311-compliant cables rounds out the company’s cable offerings, providing a range of products for a variety of audio, video and broadcast applications. www.occfiber.com.

Company Profile:

From the development of our first cables through our current product offering, which ranks among the industry's most comprehensive, Optical Cable Corporation (OCC®) is a company that provides uncompromising product quality and performance, with solutions for a multitude of market applications. OCC has earned a reputation as an industry leader, an innovator and a designer of some of the highest-performing cabling and connectivity products available. For years, OCC has been internationally recognized for pioneering the design and production of fiber optic cables. Today, OCC is internationally recognized as a leader in engineering and manufacturing a complete line of top-tier cabling and connectivity solutions, including products and solutions suitable for the most demanding applications. www.occfiber.com

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