Cabling the Data Revolution for Education

Increased reliance on connectivity demands robust fiber networking

Education is hugely important as it prepares young people for their future lives, and teaches the engineers, doctors, architects and other professionals that will shape the world in years to come. And education is often at the forefront of adopting technology that supports improved knowledge transfer and, more recently, greater elements of remote learning.

Figure 1: High speed resilient networks are important to the future of education

The use of technology in the education sector is illustrated in a survey[1] by Cambridge International based upon 20,000 teachers and students from 100 countries, which revealed that nearly half of all students use a computer in the classroom. Almost half (42%) use smartphones while a third use interactive whiteboards and 20% use a tablet. In some countries, the figures are much higher – for example, in the US 75% of students use a computer in the classroom. And the use of technology through tertiary education establishments to support areas ranging from computer science to engineering and pharmaceuticals to medicine is even greater.

The Challenge of Networking in Education

The deployment of technology means that is driving significant growth in data, with one statistic claiming that today, as much data is being generated in an hour as was generated in a year, two decades ago. And the processing, transfer and storage of this data requires robust, high-bandwidth networks – networks that demand high-performance and scalable fiber optic connectivity.

With relatively few new schools, colleges and universities being built compared to those already in existence, installing or upgrading networks often requires retrofitting into existing buildings. Invariably, this means pulling cables through conduits that may be small and often full of other, existing cabling. Clearly, thin cables with the ability to withstand tight bend radii are to be preferred here. In addition, in many cases an educational campus comprises several buildings, so any cable used must be suitable for use outdoors (between buildings) as well as indoors.

When working with high data rates in tight spaces, TiniFiber's patented Micro Armor Fiber™ Optic cable is often the best solution. This is especially true when extending existing network infrastructure in educational establishments as this innovative cable is 65% smaller in diameter and 75% lighter than normal Aluminum Interlock Armor (AIA) cable. Micro Armor Fiber can be pulled along congested conduits without excessive force and can be formed into tight bend radii where necessary. This all but eliminates the possibility of damaging the cable upon install.

Figure 2: TiniFiber's indoor / outdoor cable is ideal between buildings on an educational campus

With the smallest outside diameter of any armored cable, Micro Armor will fit where other cables will not, and leave space for future upgrades, if needed. TiniFiber's cable protects the delicate fiber optic strands inside a tightly wrapped tubular stainless steel outer coil with an inner layer of Kevlar®. This gives the cable strength while installing and then offers excellent protection against crushing, tampering and chewing by vermin once the cable has been deployed.

What's more, the small size and light weight mean that smaller vehicles can be used for transportation, getting closer to the job site and using less fuel. When on the site, the reels can be handled with less effort, making them easier to maneuver into a tight space or carry up high.

Educational establishments need network installations that will stand the test of time. For this reason, they put a lot of value the full 25-year TiniFiber warranty, which, provided that the installation firm used is registered under the TiniFiber Certified Installer (TCI) Program, comes as standard at no extra cost.

TiniFiber Range of Cables

TiniFiber offers a wide range of armored fiber optic cables to suit indoor, outdoor, or mixed use – ideal for an educational campus where there is a need for the network to span between buildings. All use cases including riser, plenum, indoor/outdoor, LSZH, and burial are catered for with a number of different jackets and colors.

To ensure that installers have high quality tools to complement their cables, TiniFiber also offers a selection of tools and accessories such as armor stripping tools, cable cutters and fusion splicers.

Figure 3: TiniFiber cable offers strength and throughput in a small diameter

The fiber heart of the cable is formed from modern bend-insensitive glass (Corning LBL G.657.A2) in two coated sizes (250 µm and 900 µm). The 900 µm tight buffer cables contain up to 24 strands while the gel-free sub-unitized 250 µm breakout style cables are available with up to 12, 24, 36, 48, 72, 96 or 144 strands.

Cost is always a factor within education where funding is often tight. Despite the strength, small diameter and high throughput, TiniFiber cables are a cost-effective solution with a low total cost of ownership.

Notes/References

1. https://www.cambridgeinternational.org/Images/514611-global-education-census-survey-report.pdf