

5 Ways Fiber Technologies Can Improve Your Bottom Line:

What Every Network Installer or Integrator Should Know

While fiber optic technologies are often discussed in terms of the value they offer network designers or end-users, the fact is that many of the fiber optic products available today offer as much – and sometimes more – benefit to network installers and integrators. From fully preterminated cabling systems to careful selection of the types of cables or field termination methods used, network installers and integrators have the opportunity to improve their business' bottom line while making value-adding improvements to the end-user customer's network by choosing the correct fiber technology.

There are five significant ways that fiber optic connectivity can improve your business without increasing operating or capital costs:

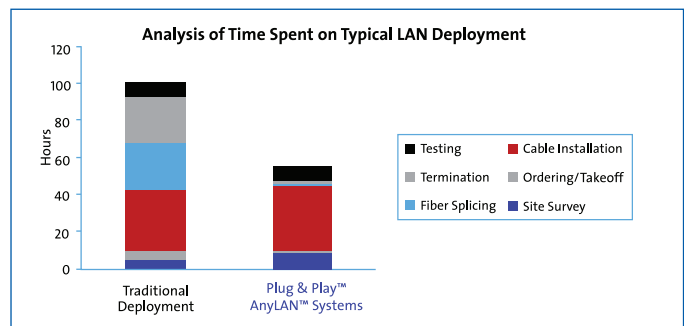
1. Reduce the total number of staff needed per project
2. Decrease investment in specialized staff or equipment
3. Reduce materials cost
4. Shrink takeoff time and complexity
5. Eliminate or reduce the need to outsource aspects of the project

Reduce the total number of staff needed per project.

By using a preterminated cabling system – cabling infrastructures that have been preterminated and tested in the manufacturing facility prior to shipment – network installers can reduce the number of personnel required at each job site. The result is the opportunity to either bid more competitively on a single project – requiring fewer personnel to do the same amount of work as a traditional installation – or bid on more projects simultaneously without increasing your staff.

In most enterprise installations, whether local area network, data center or plant floor, up to 50 percent of the total project time can be spent on termination via splicing or field connectors. In order to keep a project on schedule, a network installer may

have to deploy multiple splice or termination technicians to a single location. The project manager for one Corning Cable Systems industrial customer had multiple splice technicians working side-by-side, daily, in the main computer room to terminate the several dozen fibers aggregating at that location. By using a preterminated system, such as Plug & Play™ AnyLAN™ Systems with MTP® Connectors at the main cross-connect end, the manager could have sent out a single technician to plug the preterminated connector ends into modules and conduct the testing, taking a half day, at most. Meanwhile, her other technicians could have been deployed to other revenue-generating projects.



Decrease investment in specialized staff or equipment.

Fiber optic splicing and other more traditional methods of field termination are advanced skills that often take years of experience to perform well and, logically, draw higher labor rates. While there will, almost certainly, always be times when field splicing and termination are appropriate choices, there is a distinct economic advantage for installation or integration businesses that can use a more “generalist” staff to take on network installation projects.

A preterminated system like Plug & Play AnyLAN Systems connects so easily that it makes network connectivity something virtually any installer/integrator employee can do, regardless of skill or experience. Furthermore, as splice and connector technicians are added to the roll, this generally requires additional investment in the equipment they use,

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from fusion splicers to connector tool kits. Deploying more preterminated cabling systems enables network installers and integrators to maintain their current level of splicing and connectorization personnel and equipment without requiring additional investment when new, larger or simultaneous projects appear on the horizon.

If preterminated systems are not the infrastructure of choice for a particular installation, there are field-installable fiber optic products that can reduce dependence on specialized staff or expensive capital equipment. The skill requirements and expense of fusion splicing are relatively clear, but many installation companies continue to rely on the time-consuming process of epoxying and then hand-polishing connectors in the field, a process that can result in less than ideal outcomes even with the most experienced technician. Epoxy-and-polish connectors also take several minutes per connector to terminate, which may have a negative impact on the number of personnel required to complete the project in a timely manner.

Tip: Given the variability of hand-epoxying and -polishing, a field-polished connector will rarely, if ever, meet the end-face geometry requirements of Telcordia GR-326, even with highly skilled technicians. For more information on the importance of connector end face geometry on system performance, read Corning Cable Systems' paper "The Importance of Geometry and for Fiber Optic Connectors" (LAN-734-EN) at www.corning.com/cablesystems.

No-epoxy/no-polish (NENP) connectors, such as UniCam® Connectors, eliminate the time-consuming and skill-dependent aspects of field connectorization. A low-cost installation tool kit makes field termination as simple as strip, clean, cleave, cam and crimp – with optical performance equal to that of fusion splicing. The UniCam Pretium™ Tool Kit is simple and intuitive to use, with a "go/no-go" LED feedback light to give even the most inexperienced technician an unmistakable

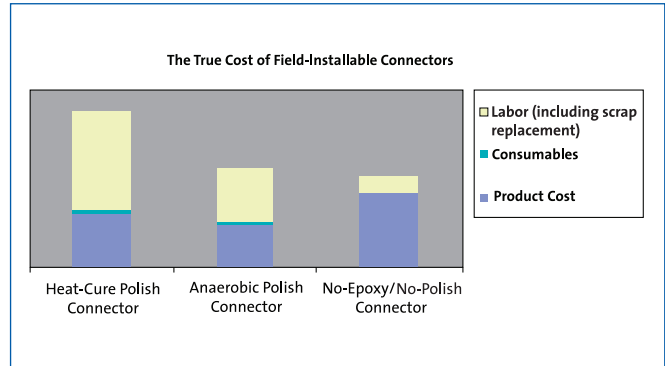
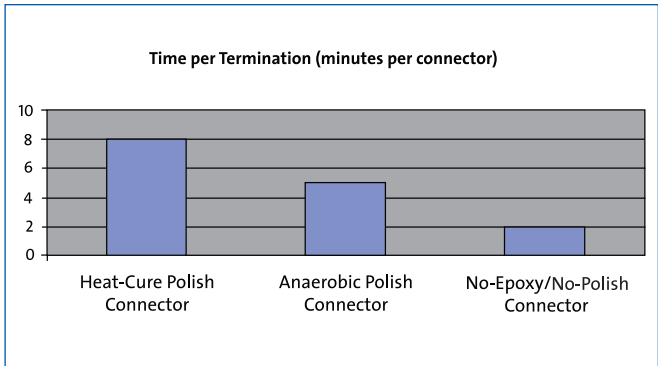
confirmation of a successful termination. Network installers and integrators can complete field terminations with fusion splice quality while deploying fewer staff, and without the need to invest in additional expensive equipment or specialized personnel.

Reduce materials cost.

In addition to reducing time and personnel required for field terminations, no-epoxy/no-polish connectors also significantly reduce materials cost for the installer/integrator. NENP connectors require no epoxy, polishing film, pucks or heat shrinks to install, materials that are an ongoing operational cost for installers.

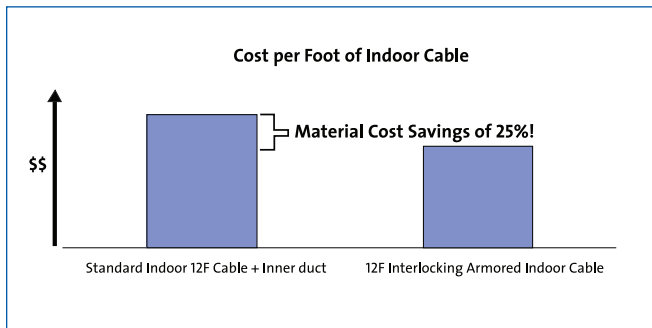
UniCam Connectors also eliminate scrap by ensuring 100 percent yield of every connector. Corning Cable Systems is able to do this in two ways: first, the easy-to-use, go/no-go installation tool immediately tells the technician if the connector has been installed properly prior to testing. In addition, Corning Cable Systems offers a 100 percent yield guarantee on all UniCam Connectors. (For more information on the yield guarantee for all UniCam Connectors, visit www.corning.com/cablesystems/unicam.) By eliminating consumables and scrap, NENP connectors are a far more cost-effective field termination method for installers, who must factor these materials and scrap into their project bids.

Fiber optic cable can also offer opportunities for materials cost reduction, allowing installers/integrators to bid more competitively on projects. For example, Corning Cable Systems offers interlocking armored indoor and indoor/outdoor cables. This flexible aluminum tape provides seven times the crush resistance of a standard cable, eliminating the need for inner duct to protect the cable during and after installation. Installers/integrators can bid on a network install with interlocking armored cable instead of standard cable and inner duct, resulting in a 25 percent per foot reduction in material cost on average.



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Shrink takeoff time and complexity.

Anyone who's spent a day (or more) with a clipboard of material lists going through project materials prior to installation, or had a project delayed a day (or more) because some necessary widget didn't make the order or ship list, knows how important a simple project takeoff can be. Whether choosing a fully preterminated system or looking more closely at the field termination product choices available, fiber optic technologies can significantly lessen the time and pain associated with project takeoff.

One of the key benefits of Plug & Play™ AnyLAN™ Systems for installers and integrators is that the entire system tests and ships as a complete – and *completed* – system. Because it is custom-engineered to the network's specific design and all termination is done at Corning Cable Systems, splice closures, connector or cable tool kits and accessories aren't needed. Imagine how much less time will be spent searching through boxes and checking off lists prior to starting installation. (Imagine how many fewer boxes of materials in general will be crowding the staging area!) For that matter, there will be no need to worry about project delays because someone forgot to put in the order for splice trays or heat shrinks while ordering the splice housing.

Plug & Play AnyLAN Systems also comes with complete documentation for this custom-engineered system. Documentation pre- and post-installation just got easier!

And Corning Cable Systems offers free design and configuration services for Plug & Play AnyLAN Systems through our Engineering Services department; a highly trained system engineer will help to configure the Plug & Play AnyLAN

System design and review the bill of materials with you prior to ordering for an additional "quality check."

Again, advantages aren't only available with preterminated solutions. It's important to look closely at the field-installable technologies you select, fully understanding that the cost and complexity they contribute often goes beyond their line item cost. Here are just a few examples:

- Heat-cure or anaerobic connectors mean with every project, project managers must ensure there is enough epoxy on the shelf (or that it hasn't expired) and plenty of polishing papers on hand. Those fusion splices require heat shrinks, glue and splice trays, not to mention maintenance. UniCam® Connectors require none of these items – nothing except what is provided within the lightweight installation tool kit.
- When evaluating hardware, don't assume that the items necessary to install it come standard. If it isn't LANscape® Solutions hardware, it may require additional part numbers (and cost) to obtain these critical pieces, such as strain-relief brackets or blank panels. Yes, even the instruction manual may have its own line item (and price!) when you purchase from some hardware manufacturers. A single part number for a piece of LANscape Solutions hardware comes with everything needed to install the hardware according to standard recommended procedures. Further easing project complexity, all LANscape Solutions hardware and accessories are designed to work together. Any panel fits any housing, rack or enclosure, whether rack-mountable or wall-mountable.

Tip: For one 144-fiber housing at a main cross-connect, you may spend another \$50 in "accessories" – things like strain-relief brackets, blank panels and instruction manuals – if you don't use LANscape Solutions hardware.

- Tight-buffered cables offer additional opportunities to reduce complexity. When terminating with field-installable connectors on a standard loose tube cable, buffer tube fan-out kits are necessary to add a protective 900 µm tubing over the 250 µm fiber strands, providing tensile strength and support to the connector being installed. Tight-buffered cables, on the other hand, add a 900 µm buffering onto each fiber strand to provide the necessary support for the connector, eliminating the need for a fan-out kit and one more line item on the bill of materials. (Corning Cable Systems

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tight-buffered cables also use a patented dual-acrylate slip layer to make cable stripping fast and easy compared with other tight-buffered cables. For more information on our TBII® Fiber buffering process and its installation advantages, visit www.corning.com/cablesystems.

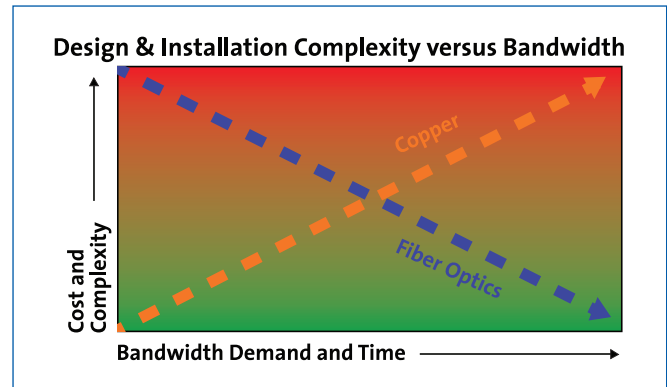
Eliminate or reduce the need to outsource aspects of the project.

For many network installers or integrators, fiber optic connectivity can be a challenge to business operations, either due to a lack of experience with fiber optics, or because their operational focus is on cable and conduit pulls versus termination. It is not unusual for an installer to outsource the termination and testing portions of a network project due to lack of experience or staff and equipment necessary to conduct the work.

First, it is important to appreciate that in the past several years, fiber optic connectivity has actually become far easier and cost-effective to deploy than copper systems. The engineering for copper technology has become increasingly complex – and therefore more challenging to install – in order to keep up with bandwidth and distance, as well as the environmental performance concerns, such as electromagnetic interference. In contrast, innovators like Corning Cable Systems have focused on making fiber optics easier and less costly to use, while effortlessly keeping up with bandwidth.

A perfect example of this is a preterminated network solution such as Plug & Play™ AnyLAN™ Systems, which connects buildings, locations and equipment as easily as connecting a garden hose. No midspan access, splicing or termination is required. UniCam® Connectors are another example of

making fiber optic connectivity so easy almost anyone can do it. The intuitive, handheld installation tool and precision cleaver virtually eliminate human variability from field termination – even the most inexperienced technician can successfully connectorize a cable using this technology.



If splicing or connectorization is not part of the typical business model for an installer or integrator, he no longer needs to outsource this portion of the project but can instead use his standard personnel to complete the network installation.

While fiber optic technologies offer great value to end-users, their advantages for network installers and integrators cannot be ignored. Fully preterminated solutions can greatly reduce cost, complexity or the need to outsource project elements, while careful consideration of the connectors, cable and hardware can also provide cost savings and simplicity benefits. These advantages enable installers and integrators to grow their business and bid more competitively on projects without negatively affecting the bottom line.

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