

Fiber Optic Training Is Free

Fiber deployers are sometimes tempted to skimp on training because it's "too expensive." A veteran trainer explains why the failure to train properly can be far more costly.

By Ian Gordon Fudge ■ *Fiberdk Denmark*

Fiber optic networks are being rolled out over the whole world today. Different countries started the rollout at different times, and Scandinavia was one of the first areas. In the beginning, Scandinavian deployers made many mistakes, but today the rollout is going well. On my travels around the world, however, I see people making many of the mistakes we made 10 years ago all over again. It is as if all deployers want to invent FTTH for themselves.

Recently, I was talking to a manager for a large national telecom operator who had tested 10 different ways of ducting (laying pipes in the ground). After several months, he had figured out the best way to do it – a pity, as I could have told him all the pros and cons in 10 minutes, having gone through the same experience in Denmark many years ago.

To install FTTH, several different types of skills are required. Technical designers must know how to design networks, choose cables and ducts and place manholes, handholes, POP stations, street cabinets and so on. Outside-plant installers must know how to lay ducts and cable poles. Fiber splicers must know how to prepare cables and splice fibers together. Premises installers must know how to make indoor installations and connect customer equipment.

Over the many years I have done FTTH training, the methods have changed. What was good practice 10 years ago is no longer good today. That's because developing best practices is easier with fiber than with copper. The behavior of copper is very dependent on the environment as well as on the installer, so if something does not work, people

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can blame it on the outside world – electrical interference, temperature variations, pressure and so on – even if the problem is with the installer. By contrast, fiber has a lifetime of well over 20 years and, if installed correctly, is immune to problems from the outside world. If something goes wrong, the fault clearly lies with the designer or installer, not with the environment.

FIBER CHALLENGES

Some of the challenges of fiber networks include

- **Designing the network and choosing the right components.** Designers who do not have a good knowledge of real-world components may design installations that cannot be built or choose materials that are not the best for getting the job done in the shortest time. In addition, people who normally sit at a drawing board often have trouble relating to real-world components.
- **Ducting.** Ducting has many ad-

vantages: It gives a great finish, it is pleasing to customers, it is easy to upgrade. However, if ducters don't use the right tools and install the ducting correctly, blowing fiber and cables through the ducts later becomes a nightmare. When ducters don't have training, blowing fiber can take two to three times as long as it should. What should have been a small investment becomes very time-consuming and expensive.

In fiber installations around the world, one set of people typically lays the ducts, and another set – often from another company – blows the fiber or cables through the ducts. If the ducts are not used right away and a problem arises when they are filled with cable, the ducting must be dug up and repaired. By that point, finding the guilty party can be difficult. For this reason, quality control is necessary at the time of handover.

- **Splicing fibers.** Some systems require two or three splices per

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customer, so laying fiber throughout a country the size of the U.S. might require 250 million splices. If the splicers are not trained correctly, the job will take too long, splices will not last long enough, fibers will break, attenuation will be too high, splicing equipment will break down – there are many possible problems, some occurring at the time of installation and some years afterward.

- **Documentation.** Documentation is required for cables, ducts, splice cassettes, POP stations and other network elements. When documentation is not done correctly, the cost of repairing or replacing a network element is much higher.
- **Outsourcing.** Many operators outsource some deployment tasks to specialized contractors. However, maintaining control of the work is important even when contractors rather than employees perform the work. Most people overestimate their own abilities – I usually say that a person who has seen a splice van drive by automatically becomes a splicing expert. To make sure their contractors are as expert as they

say they are, managers who oversee the contracts should have the skills needed to conduct pretesting and periodically check results.

TIMING OF TRAINING

When should training be done? It's best to start training for all jobs before a rollout even begins. One company that started installing an FTTH system without any training asked for quality control at the end of the job and was told, "Throw everything out and start again."

Before starting over, the operator hired my company to build a training

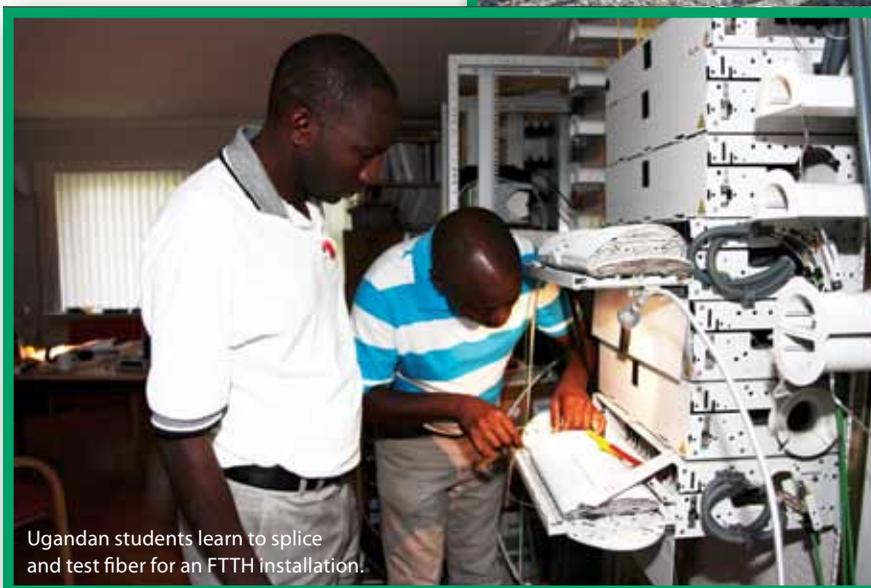
center that consisted of a town with 350 homes, seven POP stations, manholes and street cabinets. Every installer had to connect 50 houses, install cables, splice the fibers, test all fibers and, finally, connect Internet and TV (both analog and digital) to see that everything was working. The training lasted five weeks and resulted in everything being made in a new way.

Training must be undertaken not only before the rollout but during the rollout as well. Nearly everybody needs training. Training must be given in time by qualified, experienced trainers who make use of the experience gained in countries that have rolled out fiber for many years.

Managers sometimes ask, "After we train all these people and they have good skills, what's the chance that they



Tele Greenland staffers learn to blow fiber into telephone cable – a special challenge in the cold, dry climate near the Arctic Circle.



Ugandan students learn to splice and test fiber for an FTTH installation.

will leave the company?" The answer is to make sure they continue to receive training every year in new areas. This will give them a reason to stay.

Most people tell me training is very, very expensive. My answer is that it is free. The ROI for good training is fantastic. Consider a typical case – a company has to connect 250,000 customers and spends \$50,000 to \$100,000 for five weeks of training. Though this seems like a lot of money, in fact it amounts to only 20 to 40 cents per house. A good training program saves far more than that. ❖