

FIBRE DATA CABLING, A GOLDEN OPPORTUNITY FOR CONTRACTORS

by

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As the information needs of businesses and organisations continue to expand, many contractors will already be increasingly involved in installing Local Area Network cabling, running voice and data cables throughout all types of commercial, industrial and educational premises. The basic principles of installing copper data cables are little different to those needed for power; providing their installation engineers are adequately trained in the cable management techniques needed, the transition should be relatively easy for most companies. Eventually, however, having entered this new market, the opportunity to install a fibre-based network will inevitably occur, and at this point, understandable fears and concerns may well be raised when this alien technology is first considered. There is actually no need to worry; indeed, the only cause for concern is for those people who fail to embrace this new technology, for it is, without doubt, the future.

The UK leads the rest of Europe by a very wide margin in its use of fibre optic cables, the most efficient method of information transmission yet invented. More than 95% of telephone calls travel over fibre for at least part of their journey. The intrinsic advantages of fibre are well known. High bandwidth means that data transmission rates are much faster. Fibre is immune to electromagnetic interference, allowing fibre media to be installed in electrically noisy environments without the risk of signal degradation and there is no crosstalk between adjacent fibres, again preserving signal integrity. Lightning strikes are not propagated down fibre cable, removing the risk of equipment damage.

However, at the moment, fibre takes only a relatively small share of the overall data interconnect market, particularly in structured cabling LANs and other industrial applications such as shop floor data collection. Historically, this is because of higher installation costs and perceived on-site difficulties. Today, the costs are on a par with copper; indeed, the lifetime cost of ownership of a fibre-based network is actually lower than for a copper one. Also, terminating a fibre cable is as easy as doing the same on a copper one. Fibre is the best medium for all communication applications and its LAN market share is rapidly growing. Helped by recent major advances in cable and connector designs, it will grow even faster in the future.

Fibre cables are physically much smaller than copper. There are three main types: singlemode 8/125, used primarily for long distance public network telephones; multimode 50/125 and 62.5/125 for LAN & WAN applications, and 1mm plastic fibre for very short distance uses. For glass fibre cables the numbers, expressed in microns, a millionth part of a metre, refer to the diameter of the core and cladding respectively; for the plastic cable, the 1mm (1000 microns) refers to the diameter of the core.

As with copper cables, fibre media has to be terminated with suitable connectors to allow it to be used. To terminate a 50/125-fibre cable with a connector used to take some 40 minutes. It involved mixing up an epoxy adhesive, injecting just the right quantity into the body of the connector with a syringe, heat curing the joint and finally a two or three stage polishing of the end of the fibre. Not an easy or quick process, particularly on a new-build site! Now, with the latest advances, the same operation can take less than two minutes from start to finish.

In the past, it was true to say that splicing and terminating fibre cable was a relatively difficult and time consuming process which had to be carried out by skilled technicians, ideally working under laboratory conditions of cleanliness. Nowadays, sophisticated connectors and splicers are available which allow even unskilled operators, working under "on-site" conditions, to produce high quality, low loss joints and terminations on a repeatable basis in fibre cables.

For those approaching a new technology, one of the initial difficulties can be as basic as finding a good, unbiased and dispassionate source of information. As far as fibre goes, the Fibreoptic Industry Association is *the* reference source. Its Web page, www.fibreoptic.org.uk, is widely recognised as the primary source of information on fibre optics, the first port of call for anyone seeking detailed information. On average, it receives more than 50,000 hits a month from over forty countries.

The FIA was formed in the early 1990's, when it became obvious to some of the players in the new sector that their interests and needs could not be served by the existing associations of the day. It is a technically biased organisation, primarily concerned with generating Standards and Codes of Practice, existing to serve both its members and the wider fibre

optic user community. It is also very involved, in conjunction with other government and private organisation, in raising operational standards relevant to all aspects of the fibre industry. Subscription fees are low: a few hundred pounds per year, depending on the size of the member company. Membership is open to anyone with an interest in fibre: end-user, specifier, consultant, manufacturer, installer and contractor. All members of the FIA Management Council and Industry Sector Directors are unpaid volunteers from the industry, people who willingly and enthusiastically give up huge amounts of time to make the FIA work.

The most important question is, of course, 'what are the benefits of being an FIA member?' The FIA offers a large number of different services, any one of which can easily justify the annual fee. A few of the large range of services offered to the membership are outlined below.

Training

For anyone contemplating entering the fibre installation market, training is critical. The FIA is extremely active in this area, working closely with both government agencies and commercial training providers to ensure that the schemes on offer are relevant and of suitable quality. The FIA has continued to monitor this situation and has committed considerable time in contributing to a number of different initiatives that are aimed at developing skills, competence and training of personnel. There is a wide selection of programmes, courses and initiatives; some are well-established, others are recent developments.

Greater choice and flexibility also have the effect of creating confusion and uncertainty as to which is the best course of action. Do the various schemes overlap, complement or compete; are they appropriate to the individual needs? Do larger organisations outsource the training or do it in house?

One of the most common complaints one hears from all sides of industry is the difficulty in finding suitably skilled people at all levels. This is particularly true in the fast-changing fibre world, where, for example, at an operator level, new entrants to the fibre market have to teach their operators the techniques of terminating and splicing fibre cables. Even for established players, the skill requirements change rapidly as manufacturers introduce new termination and splicing techniques. With the objective of complementing the C & G theory-based knowledge with an "on-the-job" practical dimension, the FIA is working closely with TVSC to improve the take-up of NVQs in the industry. It is also represented on the management Councils of ELCIS and BICSI. The FIA has developed an 'Approved Training Provider' scheme, designed to help improve the level of training standards in the industry. Available courses cover the entire spectrum of needs from basic practical skills, through advanced testing and measurement to LAN design and implementation. A brief overview of the four main types of training program follows.

City and Guilds

The City and Guilds course 3466 has been run by accredited training providers for a number of years; it is arguably the best known qualification and is nationally recognised. It is worth noting that it is a training course on which participants learn a number of practical skills, aimed at those who will be installing and testing networks. It is a short, intensive "hands-on course": to complete the course an assessment must be taken.

The original syllabus was developed some time ago to provide installers with the necessary skills to work with the then "new" multimode fibre optic technology for datacoms. Since then a singlemode qualification has been introduced, and, more recently, a new, predominately copper-based, structured cabling installation qualification has also been added to the series.

These are excellent courses, well thought out and recommended for both those embarking on a career in network installations and for people with a degree of experience, gained perhaps in another field of cable installation such as electrical or mainstream telecommunications.

National Vocational Qualifications. (NVQs).

National Vocational Qualifications are assessment standards, unlike City and Guild Qualifications, which are training qualifications.

NVQs accredited assessors, assess the competence of an individual by a set criterion with a number of modules to be completed to gain an appropriate level. The NVQ option has not been well promoted in the past and take up has been disappointing.

The responsible organisation, for this and for maintaining occupation standards while promoting education and training within the telecommunications workforce, is the Telecommunications Vocational Standards Council, (TVSC). The TVSC recognise that a fresh approach is required to establish NVQs as an essential qualification in the industry. The FIA is

working very closely with the TVSC to determine an approach that would make NVQs more accessible to the industry. The TVSC wishes to develop partnerships with industry and is actively seeking representation to contribute to TVSC training initiatives.

Two recent developments in Europe are the introduction of BICSI, and a research project under European Adapt funding to create a licensing scheme abbreviated to ELCIS.

ELCIS, when developed as a viable scheme, will become the European Licensed Communications Installer Scheme.

BICSI

Founded in 1974 in the USA, BICSI is an international professional non-profit trade association. It provides information, organises conferences and designs education programmes. It is probably best known for the RCCD (Registered Communications Distribution Designer) qualification. The RCCD is aimed at the communications engineer level, a very high level of training which takes over 100 hours of study and "credits" to attain.

As far as the UK is concerned, the main point to remember that the RCCD qualification is based on a programme designed around the requirements and working practices of the US. No European manuals exist at this time. BICSI is looking to companies to provide the support to amend these documents so that they are appropriate to European standards and working practices (no small task). It is well supported by US corporations in Europe, providing the base platform from which to work. The FIA, through its Technical Director, Mike Gilmore, is represented on the BICSI European steering committee.

Unlike the vast majority of training qualifications or competence assessments, membership is ongoing, with a stipulation that a number of credits need to be achieved through additional "training". Not surprisingly, attendance of BICSI conferences can count towards this. The BICSI organisation does have a very professional outlook with a strong marketing emphasis, so it will be interesting to see how effective they are in Europe.

ELCIS

ELCIS is a European funded initiative to research the possibility of creating a common "Licensed Communication Installer" scheme across Europe. The project is not, as many people perceive, to actually launch a commercially viable scheme but to carry out research into the possibility of launching such a scheme (this is a fundamental of European Adapt funding). The research programme has struggled over the last 18 months, but there is now optimism that ELCIS will help to strengthen NVQs by simplifying their award process.

Training initiatives should be based on a recognised standard, accessible to all. Both the FIA & TVSC believe should be the NVQ. NVQs are gaining momentum in many other industries; greater emphasis is required to ensure that those working in this industry have access to and are able to support NVQ developments.

Standards

The FIA contributes to the development of world standards in fibre through its Technical Director, Mike Gilmore. A well-known industry figure, Mike is an enormous asset to the FIA, bringing his expertise to the service of the industry. The FIA's Standards Forum is maintained on the Web site, enabling members to access updated information on relevant standards as soon as it becomes available. The FIA also publishes its own Codes of Practice covering a wide range of topics associated with the installation, testing and configuring of fibre-based networks.

Insurance

The FIA's insurance scheme offers two unique benefits: As standard, cover is provided for loss of tools and goods from unattended vehicles, removing one of the major exclusions in nearly all the other policies. Installers and contractors are covered against theft from their vehicles at any time, even when parked overnight.

The second major benefit is that consequential loss cover is provided as standard, giving all risks cover to gross profit and increased cost of working and wide cover against public utility failure. This cover can be extended to cover suppliers and customers where required.

Installers

For the benefits of end users, specifiers and the installers themselves, the FIA maintains a Register of Approved Installers, enabling companies to be selected for tender with confidence in their capabilities.

The Web site and other benefits

The FIA Web site www.fibreoptic.org.uk is open to all, but members have additional access to extra areas with far more detailed information. The site is well worth investigating; a disc has also been produced that gives an overview of the site: it is freely available on demand.

Many initiatives are currently under way: a Recognised Qualification for individuals to record their fibre-related qualifications; a new, updated Cable Guide is in preparation and members receive a monthly newsletter.

Conclusions

An industry association is only as strong as its membership. Members of the FIA are automatically eligible for election to our Council, a real influence in the fibre industry. Anyone interested in fibre optics in networks should contact the Secretariat for an information pack – they will find it well worthwhile to join.

*** Ends: 2355 words ***

Notes to Bill Taylor, 19 July 1999.

Photographs, digital photos and copy on disc supplied.

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The Fibreoptic Industry Association represents more than 80% of UK companies involved in the manufacture or installation of fibre optic components and systems for voice and data communications. The Association provides advice to end-users, runs training and qualification services for its members, contributes to the development of national and international standards and generally represents the interests of the fibre industry. Its web site, www.fibreoptic.org.uk provides a free online reference service to all visitors.