TC title: Fibre optic interconnect, passive and connectorised components

A Background

CLC/TC 86BXA was established in 1993 to develop European Standards on 'fibre optic interconnect, passive and connectorised components'.

The scope of the group is: to prepare and maintain European Standards and specifications for fibre optic interconnecting devices, passive and/or connectorised components, fibre optic protective housings, fibre management systems, fusion splice protectors, mechanical splices, unprotected microduct tubes and microduct tube connectors.

The main activity of the TC and its working groups is to write Product Specifications for fibre optic passive components, closures and fibre management systems to meet the needs of the European market. Product Specifications are documents which use standards created in IEC for the mechanical, optical and performance criteria of optical components and bring them together to produce a purchasing document to ensure that compliant products purchased from multiple vendors are compatible in fit, form and function.

The group also monitors relevant IEC documents, provides feedback and input to these standards and ratifies them for publication as European Norms (ENs).

CLC/TC 86BXA has organised its technical activities into two working groups and is very active in the joint working group with CLC/TC 86A:

WG1: Fibre Optic Connectors and Passive Components.
WG2: Fibre Management Systems and Protective Housings
JWG TC 86A / TC 86BXA: Interaction between connectors and cables.

CLC/TC 86BXA members consist of a mix of delegates from manufacturing companies, telecommunications companies and data communications companies with the majority being manufacturing based.

B Business Environment

B.1 General

The product specifications written for the European market have been generated by both manufacturer and consumer demand for specifications that can be published in a very short timescale for standardised product that is multi-sourced. IEC does not have comparable specifications or standards and the gestation period for their documents is longer.

Product specifications are particularly important for SMEs as it allows them to produce and sell competitive product into the market place on even terms.

B.2 Market demand

Among the customers of the documents covered by the group are:

- European telecommunications operators
- data centre owner and designers
- industrial and medical equipment manufacturers
- television broadcast companies
- data communications installers
- telecommunications installers
- mobile operators
- system integrators
- distributors
- component and equipment manufacturers
- military and government users

The test and measurement methods and product specifications are gaining a wide use as fibre optic technology moves into all spheres of the market.

The component specifications are also used by parts of CENELEC which are concerned with systems (e.g. CENELEC/TC 215).

B.3 Trends in technology

Fibre optic technology is continuing to expand as the need for higher data rates and increased bandwidth grows. This is particularly true in the data centre segment where, on average, 50% of the cabling is optical fibre based and speeds (and therefore bandwidth requirements) have increased rapidly over the last few years. Some of this increase is driven by IEEE Ethernet and Fibre Channel standards. IEEE has published 40Gb/s and 100Gb/s Ethernet standards (predominantly fibre) and the data carrying capacity of each fibre has been expanded from 10Gb/s to 25Gb/s. 400 Gb/s Ethernet on single-mode and 200 Gb/s on single-mode and multimode fibre have been published. Nearly all of these higher data rate systems require the use of parallel optics and therefore the MPO connector set. IEEE is also developing Ethernet at 25, 50 & 100 Gb/s for passive optical networks due to be published in 2020, 50G single-lane Ethernet and Dense 100/200G Ethernet for both multimode and single-mode fibre. Fibre Channel has been expanded to 32 Gb/s and above.

Fibre to the Home roll out is driving technology concerned with rapid, simple, low cost installation, including fibre optic connectors, splicing and splice protection.

While single-mode technology gives the highest bandwidth, there is an increasing interest in multimode technology for data communications and ICT use, due to the lower cost of the transmitters and receivers and ease of installation. Recent enhancements in multimode fibre bandwidth and increasing transmission speed have led to a demand for low attenuation connectivity and a focus on parallel optics in connectors.

B.4 Market trends

Due to the explosion in bandwidth demand for data, video and mobile services, telecoms providers are rapidly rolling out more and more advanced technology and services. Where traditionally these services would have been provided to the home or office by copper cable, this is now being replaced by fibre optics either into the premises or to within a short distance of the premises. With new smart services, mobile use is increasing rapidly, in the number of handsets, messages transmitted and the amount of data being processed. This drives the need for increased number and capacity of base stations where the backhaul is over fibre optic cabling. New mobile applications over 5G networks will drive the use of optical systems. Outsourcing of data centres and use of the ‘cloud’ are driving long and short haul telephony routes – predominately fibre optics.

New power generation technology, such as wind farms, existing power generation and distribution systems and the ‘smart grid’ have a high proportion of signalling over fibre optics due to the distances involved and fibre optic’s ability to function within high EMI/RFI environments.

The introduction of high bandwidth TV and video has led to a demand for high speed fibre optic cabling from the broadcast industry.

B.5 Ecological environment

The construction of fibre optic components and systems has little impact on the environment, glass fibre being particularly environmentally friendly in its raw material source. The only issues that might arise would be from the disposal of any plastic connector shells at the “end of life”.

Copper is the main competitor to fibre as a transmission medium and copper cabling consumes a non renewable resource and copper cable construction consumes more plastics per line than fibre cable. It is also considerably heavier and larger making it more costly to transport and store.

Fibre optic transmitters also have lower power than copper transmitters, particularly over longer distances.

CLC/TC 86BXA is not subject to any co-regulation nor are there any current EC mandates which might impact its work.

B.6 Involvement of societal stakeholders

Societal stakeholders such as consumers (ANEC) or the European Environmental Citizens' Organisation for Standardization (ECOS) have presently not indicated interest in active participation in CLC/TC 86BXA's work.

B.7 Involvement of SMEs

As stated in B.1 the work of CLC/TC 86BXA is important for SMEs as it allows them to produce and sell competitive product into the market place on even terms.

While the experts in CLC/TC 86BXA (mainly from manufacturing companies) are participating in this standardization activity, National Committees should encourage more involvement of users in the national mirror committees to foster their input and promote the benefits of applying European Standards and Product Specifications.

SME's have always been encouraged to participate in the work of CLC/TC 86BXA and their opinions have been as much respected as the larger multinational companies. While experts from such companies are participating in both CLC/TC 86BXA and at national levels. National Committees are encouraged to check whether they can further improve expert involvement from this sector.

C System approach aspects

CLC/TC 86BXA has good working relationships and extensive cooperation with a number of other standards bodies and committees. Some of these are within the CENELEC organisation and some are outside.

Within CENELEC there is a very strong link with TC 86A and a joint working group that is made up of members from each TC meets once a year.

There is a functioning liaison with IEC and in particular with IEC/SC 86B where there is a strong crossover of members.

CLC/TC 86BXA has good relations with CENELEC TC 215, particularly with WG1. The TC 215 group references component standards within their document and requests new components or updates when required.

Recently CLC/TC 86BXA formed an informal liaison with ITU-T in relation to the revision of G.652 and G.657. The current specified ITU-T range for specific fibre optic parameters is too large for CLC/TC 86BXA product specifications. CLC/TC 86BXA at this moment specifies a selection of the ITU-T range. The wish is to harmonise the specified ranges.

D Objectives and strategies (3 to 5 years)

To continue to develop the product specifications needed for the European fibre optic industry to grow to meet market, manufacturer and user demands.

To continue to influence international/worldwide standards to ensure that they meet needs of the European market.

E Action plan

TC86BXA will continue to meet twice a year to review current specifications, discuss new technologies and requirements and to prepare new documentation as necessary.

F Useful links to CENELEC web site

The TC home page giving access to Membership, TC/SC Officers, Scope, Publications, Work programmes [password-protected area] can be found by going to http://www.cenelec.eu/ and looking up CLC/TC 86BXA.
https://www.cenelec.eu/dyn/www/f?p=104:7:1884137936636201::::FSP_ORG_ID,FSP_LANG_ID:1258371,25