Agenda

Introductions and BT Cables overview  Toby Collins
Construction Products Regulation  Mark Froggatt
Cables for BMS: A Technical Overview  Mark Froggatt
Q&A’s  Open

Close and refreshments

BT Cables Technical Seminar | CIBSE CPD Programme
Market Segments

Voice
Rail
Data Networking
Industrial
Fire
Building management systems
Security
Optical

BT Cables Technical Seminar | CIBSE CPD Programme
www.btcables.com
# Products by market sector

<table>
<thead>
<tr>
<th>Voice</th>
<th>Rail</th>
<th>Data Networking</th>
<th>Optical</th>
</tr>
</thead>
<tbody>
<tr>
<td>External primary &amp; secondary cables, central office cables, drop cables, jumper wires, limited fire hazard cables</td>
<td>Axle counter cables, trackside communications cables, ssi datalink cables</td>
<td>Cat5e pvc, lszh, pe, Cat6 pvc, lszh,pe Cat6a pvc, lszh Optical patch-cords &amp; pigtails</td>
<td>Defence standard 61.12 parts 4&amp;5 cables, flexible control cables – SY,YY,CY</td>
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<tr>
<td>Fire resistant PH30 cables, fire alarm cables</td>
<td></td>
<td>Coaxial cables for CCTV, HDTV.</td>
<td>Single mode &amp; multi mode cables for pulled and blown installation, armoured cables, ADSS cables</td>
</tr>
<tr>
<td></td>
<td>Building Management Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Belden equivalents, access control systems cables, HVAC cables, profibus cables, electronics cables</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BT Cables Technical Seminar | CIBSE CPD Programme**

[www.bt-cables.com](http://www.bt-cables.com)
History of the Manchester Facility

Connolly Bros- Established 1895

1959- Wholly Owned subsidiary of BICC Plc

1975- Becomes BICC Telecommunications Cables Limited

1999- Acquired by Corning

2000- Acquired by Belden

2006- Acquired by B3

2012- Acquired by BT

Over 120 years of Cable Making Experience
Accreditations and Memberships:

<table>
<thead>
<tr>
<th>BASEC</th>
<th>BASEC</th>
<th>BASEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 9001</td>
<td>ISO 14001</td>
<td>ISO 18001</td>
</tr>
</tbody>
</table>

BT Cables is accredited to ISO9001, ISO14001 & ISO 18001

<table>
<thead>
<tr>
<th>BCA</th>
<th>ACIO</th>
</tr>
</thead>
</table>

BT Cables holds 2 seats on the BCA committee, one of which is the technical authority and is signed up to the Approved Cables Initiative

<table>
<thead>
<tr>
<th>Link-up</th>
<th>UL</th>
<th>LPCB</th>
<th>RoSPA</th>
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</table>

BT Cables is accredited to ISO9001, ISO14001 & ISO 18001

<table>
<thead>
<tr>
<th>BT Cables has achieved the President’s Award given for achieving 11 consecutive Gold Medal awards</th>
</tr>
</thead>
</table>

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BT Cables Technical Seminar | CIBSE CPD Programme

www.bt cables.com
The Construction Products Regulation (CPR) lays down harmonised rules and methods for the marketing of construction products in the EU. The Regulation provides a common technical language to assess the performance of construction products. It ensures that reliable information is available to professionals, public authorities, and consumers, so they can compare the performance of products from different manufacturers in different countries. The CPR builds upon the CPD and aims to break down technical barriers within the European Economic Area (EEA). To achieve this, the CPR provides for four main elements:

- A system of harmonised technical specifications
- An agreed system of conformity assessment for each product family
- A framework of notified bodies
- CE marking of products
This common technical language is to be applied by:

- **the manufacturers** when declaring the performance of their products, but also by
- **the authorities** of Member States when specifying requirements for them and by
- **their users** (architects, engineers, constructors, etc.) when choosing the products that are most suitable for their intended use in construction works.

In respect to Cables, The CPR relates to the “REACTION TO FIRE” performance.

- The appropriate harmonised standards are the harmonised Product Standards covering reaction-to-fire products (EN 50575: 2014 + A1 2016)
The Construction Products Regulation- UK Position

**EN 50575: 2014 + A1 2016**

This document contains the rules upon how product is placed upon the market. Within it details:

- Methods of assessment
- Methods of testing
- Type testing system of assessment
- Product Performance declaration
- Labelling requirements

**CPR DOES NOT SAY HOW OR WHERE A CABLE SHOULD BE USED!**
Whilst it is mandatory to CE mark product, each Member state is responsible to detail which class of performance must be used in each particular application or type of building.
Whilst written into UK Statute, and carrying criminal charges for non compliance, The UK Government has not imposed any official requirements with respect to CPR- CE marking is the minimum.

UK authority with responsibility for CPR is DCLG, through the Trading Standards Institute.
Unlike some other EU/EEA countries, the UK has decided not to enforce any specific regulations. E.G. Germany and France have specific requirements for specific applications. (B2ca for hospitals)

BUT for communication cables, there is a pending publication of BS6701-Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance, AND CPR is a consideration in the current writing of BS7671- The Wiring regs.- 18th edition

However, it is a legal requirement to CE-mark any construction product in the EU/EEA.

In lieu of government regulation, minimum permissible Euroclass for internal applications should be Eca.

Defacto regulation such as Transport for London (TfL-Cca (s1a, d0, a3) will take root and move forward.

Incidents such as Grenfell Tower could expedite UK government position on regulation
BS6701 is due to be published imminently

The 2017 version includes, for the first time guidance on fire safety.

ALL INSTALLATION CABLES will need to meet a minimum of Cca (s1b, d2, a2)

Installation cable definition:

cables intended for installation into pathways which are hidden (below floors, above ceilings, behind walls) or to which access is limited and which can either be terminated in-situ or “preterminated”
What is a Construction Product?

“Any product or kit which is produced and placed on the market for incorporation in a permanent manner in construction works or parts thereof and the performance of which has an effect on the performance of the construction works with respect to the basic requirements for construction works.”
Cable Fire testing methodologies

Incidents such as the Kings Cross Underground station and Düsseldorf airport disasters have bought fire safety of materials into focus, and cables have had a two tiered regime in terms of flame spread for some time

**IEC 60332-1-2:**

A calibrated “Bunsen burner” type flame is applied (1kW) to a single cable sample for a duration dependent on the cable diameter (1-4 minutes). Once the burner is removed, the sample should self extinguish. If the char length is less than 425mm, the sample meets the requirements.

**IEC 60332-3:**

A calibrated flame is applied (20kW) to a cable array on a ladder representative of a building riser. Volumes of combustible material from 7l/m to 0.5l/m are attached to the ladder, and the flame is applied for either 20 or 40 minutes (dependent on category of performance). Flame spread of less than 2.5m are deemed to meet the requirements.
Cable Fire testing methodologies

Additional requirements such as acidity and smoke density have also been developed to assess the performance of the cable in the event of fire for evacuation purposes.

**IEC 60754:**

Material samples are incinerated in a tube furnace, and the effluent gases are analysed for HCl or pH and conductivity. This determines the level of acidic effluent evolved from a prescribed amount of material. There are limits that the materials need to meet to be considered Halogen free.

**IEC 61034:**

A cable specimen is burnt in a closed 3m³ chamber using an alcohol flame. The reduction in light transmittance due to the resulting smoke is measured optically. There are certain limits defined in cable design specifications that are required to be met for the cables to be considered low smoke.
Cable Fire testing methodologies - CPR

Performance is based on a test SIMILAR to BE EN 60332-3 BUT:

- Different Array (Based on diameter of cable)
- Calorimetry/smoke detection equipment in Analysis section of extraction hood/duct

Additional measurements

- Total Heat Release (MJ)
- Rate of Heat Release (kW)
- FIGRA (W/s)

Euroclass is derived from this along with char height for Classes B1-D, with BS EN 60332-1 (Bunsen Burner) for class E. Class F is a Failure to meet class E requirements.
Cable Fire testing methodologies- CPR- Specific Parameters

Total Heat Release (MJ):
The total heat evolved which is attributable to the cable. The energy evolved (MJ) once the burner has been subtracted.

Rate of Heat Release (kW):
The rate that the burning cable evolves heat energy.

FIGRA (Fire Growth Rate- Ws-1):
The rate at which the cable fire grows.

Additional classifications:
Smoke
Droplets
Acidity
Each of the 3 additional classifications has 3 levels of performance
Cable Fire testing methodologies- CPR- Specific Parameters

<table>
<thead>
<tr>
<th>Euroclass</th>
<th>THR (MJ)</th>
<th>RHR (kW)</th>
<th>FIGRA (W/s)</th>
<th>Flame Spread</th>
<th>EN 603321</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1ca</td>
<td>10</td>
<td>20</td>
<td>120</td>
<td>≤1.75</td>
<td>H≤425mm</td>
</tr>
<tr>
<td>B2ca</td>
<td>15</td>
<td>30</td>
<td>150</td>
<td>≤1.5</td>
<td>H≤425mm</td>
</tr>
<tr>
<td>C1ca</td>
<td>30</td>
<td>60</td>
<td>300</td>
<td>≤2.0</td>
<td>H≤425mm</td>
</tr>
<tr>
<td>Dca</td>
<td>70</td>
<td>400</td>
<td>1300</td>
<td></td>
<td>H≤425mm</td>
</tr>
<tr>
<td>Eca</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>H≤425mm</td>
</tr>
<tr>
<td>Fca</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>H≤425mm</td>
</tr>
</tbody>
</table>

**Notes:**
- B1ca: Very low contribution to fire
- B2ca: Low contribution to fire
- C1ca: Reduced contribution to fire
- Dca: Improved contribution to fire
- Eca: Basic flame retardance
- Fca: Non-flame retardant
## The Construction Products Regulation - Cables

<table>
<thead>
<tr>
<th>Euroclass</th>
<th>Classification</th>
<th>Additional</th>
<th>Assessment and Verification of Consistency of Performance Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>EN ISO 1716</td>
<td></td>
<td>1+ initial type-testing and factory inspection and continuous surveillance of factory production control (FPC) with audit testing of samples by 3rd party notified product certification body</td>
</tr>
<tr>
<td>B1</td>
<td>EN 50399 Heat release Flame spread</td>
<td>Smoke production (s1a,s1b, s2, s3)</td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>EN 60332-1-2</td>
<td>Acidity (a1, a2, a3)</td>
<td>3 initial type-testing by 3rd party notified testing laboratory</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>Flaming droplets (d0, d1, d2)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>EN 60332-1-2</td>
<td></td>
<td>4 initial type-testing and FPC by manufacturer</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
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</table>
The practical implications of bringing cables within the Construction Products Regulation (EU 305/2011), came into effect on 10th June 2016. This date, known as the Date of Applicability (DoA), was confirmed via listing in the OJEU (ref 2016/C 209/03).

From this date, manufacturers of cables with requirements for Reaction to Fire, meaning flame spread/propagation, heat release, evolution of smoke and acidic/corrosive gases, and restriction on flaming droplets, may make a Declaration of Performance (DoP) for their product against the harmonised European Standard (EN 50575) and apply CE marking under the CPR.

1st July 2017 was the end of the so-called co-existence period. For cable that is PLACED ON THE MARKET from 1st July 2017 the manufacturer, importer or distributor must make a DoP and apply CE marking.

Cable that was on the market prior to July 1st 2017 does not need to meet the requirements of CPR.
From July 1st 2017, cable that is used for permanent installation in construction works, that is on the market after this date must have:

| A | Declaration of Performance | B | CE marking on the label |
The Construction Products Regulation - Requirements

BT Voice-Tec®-CW1128 Aerial

DoP number

Unique identifier

AVCP System of assessment

Declared performance

Validity Statement from Manufacturer

Generic product type

Intended use

Name and address of manufacturer

ID of notified body, and scope of work they performed

Sign off by authorized representative

BT Cables Technical Seminar | The Construction Products Regulation
The Construction Products Regulation- Requirements

Product label

- CE mark
- Year on which marking was first affixed
- DoP number
- Unique identifier
- Declared performance
- ID of notified body
- Name and address of manufacturer
- Reference to relevant harmonized specification
- Intended use

Cables for the supply of communication in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke.

Reaction to Fire: Eca
Dangerous substances: none

BT Cables Limited, Delaunays Road, Blackley, Manchester. M9 8FP

BTCCS9080UZ07B
DoP BTCL1004
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Building automation is an example of a distributed control system – the computer networking of electronic devices designed to monitor and control the mechanical, security, fire and flood safety, lighting (especially emergency lighting), HVAC and humidity control and ventilation systems in a building.
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Project and major contract references
- Toby Collins

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BT Cables
Trust in our experience