



# CHOOSING THE RIGHT CODING SOLUTION FOR WIRE, CABLE & FIBRE-OPTIC MANUFACTURE

## WIRE & CABLE

With anticipated growing global demand for wire and cable in 2014, the outlook for the industry remains positive.<sup>1</sup>

In the UK, reductions in construction and public spending coupled with a rise in the use of fibre-optic cable, especially for telecommunications projects, have reduced demand for wire and cable products over the past five years. However, higher demand from the power and transmission industries and a moderate growth in exports mean industry revenue is forecast to grow at a compound annual rate of 2.2% over the five years through 2014-15. Non-ferrous wires and cables for buildings, alone, make up around a quarter of the market in the UK.<sup>2</sup>

Increasing demand for wind, nuclear and other green energies have also led to predictions that the global market value could reach \$114 billion by 2015. Telecoms developments, such as transmitters and antenna towers are expected to contribute to annual growth of more than 11% through 2018.<sup>3</sup>

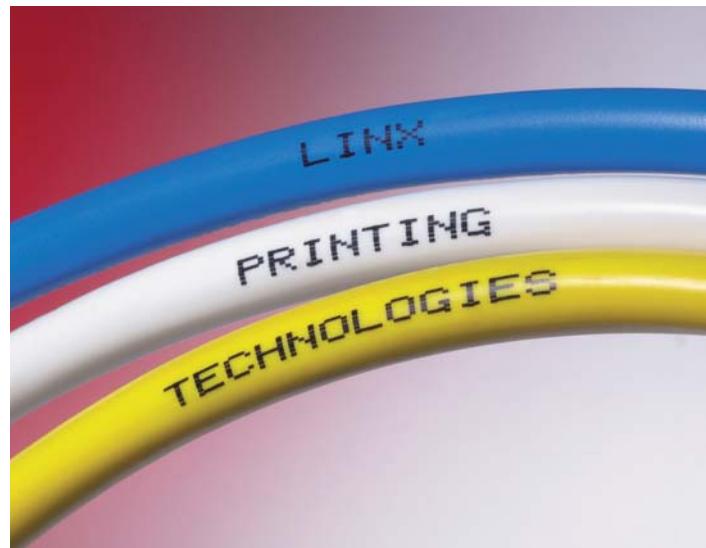
Alongside that, there has been increased awareness of the vital importance of accurate marking of cables: inadequate, incomplete or incorrect marking is identified as a major safety hazard. The Approved Cables Initiative was established in March 2010 to address the issue of unsafe, non-approved and counterfeit cable entering the UK marketplace. And the British Cable Association (BCA) has promoted improvements to British Standards that should ensure in future that any cable that has a conformity claim against a particular standard has complete safety marking plus certain additional information.<sup>4</sup>

Both initiatives highlight to wire and cable manufacturers the vital importance of selecting coding equipment which is not only capable of marking cables with the clear, accurate and durable information which is required now, but is also future-proof and ready to tackle possible extra requirements to come.

What's more, in growth markets including telecoms, construction, and automotive,<sup>5</sup> rising prices for steel, copper, and metals will have an influence – reducing further the margin for error and placing ever-greater importance on the need for accurate coding to avoid costly scrappage, and machine reliability to avoid downtime.

## FIBRE-OPTIC CABLE

International demand is a significant influence on the performance of the UK fibre-optic industry, as exports generate over 70% of revenue and imports meet over 80% of domestic demand. Manufacturers must therefore be ready for demands for coding variations by global territory.



In the domestic market, telecommunications investment in the five years to 2014 led to annual growth of 3.4% and a total industry revenue of £531m as companies invested heavily in super-fast broadband networks.<sup>6</sup>

More widely, as new global territories are fibre-optic equipped to meet modern communications needs, demand for submarine cable through 2016 means this sector on its own is predicted to show a combined annual growth rate of 9.87%.<sup>7</sup>

Overall, investment in new systems is forecast to average at least \$2 billion per year, with average annual deployment of at least 50,000km of cable, and continued growth in demand for upgrades.<sup>8</sup>

The internet is a bigger part of the British economy than education, healthcare or construction<sup>9</sup> and the UK government has chosen a mix of fibre, wireless and satellite ISPs to work on delivering superfast broadband.<sup>10</sup>

The aim is for 100 per cent super-fast broadband coverage, with ministers claiming that the public money being invested in infrastructure should allow all homes and businesses to take advantage of next-generation services.<sup>11</sup>

But despite government aspirations to create one of the leading broadband markets in the world, many users will continue to rely on a combination of metal and fibre-optic cables. BT, for example, is laying fibre to cabinets in the street, then using copper to carry the broadband signal to the home.<sup>12</sup>

Consumers and businesses will continue to rely on a mix of technologies for their broadband needs, including 3G and 4G mobile broadband, ageing xDSL-enabled copper infrastructure, DOCSIS 3.0-upgraded cable networks and fibre-optic connections.<sup>13</sup>



## FACTORS TO CONSIDER

With such diverse requirements, choosing the right coding solution is not easy. No two applications are exactly the same and there are various factors to be considered when deciding which coding solution to choose:

- Code content – the codes required for wires and cables tend to be simple, commonly one line. But will the possibility of increased code complexity such as varying message content for different customers, or to match future industry standards, already be supported by the printer you choose, or will you need to buy another to keep up?
- Available budget – not just the initial purchase price, but consider the overall cost of ownership and factor-in reliability; by compromising on price you may pay more with unexpected breakdowns. Is leasing a better option, as a revenue rather than capital cost? During peaks in production, will rental give you flexibility to meet coding demands?
- Substrate – consider the range of materials you need to code onto and ensure that you have each of them sample-coded by the printers you are considering. Is the code legible? Also consider the range of colours of the materials you want to code onto: high-contrast coding is needed for more cable colours than just the international standard blue/brown colour scheme for fixed electrical wiring. And as some gadget manufacturers restrict halogen use, meaning a switch of substrate to polyethylene (PE), can one coding solution be suitable for all?
- Production environment – if your coding environment is hot and dusty, dry or greasy, ensure that your coder has the right IP rating and features to perform reliably. Also take into consideration where coding takes place in relation to high temperature extrusions, and ensure that both the coder is protected, and that the code will adhere to the substrate in these conditions
- Testing – will your coding and marking provider offer a free trial? You need to be certain the machine is capable of meeting the demands you will put on it

Linx's own Voice of Customer research in 2014 suggests that the key driver behind coding purchases for wire and cable manufacture is the no-compromise demand for minimising the risk of waste and downtime, combined with printer reliability.

Less downtime on your production line means less cost to your business, and less risk of delaying delivery to customers. And fewer coding errors means less scrapage and the associated cost to the business. These factors, and others, are often inter-connected.

## MINIMISE WASTE

### 1. Minimise coding errors

Modern coders with easy-to-use interfaces diminish the risk of human error, for example by entering an incorrect message or selecting the wrong code. By reducing these errors, scrapage costs are reduced further down the line.

Easy, intuitive message selection and a large memory to store different codes can substantially reduce these risks by making sure the correct code is selected first time, every time.

Coders which can be linked to a central PC, or even monitored by smartphone, also help to reduce the chance of manual errors when switching between products or messages, for different products or customers.

### 2. Built-in reliability

With fast line speeds, you need to be able to trust your printer to work reliably and unobtrusively during continual operation, without constant checking, cleaning or recalibrating.

In production environments which can be hot and dry, dusty or greasy, coder failures mean costly downtime.

Coders with IP55 or IP65-rated steel enclosures offer protection against liquid and particle contamination, preventing stoppages and offering high quality continuous coding you can rely on.

### 3. Flexibility

A coding system which is limited in its choice of messages can mean additional cost and delays in setting up new messages, which cannot be afforded in high speed cabling production.

Non-contact CIJ and laser coding systems provide the flexibility to change messages quickly at the press of a button, and also deliver a vast range of code sizes and styles onto most materials. Codes can be changed without stopping the printer, meaning downtime is saved and delays on delivering to customers are reduced.





#### 4. Quality control

Poor quality code, which is either illegible against the cable colour, or smudges often results in costly scrappage.

Fast-drying inks in a variety of colours means that codes not only stand out on the cable, but also resist transfer during cable winding. Alternatively, laser coding offers printing with permanence, applying robust, legible and traceable messages, and without the risk of code transference. Metre marking software also will ensure accurate code placement.

To keep your line moving ensure that your coder delivers clear, legible codes on a variety of colours and materials, and even on small scales such as onto fibre optic cables.

### THE DIFFERENT CODING TECHNOLOGIES

There is a range of coding technologies available, each with its own particular strengths in different applications.

#### Continuous Ink Jet (CIJ)

Perhaps the most cost effective choice, CIJ maintains an important place as it can print on most plastics. A wide range of inks is available to use with CIJ printers, including pigmented inks of different colours which offer superlative contrast and durability to ensure codes stand out on any colour substrate

Additionally, UV cure inks provide excellent adhesion, light fastness, and resistance to a range of chemicals – perfect for preventing code transference during production, and fading during end-use.

CIJ can print from one to multiple lines of text and simple graphics at speeds of over 2600 characters per second. Further versatility is given by the compact printhead that can be situated above, beside or beneath a production line. With lighter models increasingly being produced, the CIJ printer is more capable of being quickly moved from line to line and is quicker to install and set up than laser coders.

#### Laser

Laser coding can deliver a wide range of code sizes and styles, onto most materials, providing the flexibility to meet most coding applications.

Laser coding also provides a permanent code on plastics. On PVC, laser produces a colour change for added code visibility, while extractors to remove the hydrogen chloride by-product when coding PVC with a laser are a necessity.

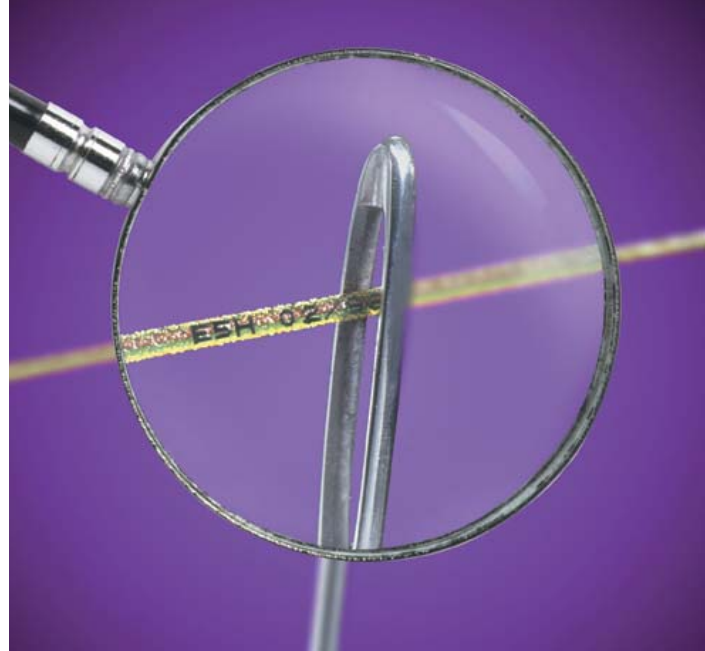
As there is no ink involved in the coding process and therefore no drying time, the risk of smudging is removed, for example during high speed cable winding after coding.

Laser coders are particularly attractive due to their low downtime, high-speed capability and the fact there are no consumables; which together make the long-term cost of ownership lower than some other technologies.

Steered beam laser systems are highly versatile as they provide clear, consistent and perfectly formed characters in a variety of fonts and message formats, and enable the use of high quality graphics across a wide range of print sizes, for example international standards, or company logos.

Developments in design have also recently given rise to a new generation of lower cost compact laser coders, which offer an affordable alternative to other technologies whilst still maximising functionality.





## CONCLUSION

Demands for traceability, customer or consumer expectations and legislation can all require different information to be printed onto various colours and types of plastics and in different environments, so coding and marking equipment must be able to meet complex demands comfortably.

It is important that the choice of coding system for the wire and cable manufacturer has both the flexibility to cope with these demands, and is robust enough to operate reliably in challenging production environments, with trouble-free integration into production processes.

Wire and cable manufacturers work on tight margins, with material costs exerting continual pressure, so it's vital that coders are simple but reliable, and carry on working without the time-consuming need to be continuously monitored or adjusted. This includes minimising the time taken to change the code between runs. Total cost of ownership over the printer's lifespan is important, so choose a coder which can help minimise hidden costs, for example by offering long service intervals.

An effective coding solution, tailored to your particular production requirements, can reduce downtime and coding errors which, in turn, reduce scrappage costs, as well as helping you deliver top-quality service to your customers.

### References

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