

Put the pedal to the metal

Kennedy Miller of Leviton Network Solutions Europe explains why using environmentally friendly strategies and implementing a circular economy creates a smarter, greener business model



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▶ Network cabling manufacturers need to look holistically at reducing their carbon footprints. All too often a company will seek to use more sustainable or green materials here and there, but such efforts will not actually move the needle. Progressive companies have embraced several excellent green cabling practices within recent years and are exploring and championing innovative ways to do business, such as using a circular economic model for buildings and products, thus bypassing future needs for mining and natural resource exploitation.

GREEN CABLING PRACTICES

Sustainable cabling practices that are currently in use include:

- **Cable diameters optimised to improve density in cable trays**

Slimmer diameter cable is important in existing pathways where channels may be added and lack of space can become problematic. They also reduce the need for extra trays and associated mounting materials. Additionally, smaller diameter cables are helpful in data centres, where

they improve airflow in racks and cabinets for better cooling and less energy consumption.

- **Blown fibre used for exceptional flexibility and longevity, with a high return on investment**

Air blown fibre (ABF) systems increase design flexibility, enhance longevity and reduce costs, compared with conventional optical fibre cables. They consist of a network of protected microducts installed between locations, with fibre blown into the microducts only as needed. In this way, the decision to purchase fibre can be postponed until it's determined that buying fibre is actually needed. Blown fibre also eliminates the need for splicing and interconnection points.

Additionally, blown fibre products for indoor use connect buildings and campus infrastructure in a unique, environmentally friendly way. This solution involves blowing multiple individual fibres, where a special coating is applied in order to install in a small diameter microduct. This is a particularly sustainable solution since it uses less material than a standard blown

cable product, and so takes less energy to make. The protected microducts themselves are also low smoke and halogen free – all making the product uniquely environmentally friendly.

• **Pre-terminated solutions**

Leading companies ensure that pre-terminated cables are made to order, so that extra materials are not unnecessarily wasted in the process. While it can be tempting for manufacturers to purposefully supply orders with more material than what's needed in order to appease the customer, progressive organisations guarantee that all pre-terminated cabling solutions are built to fit, protecting the environment from waste.

CIRCULAR ECONOMIES

Traditionally, the cabling economy – like most other industries – has been linear, where organisations use natural resources to make their products, and then those products are discarded once they've reached the end of their useful life. This format involves constant exploitation of natural resources and is unsustainable.

However, industry leaders are now looking to replace this model with a circular economy – one in which end of life products can be reused, remanufactured or recycled back into the supply chain. This is done by recovering copper, gold and other materials from unused buildings and end of life products. Buildings made in this way are called circular buildings, and offer enormous value to the environment, businesses and customers.

A massive amount of raw materials can be harvested from old buildings. Old data centres, offices, factories, hospitals and other commercial public buildings easily provide millions of tons of unused copper that often lie within formerly used cable pathways. A decommissioned data centre, for example, could generate 500kg of pure copper from one ton of harvested cables. And while cabling companies are increasingly using fibre in their products, copper is still in high demand.

MATERIAL GAIN

According to a report published in *Metal Stocks in Society: Scientific Synthesis of the International Resource Panel of the*

‘Old data centres, offices, factories, hospitals and other commercial public buildings easily provide millions of tons of unused copper that often lie within formerly used cable pathways.’

United Nations Environment Programme, for every person on Earth, there is up to 55kg of copper and 80kg of aluminium above the ground. Additionally, there is 2,200kg of iron per capita.

The quantity of materials that can be acquired from old buildings is staggering already, but the low percentage of carbon emitted from recycled materials versus virgin materials adds more to the story. With conventional mining, it typically takes an entire ton of ore to produce just 1kg of pure virgin copper. That’s a ton of material that has to be extracted from the ground, processed and purified. The rest of it, 950-990kg of material, is mainly wasted. It’s hardly surprising then that recycled copper has a 40 per cent lower carbon factor than virgin materials.

TOP QUALITY

At this point, one might question whether the quality of the products made out of recycled copper will be inferior. This is a fair question, but the reality is the complete opposite. Metals are easy to melt and reform, and zero quality is lost in the process – recycled copper can be easily upscaled, resulting in products of an even higher value.

Recycling old products and moving towards circular manufacturing can also make an even a bigger difference than circular buildings. One tonne of printed circuit boards, for example, can generate up to 180g of gold, and various other precious materials. One tonne of old

cellphones can yield up to 280g of gold. Harvesting materials and recycling end of life cabling products produce massive amounts of new, raw materials.

It should be noted that while many companies see a circular economy as their future, not all of them are jumping on the bandwagon quite yet. But these organisations are nonetheless taking small steps forward, as well as forming collaborative partnerships with other organisations and entities, with the goal of fully integrating into a circular economy as time goes on.

NOT JUST A DREAM

Leviton recently partnered with large energy, food production and health insurance companies on circular building initiatives. In collaboration with Leviton, these companies were able to remove old cable, work with a specialist company which extracted the metals and incinerated the plastic for energy, and then either buy cable for the new installation



made with copper recycled from the old cable or use the dollars earned to offset those new cable costs.

Around 92 per cent of the products retrieved – mainly consisting of power cables, cabinets, twisted pair copper cable and patch cords – were successfully recovered and returned to the material supply chain. The remaining eight percent was diverted to landfill. This additionally created a positive revenue stream, benefiting both the environment and these companies' bottom lines. This illustrates that recycling copper is profitable, and not only creates a commercial benefit for the building owner, but can provide recycled copper at a competitive price back into the manufacturing process. It's a win-win for everyone involved.

AN EXCITING FUTURE

With the population of the planet currently over seven billion people and expected to reach nine billion by 2030, the strain on natural resources and need for cleaner energy continues to skyrocket. Progressive cabling organisations understand this and are making huge strides at identifying the root cause of environmental impact, implementing new strategies and turning the industry green. This is not only good for the environment, but it's also good for

business – it creates a more successful business model, higher quality products and ultimately offers more value to customers. ■



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Kennedy Miller is technology and sustainability manager at Leviton Network Solutions Europe. He is responsible for leading materials research and testing, including laboratory strategies, fire science and Construction Products Regulation (CPR) initiatives. With more than 20 years of experience in the field, Miller is passionate about developing new environmentally conscientious cabling technologies.