Why? Around the world the price of copper has increased dramatically over the last five years, it is currently around US$ 10 000 per tonne based on the London Metal Exchange valuation and the reason you may know the high value of copper is either you purchase copper or, sadly, because you might have been victims of copper theft. The high value of copper has made it a target for thieves who sell on to unscrupulous scrap metal traders.

Copper is used in many ways in our modern world, from the delicate wiring of vehicles to grounding of substations. Thieves target both the stocks kept on site by manufacturers and the finished product once installed, however, the implications of the theft are not just confined to the high replacement costs, or potential power outages and train stoppages. For instance, in cases such as removal of grounding conductor at substations there is a potential life threatening situation as the safe routing of lightning strikes or current surges has been broken.

Over the years research has been done to offer an alternative product to solid copper and this has led to the development of bimetallic conductors. These products look like copper because a steel or aluminium core has had a metallurgically bonded outer layer of copper applied which cannot be recycled and is difficult to saw off. This makes any stolen material only worth the value of the base metal, ie steel or aluminium. The copper cladding thickness remains constant, measuring 10% of the overall product diameter and yields a composite conductivity of 40% IACS (International Annealed Copper Standard).

The advantages of bimetallic conductors are:
- They have the strength of the steel.
- They retain the conductivity and corrosion resistance of copper.
- They will not break, crack, flake or peel.
- They are suitable for all applications where copper is used.
- There is a low scrap value.

Bimetallic conductor is available as plain wire or in stranded configurations in various sizes. Also, as an added deterrent to thieves, it can be coated in any colour in either PVC (polyvinyl chloride) or polyethylene. This not only disguises the enclosed product to the sight of a thief but is also aesthetically pleasing for applications where the building design is important and the bare metal would look unsightly.

Exobond

Exoweld has a bimetallic conductor called ExoBond the physical and electrical properties of which are detailed in the table below, it is an annealed steel wire calculated to ANSI/IEEE Std 80-2000.

Conclusion

Like the gold prospectors mentioned at the outset thieves may also go to great lengths to steal the highly valuable copper, however, by utilising a bimetallic conductor their quest will be rendered futile and hopefully they will learn that there is no value in targeting these conductors. In turn this should assist in ensuring the safety and integrity of the installation.

References


About the author

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