
C-Lite Cables

Weight-Saving, Space-Saving Cable Solutions
for Offshore and Marine Applications

CABLING CHOICES THAT SAVE SPACE AND WEIGHT

In today's marine environment with the ever-increasing complexity of electronic systems, sensors, communications and safety equipment more cables are required to fit into more densely populated areas.

Space is always at a premium and weight is always a concern. Tradeoffs in weight mean savings in one area may allow more equipment in another area. Thus, designers are always looking for ways to save space and weight - without compromising performance or personnel safety.

Cabling is sometimes overlooked as a means of saving space and weight. But with more automation the number of cable runs increase, the sum of all the cables can represent significant size and weight, providing significant impact on the construction and costs of a vessel.

The space and weight reductions of TE Connectivity's (TE) C-Lite technology mean additional savings in the cabling infrastructure. Cable trays and other supports can be smaller and lighter. The same holds true for the glands. Tighter bend radii are also a benefit of a reduced-diameter cable, which can simplify pathways and the installation and routing of cable.

Smaller, lighter cables are of limited benefit if they offer reduced performance. In the demanding marine environment, cables must offer:

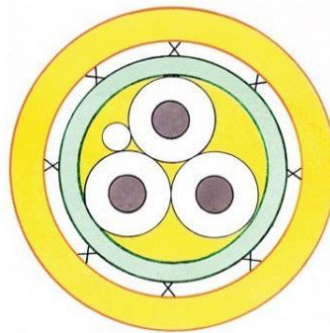
- Mechanical robustness to resist abrasion
- Environmental toughness to resist temperature, oil and solvents
- Safety, which includes low toxicity, low flammability in the event of a fire

The key to these size and weight reductions is the use of a unique thin-wall insulation used on the conductors. A typical cable used in marine applications meets the requirements of EN60092 and has an insulation wall thickness of 0.8 mm. C-Lite offers a thin-wall insulation system, meeting the same performance requirements while reducing the thickness to a mere 0.2 to 0.3 mm.

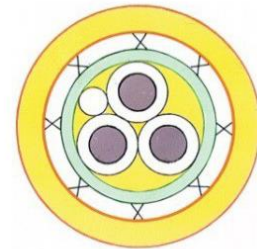
The only difference between the traditional cable and the lightweight cable in Figure 2 is



Fig. 1. Examples of typical applications for C-Lite family of cables. Left: (U.S. Navy photo by Mass Communication Specialist 2nd Class Joshua Scott/Released) Right: (Source: TE Connectivity)



XLPE Insulation:
0.8 mm Thick



Thin-Wall Insulation:
0.25 mm Thick

Fig. 2. C-Lite thin-wall insulations can significantly reduce cable size and weight (Source: TE Connectivity)

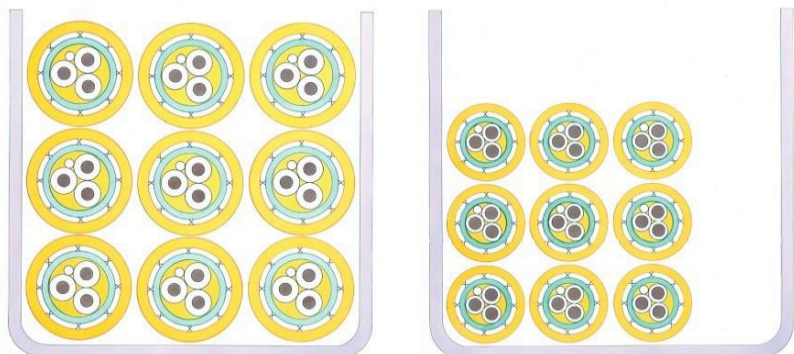


Fig. 3. A Demonstration of the space-saving advantages of lightweight, thin-wall cables (Source: TE Connectivity)

the type and thickness of the insulation. The size reduction of thin-wall insulation is dramatically apparent.

Figure 3 illustrates the cascading effects of the size reduction of a single cable by showing multiple cables in a tray. Reductions

of 40% are routine - with the benefits of smaller pathways, lighter-gauge cable trays, and smaller glands and feed-throughs. In retrofit or upgrade applications, thin-wall cables allow more cables in the same existing space.

Mechanical and Environmental Toughness

Cables used in marine environments must comply with the rigorous requirements of the marine classification societies such as ABS (American Bureau of Shipping), DNV-GL (Det Norske Veritas - Germanischer Lloyd), C-Lite is no different carrying certification from eight of the world's top marine classification societies.

Our thin-wall technology, coupled with our IEC60092-360 SHF-2 Zerohal EN jacket material delivers a cable system that operates in environments from -40 to +120°C whilst delivering excellent resistance to oil & common fluids seen in the marine environment, including petroleum muds used in drilling.

Safety

Safety, especially in a fire, is critical in marine & offshore platforms. Our C-Lite IEC60092-360 SHF-2 jackets are truly low-smoke zero halogen (LSZH) using our specially developed irradiated Zerohal EN jacket material, that delivers a cable system that meets the rigorous halogen content requirements of IEC60684-2, the smoke emission requirements of IEC61034-2, in addition to meeting the halogen gas requirements of both IEC60754-1 (laid down in IEC60092-360) and IEC60754-2.

Toxic gases are not only a hazard to humans, but they can have a corrosive effect on equipment. Halogen-free materials protect personnel, but may still generate significant smoke that can hamper visibility. LSZH materials allow visibility to be maintained by generating very low amounts of smoke. Our C-Lite family of Zerohal EN jacketed marine cables meet the stringent flammability requirements of IEC60332-3-22 Cat A and IEC60332-3-25 Cat D.

C-Lite Cable Technology – allows you to do more with less

C-Lite CL105 cables use TE's CL105 halogen free primary wire, coupled with our Zerohal EN irradiation crosslinked jacket material to achieve a smaller, lighter cable, whilst offering excellent resistance to oils, solvents, fuels, and petroleum mud whilst meeting the demanding requirements of IEC 60092-350 SHF-2.

Our Zerohal EN non halogenated jacket is highly flame retardant, in addition to offering a low toxicity index with an enhanced temperature rating.

With its lower weight & size makes C-Lite cables ideal for both new installations, upgrades and repairs when space & weight are limited.

Features and Benefits

- Small size, lightweight thin-wall insulation
- Voltage rating 600/1000v
- Temperature rating of -40 to +120°C (based on a 20,000 hour operating cycle)
- Halogen free, low toxicity
- Highly flame retardant meeting the requirements of both IEC60332-1 & IEC60332-3 Cat A
- Flexible with good fluid resistance
- Marine classification agency certified by ABS, BV*, CCS, DNV, GL, KR, NKK & RMRS
- Offered in Screened (meeting the requirements of IEC60092-350) & Non Screened versions
- Ideal for upgrades and repairs when both space & weight are limited

Full Range of Multiconductor Cables

RS Components carry an extensive range of C-Lite space & weight saving multicore cables, offered in both screened and unscreened solutions in sizes from 0.50mm² to 2.50mm² making these cable configurations ideal for offshore and marine use in power, lighting, communications, and instrumentation or in other applications requiring a smaller, lighter cable without any loss in performance because TE Connectivity's C-Lite cable technology – allows you to do more with less.

Conductor sizes from 0.50 mm² to 2.50 mm² for both signal and power

- Available in 2, 3 or 5 core styles
- Stranded conductors for flexibility
- Unshielded or braid shielded versions
- Voltage rating of 600/1000 V
- Supplied on easy to handle 50m spools
- The product is metre marked
- Color code of offered

Number of cores	Color Code
2	Light Blue & Brown
3	Light Blue, Brown & Yellow/Green
5	Light Blue, Brown, Yellow/Green, Black & Grey

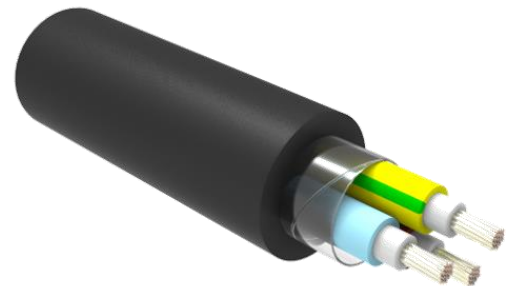


Fig. 4. TE Connectivity's Raychem lightweight, thin-wall cables are available in a wide range of configurations (Source: TE Connectivity).

ABOUT THE AUTHOR

Mark Casselton is Global Product Manager for Commercial Marine Wire & Cable Products within TE Connectivity, Global Aerospace, Defense & Marine. Mark has more than 27 years' experience in the marine wire and cable industry and has extensive experience in all aspects of product and market development.

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