Cable tray procurement and lightning protection

Overview

Cable tray, introduced in the mid 1940s, is a safe and economical solution for supporting requirements of electric power, signal, control, instrumentation and communication cables.

Key Takeaways

Effective lightning protection for cable trays involves proper material selection, grounding, surge protection, and compliance with IEC 62305 standards.

Material and Design Considerations

When procuring cable trays, select materials with high conductivity and corrosion resistance, such as stainless steel (AISI 316L) or aluminum alloys, to ensure reliable conduction of lightning currents and long-term durability in harsh environments ( ). Ventilated or solid-bottom trays can be chosen based on the risk of heat buildup and electromagnetic interference, while mesh or ladder-type trays provide flexibility for bonding and grounding connections ( ).

Grounding and Equipotential Bonding

Cable trays must be integrated into the building's earthing system. All metallic trays should be bonded to the main equipotential bonding network to safely conduct lightning currents to the ground ( ). This reduces the risk of side-flashes and ensures that approximately 50% of the lightning energy is safely dissipated into the earth, while the remainder is distributed through the equipotential system ( ).

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Surge Protection

To protect sensitive equipment connected to the cable trays, install surge protection devices (SPDs) at key points along the power and data lines.

SP

Ds should be coordinated in stages according to the lightning protection zone concept, from air-termination devices to terminal equipment, ensuring that residual voltage peaks are minimized ( ). Compliance with StandardsEnsure that all cable trays and associated lightning protection components comply with IEC 62305 and relevant national standards. This includes proper sizing of conductors, spacing, and testing for withstand voltages to handle direct and indirect lightning strikes ( ).

Certification from recognized bodies (e.g., UL, VDE) provides assurance of compliance and performance ( ).

Installation Best Practices

Maintain continuous metallic paths without gaps to prevent arcing. Use mechanical fasteners and bonding jumpers to connect tray sections. Avoid routing trays near high-risk areas without additional shielding.

Verify that tray supports and hangers are conductive or properly bonded to the earthing system ( ).

Summary

For safe and reliable cable tray procurement under lightning-prone conditions, focus on material selection, grounding, surge protection, and adherence to IEC 62305 standards. Proper integration into the lightning protection system ensures both personnel safety and protection of electrical and electronic equipment.

Article Content

Practical Guide to Cable Tray Procurement & Quality

Cable trays may seem simple, but they directly affect safety, reliability, and maintenance. I''ve seen trays fail because of poor coatings, undersized

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In designing supports for a cable tray system, consideration should be given to the loads associated with future cable additions and any additional loading that may be applied to the cable tray system (e.g.,

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Major procurement packages include MV, HV and LV Switchboards, Power Transformers, AC and DC UPS Systems, Emergency Diesel Generators, Cathodic Protection Systems, HV, MV, LV

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Cable tray, introduced in the mid 1940s, is a safe and economical solution for supporting requirements of electric power, signal, control, instrumentation and communication cables.

GUIDE CABLE TRAYS TECHNICAL

The cable management system''s electromagnetic performance characterises its ability to protect its cables from external electromagnetic disturbance; if this is controlled, the data carried by the cables

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ITER Electrical Design Handbook Earthing and Lightning Protection

Every cable tray will have a protection conductor electrically bonded to the tray, running all along the one. This conductor shall be electrically bonded to the tray at regular intervals (~5 m), and it shall be

Lightning protection guide

Just like its predecessors, this edition of the lightning protection guide offers assistance in installing profes-sional lightning protection systems in line with the very latest standards.

Engineers Corner | Harger Lightning and Grounding

To aid engineering firms and specification designers, we have assembled a filterable collection of generic installation details and relevant specification sections. Please contact us if you have any

Smart Cable Tray Covers: A Buyer''s Guide to Material,

Cable tray covers are more than lids. Their shape solves real engineering challenges like water runoff, airflow, and protection from external impacts. Dome

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Cable Tray Design and Standards Guide

1. The document outlines codes and standards that must be followed for design and construction of cable trays and their components. Standards listed include those for materials, rolling and cutting

Cable Tray Specifications and Sizes

The data sheet provides specifications for standard cable trays and accessories. Standard cable trays are 2.5 meters in length with a maximum thickness deviation of 0.01mm and dimensional deviation of

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