Selection Criteria for Cable Tray and Pipe Supports



Overview

Guide to cable support systems This chapter deals with the correct dimensioning and the final selection of a cable support system, depending on the applica.

Key Takeaways

Selecting cable trays and pipe supports requires evaluating load capacity, material, environmental conditions, compliance with standards, and proper support spacing to ensure safety, durability, and system reliability. Key Selection Criteria1. Load Capacity and Mechanical Strength Cable trays and pipe supports must withstand the weight of cables, conduits, and any additional mechanical loads.

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C 61537 specifies load testing methods to validate tray strength, while NEMA BI 50015 and BI 50016 provide guidelines for support spacing and structural integrity. Proper support spacing, typically at 1/4 span intervals, minimizes deflection and stress at splice locations, ensuring long-term reliability. 2.

Material and Corrosion Resistance Materials are chosen based on environmental exposure: Steel or stainless steel for high mechanical strength and industrial applications. Aluminum for lightweight, corrosion-resistant applications, especially in atmospheric or offshore environments. Galvanized coatings or AISI 316L stainless steel for chemical, marine, or high-humidity environments.

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Material selection must consider stress corrosion, pitting, and thermal expansion to maintain structural integrity. 3. Environmental Conditions Consider temperature extremes, humidity, chemical exposure, and UV radiation.

Cable ladders or trays for extreme temperatures may require specialized alloys or coatings. Ventilated trays are preferred where heat dissipation is critical, while solid-bottom trays protect against dust, electromagnetic interference, or fire hazards. 4.

Compliance with StandardsIEC 61537: International standard for metallic cable tray systems, covering construction, testing, and performance.

NEC and CE

C: National Electrical Code and Canadian Electrical Code compliance ensures safety and legal installation requirements.

NEM

A standards: Define load classes, support spacing, and installation practices for reliable performance. 5.

Installation and Support Considerations

Use appropriate splice plates, vertical adjustable supports, and expansion joints to accommodate thermal expansion and mechanical stress. Maintain minimum bend radius for cables to prevent damage. Ensure proper grounding and electrical continuity, especially for metallic trays serving as a grounding path.

6.

Cable Type and Application

Power, control, instrumentation, and data cables may require different tray types (ladder, solid, or mesh) and spacing to prevent overheating and interference. Closed or solid trays are suitable for sensitive instrumentation or aesthetic requirements, while ventilated trays allow airflow for heat dissipation. 7.

Cost and Maintenance

Consider total installed cost, including supports, fittings, and labor. Select materials and finishes that reduce long-term maintenance and corrosion-related replacement.

Summary

Selecting the right cable tray or pipe support involves balancing mechanical strength, material durability, environmental resistance, compliance with standards, and proper installation practices.

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Following IE

C, NEMA, NEC, and CEC guidelines ensures safety, reliability, and cost-effective operation in industrial, commercial, and utility installations.

Article Content

Guide to cable support systems

This chapter deals with the correct dimensioning and the final selection of a cable support system, depending on the application, according to various influencing factors, such as cable volume, cable

Cable Tray Technical Guide A practical guide to product selection and ...

Cable tray length is selected based on the load to be supported, the distance between the supports (also referred to as the span), and handling and installation constraints.

GUIDE CABLE TRAYS TECHNICAL

Specifies requirements for metal cable trays and associated fittings designed for use in accordance with the rules of Canadian Electrical Code, Part I and the National Electrical Code®

B-Line series Cable Tray Design Considerations

Our wind certification report provides you with list of acceptable B-Line series cable tray supports, fittings and covers based off of the environmental conditions, cable loading, and type of cable tray in your

A Guide to Selecting Cable Trays for Engineering Design

In this article, we will discuss the key factors involved in selecting cable trays, the principles to guide this selection, and the benefits of making the

Ultimate Guide to Cable Tray Selection – Types, Materials & Best

Learn how to choose the best cable tray system for your needs. Explore types, materials, installation tips, and NEC compliance in this expert guide.

Criteria for Sizing, Designing, Installing and Supporting of Cable-Tray ...

In most applications, a cable tray meeting the requirements of NEMA 20A rating, supported at 6 m (20 ft) intervals and cable loading of 22.6 kg per 300 mm (50 lbs per ft), is sufficient to meet these

Cable Tray & Pipe Supports-The Forgotten Structural Elements

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Learn how to avoid costly installation mistakes, like choosing the wrong cable tray type or overloading, and understand the critical engineering rigor required for cable tray supports.

Best Practice Guide to Cable Ladder and Cable Tray Systems

Introduction This publication is intended as a practical guide for the proper and safe* installation of cable ladder systems, cable tray systems, channel support systems and associated supports.

How to Fix Common Cable Management Issues using

Discover common cable management problems and how cable tray accessories effectively solve them to ensure safety and performance.

Guide to cable support systems

I support systems for cable support structures are used to bridge large loads and support spacings and to cre-ate complex section routes. The systems allow large support spacings of wide span systems

CABLE TRAY SYSTEMS GUIDE

Steel Ladder System Hubbell''s NEXTFRAME® Ladder Tray is the effective and widely used cable runway that supports and delivers bundles of cable between cabinets, racks, and closets, along

241-252_EJ4Q_2010_2009_26

ABSTRACT Pipe racks are structures in petrochemical, chemical and power plants that are designed to support pipes, power cables and instrument cable trays. They may also be used to support

Cable Tray Technical Guide A practical guide to product selection and ...

A practical guide to product selection and installation This guide for engineers and installers has been developed by ABB as a practical reference regarding cable tray characteristics, installation, and

Cable Tray Design and Sizing Guide

The document discusses several key factors to consider when designing a cable tray system, including: 1) The width and height of the tray, type of tray bottom (ladder, ventilated, or solid), and type of

CABLE TRAY INSTITUTE

The Cable Tray Institute (CTI) was founded in 1991 to support the cable tray industry by engaging in research, development, education, and the dissemination of information designed to promote,

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A Guide to Selecting Cable Trays for Engineering Design

A well-selected cable tray solution not only supports the weight of cables but also considers the potential for future expansion, environmental

Cable Tray Selection Process

Weight of the installation, which affects the cost of the support structure and the ease of installation. Corrosion resistance of the material is one of the most important selection criteria. Cable tray

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