

Article Overview

A tubular dense busbar is a hollow, high-conductivity conductor, typically made of aluminium or its alloys, designed to efficiently carry large currents while minimizing weight and improving heat dissipation.

Overview

A tubular busbar is a hollow conductor used in electrical power systems to transmit high currents between sources (like transformers or substations) and load centers. Unlike solid or flat busbars, the tubular design provides a high strength-to-weight ratio, excellent mechanical rigidity, and improved thermal performance due to the large surface area relative to its cross-section, which enhances heat dissipation during operation .

Material and Construction

Tubular busbars are commonly made from high-purity aluminium or aluminium alloys such as 6061, 6063, 1350, 1370, 1060, and 1070 . Aluminium is preferred for its lightweight, corrosion resistance, recyclability, and cost-effectiveness compared to copper, while still offering sufficient electrical conductivity. The hollow, seamless construction ensures uniform cross-section, smooth surfaces, and minimal defects, which are critical for reliable current transmission .

Electrical Performance

- o **Current Carrying Capacity:** The tubular shape efficiently supports high currents. In AC systems, the skin effect causes current to flow primarily near the surface, making hollow tubes more efficient than solid rods of the same diameter .
- o **Voltage Drop:** The large surface area reduces resistance and voltage drop, particularly in high-frequency applications .
- o **Heat Dissipation:** Hollow geometry allows better thermal management, reducing temperature rise during operation .

Mechanical and Installation Advantages

- o **Rigidity and Strength:** Tubular busbars maintain structural integrity while being lighter than solid bars .
- o **Bending and Fabrication:** Aluminium tubular busbars can be bent using standard industry methods, with recommended inner bending radii of 5-7 times the nominal pipe size for certain alloys .
- o **Customizable Dimensions:** Diameter, wall thickness, and length can be tailored to meet specific current ratings, space constraints, and connection requirements .

Applications

Tubular Dense Busbar

Tubular dense busbars are widely used in:

- o Power Transmission and Substations: As connecting conductors and overcurrent conductors in high-voltage systems .
- o Switchgear and Distribution Boards: For compact, high-current connections .
- o Industrial Equipment: Electrical conduction and grounding in machinery .
- o Transportation and E-Mobility: Electrical systems in vehicles, trains, and aircraft .

Summary

A tubular dense busbar combines the advantages of aluminium's lightweight and corrosion resistance with a hollow, high-surface-area design that optimizes current-carrying capacity, heat dissipation, and mechanical strength. Its versatility in fabrication and installation makes it ideal for high-current, high-performance electrical systems across industrial, utility, and transportation applications .

Aluminium tubular busbars are subject to wind-generated vibration and oscillation. Because of the low self-damping of tubular

Busways, or bus ducts, are long busbars with protective covers. Rather than branching from the main supply at one location, they

We offer 6101 and 6063G aluminum tubular busbars that meet electrical standards, ensuring high quality and reliable power

A general design guideline (technical design and economic analysis) is made for building HTS busbar networks in high

Aluminium tubular busbars are made from high-purity aluminium or its alloys (e.g., 6061, 6063). Their tubular design optimizes the

Learn what a fully insulated tubular bus bar is, how its insulation system works, key electrical specs, and where high

As showed in Figure 4, when the cross sectional area is smaller than 150 mm², there are small ampacity differences between cable

Busbars A practical guide to how busbars distribute current, what controls

Tubular Dense Busbar

Aluminum tubular busbars are the ideal solution for modern electrical applications. Designed for efficiency

Advantages and Limitations of Rigid Bus Bar Failures in High Density Applications When it comes to transmitting and distributing

Interactive Substation Busbar Systems We ensure you have tailored, individual solutions to meet your requirements and needs. With

Typical Busbar Sizes If this program recommends sizes that do not fit into the ranges below, change either the number of conductors

L is the length of the busbar Conclusion In conclusion, solid, stranded, and tubular busbars are three common

Busbar Design and Sizing Calculations This document provides specifications for an electrical busbar

Compare busbar types -- copper vs aluminum, flat vs tubular, solid vs laminated -- and choose the right busbar for

The busbar sizing calculator determines the required busbar dimensions based on the

Web: <https://bssoda.pl>

