Connection of busbar bridge and small busbar in high-voltage switchgear



Overview

Busbar Design in Switchgear: Key Principles & Best While busbars generally offer higher current-carrying capacity, better heat dissipation, and easier bran.

Key Takeaways

In high-voltage switchgear, a busbar bridge connects main and small busbars using dedicated connectors, ensuring reliable current flow, mechanical stability, and safe maintenance.

Busbar Bridge Function

A busbar bridge serves as a conductor linking the main busbar to smaller branch busbars or auxiliary circuits. It allows power to be distributed from the primary bus to secondary circuits while maintaining electrical continuity and minimizing voltage drop. The bridge ensures that the system can handle the rated current without overheating or excessive mechanical stress during short-circuit events.

Connection Methods

Material Compatibility: Copper-to-copper connections typically use bronze connectors to enhance contact reliability and prevent creep relaxation. Aluminium-to-aluminium connections use treated aluminium alloy connectors to maintain oxide film stability. Copper-to-aluminium connections require bi-metallic connectors (e.g., explosive welding or brazing) to prevent electrolytic corrosion.

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Mechanical Support: Busbar bridges are supported by insulators or brackets to withstand mechanical stresses from short-circuit forces. Tubular or flat busbars are commonly used, with tubular types offering higher mechanical strength and better corona resistance. Insulation and Safety: Bare busbars rely on air insulation, while enclosed or insulated busbars reduce short-circuit risk and allow compact layouts.

Proper spacing and support prevent overheating and electrical faults, ensuring safe operation during maintenance.

Operational Considerations

Flexibility: Busbar bridges allow sectionalization, enabling parts of the switchgear to be isolated for maintenance without interrupting the entire system. Current Rating: The bridge and small busbar must be sized to carry the expected load, considering thermal performance and short-circuit withstand capacity. Maintenance: Connections should inhibit corrosion and oxidation to maintain low contact resistance and prevent overheating.

Summary

Connecting a busbar bridge to a small busbar in HV switchgear involves selecting compatible materials, using appropriate connectors, providing mechanical support, and ensuring proper insulation. This ensures reliable power distribution, operational flexibility, and safe maintenance, while meeting the electrical and mechanical requirements of high-voltage installations.

Article Content

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Busbars and Connectors in HV and EHV installations

In HV and EHV installations and in outdoors MV installations bare busbars and connectors are used and the conductors may be tubular or stranded-wires.

Section 7 Switchgear and controlgear assemblies

7.2.1 Busbars and their connections are to be of copper or aluminium, all connections being so made as to inhibit corrosion/oxidation between current-carrying mating faces, which may result in poor

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Introduction to GIS sections / bays Gas-insulated switchgear (GIS) is a piece of high voltage equipment that is being constantly developed day by day. The basics of GIS technology is

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Circuit configurations The circuit configurations for high- and medium-voltage switchgear installations are governed by operational considerations.

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Busbar Design in Switchgear: Key Principles & Best

Busbar design in switchgear ensures safe, reliable power distribution by balancing current capacity, thermal performance, mechanical strength,

ABB MV Switchgear – Single Busbar Or Double Busbar?

Although separate busbar sections exist, the switchgear classification will remain a single busbar arrangement, as each circuit (incomer or feeder) is connected to the busbar section where it

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