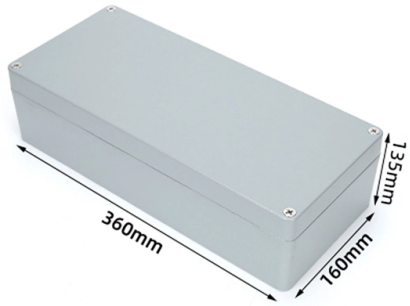
Discharge at 10kV busbar bushing



Overview

The optimized bushing of 10 kV switchgear cabinets has a significantly better electrical performance and can effectively avoid partial discharge caused by the defects produced during installation and operation.

Key Takeaways

Partial discharge at a 10kV busbar bushing occurs when the electric field exceeds the local insulation strength, and it can be minimized through proper bushing design, material selection, and monitoring.

Understanding Discharge in Busbar Bushings

A busbar bushing provides electrical insulation and mechanical support for high-voltage conductors passing through grounded partitions in switchgear. At 10kV, bushings are typically epoxy resin (APG) or porcelain, designed to withstand system voltages and prevent internal or surface discharges. Discharge occurs when local electric field stress exceeds the dielectric strength of the insulation, often due to voids, contamination, moisture, or aging.

Types of Discharge

Partial Discharge (PD): Small localized discharges within the insulation or at interfaces, which do not bridge the full insulation gap.

P

© 2026 ENSAA OPTICAL NETWORKS - All rights reserved

D is a key indicator of insulation degradation and can lead to long-term failure if undetected. Surface Discharge: Occurs along the bushing surface, often influenced by humidity, pollution, or improper sealing. Corona Discharge: May appear at sharp edges or protrusions, generating ozone and audible noise, typically at higher voltages or poor field distribution.

Bushing Design to Minimize Discharge

Epoxy Resin (APG) Bushings: Molded via Automatic Pressure Gelation (APG) to create a void-free structure, high bending strength, and low partial discharge (

Article Content

Partial Discharge Detection and Structure Optimization of a Bushing of ...

The optimized bushing of 10 kV switchgear cabinets has a significantly better electrical performance and can effectively avoid partial discharge caused by the defects produced during installation and operation.

A Guide to Partial Discharge Measurements on Medium-Vortage (MV)

1 IEC 60270 – A Normative Reference IEC 60270 – High-voltage test techniques – Partial discharge measurements is a general standard that defines the broad lines of partial discharge (PD)

Busbar Testing Procedure

The test measures the amount of partial discharge in Coulombs, also known as arcing, across the copper (or) aluminum conductor & the insulation placed to the surface of the bus bar.

Investigation of Partial Discharge Characteristics in Switchgear Bushings

PD bushing structure analysis is described to assess possible defect sources in bushings. An experimental 10 kV bushing sample with the natural defect was obtained from the bushings''

Partial Discharge Monitoring System for Switchgear

Contaminants such as moisture and dust can easily cause busbar insulation degradation and produce partial discharge. Symptoms of partial discharge may include the corona effect, traces on the

Fault Diagnosis and Troubleshooting of 10kV High

Busbar Discharge or Insulator Damage: Listen for discharge sounds, check temperature at busbar connections, and visually inspect insulators for flashover

© 2026 ENSAA OPTICAL NETWORKS - All rights reserved

(PDF) Partial Discharge Monitoring Method in Switchgear with

This work analyzes the feasibility of using the high-voltage sensor in the bushing to detect partial discharge, and the analysis shows that the synchronous signal and the partial discharge...

TIP technical series | Edition 7.1 | Arcing faults in medium ...

The term "arc discharge" is also common. If this effect is caused by a fault, such as a short circuit inside a switch-gear or switchboard, this is referred to as an arc fault.

Analysis of Partial Discharge in OIP Bushing Models

Acknowledgments This report accounts for the thesis work “Analysis of Partial discharge in OIP bushing” performed between February 2011 and August 2011. It is a pleasure to thank those who made this

Testing Partial Discharges in Laminated Busbar for Electrified ...

This paper shows how to approach properly partial discharge, PD, measurements in laminated busbars for electrified transportation. The goal is to locate and identify the type of partial discharges, PD,

Research on insulation state evaluation and detection technology for

However, there is no corresponding state detection means to warn the deterioration stage of the wall bushing intelligently. This article firstly analyzes the influence of the typical double

Test Requirements for HV Bushings

Although bushings generally account for only 5 to 8% of the total installed cost of equipment, bushing failure can result in loss of costly assets.

Assessment of the partial discharges impact on the new type 20 kV ...

The article considers the partial discharges impact on busbars of voltage class 20 kV. The composition of a new type insulation includes a dusty inert material, which contributes to an increase

Design Guide for bus bars

Impedance In the design of laminated bus bars, you should consider maintaining the impedance at the lowest possible level. This will reduce the transmission of all forms of EMI (electromagnetic

Analysis of partial discharge of GIS busbars together

Discover the root causes and effective solutions for local discharge faults in 220 kV GIS busbars. Learn about bolt loosening issues and a proven improved fastening

© 2026 ENSAA OPTICAL NETWORKS - All rights reserved

Bushing (electrical)

Insulated bushings can be installed either indoors or outdoors, and the selection of insulation will be determined by the location of the installation and the electrical

Investigation of Partial Discharge Characteristics in Switchgear ...

The paper is devoted to partial discharge measurement and analysis in switchgear bushings. PD bushing structure analysis is described to assess possible defect sources in bushings. An

Partial discharge investigations in laminated busbars

The aim of the study is to predict the presence or absence of partial discharges (PDs), in a laminated busbar (LBB), for a given voltage. PDs appear in specific zones that are located using a

Contact Us

Continue your research online:

Website: https://ensaa.es
Technical inquiry: https://ensaa.es/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 ENSAA OPTICAL NETWORKS - All rights reserved