Section: High Voltage
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Insulator Options

Ritz Instrument Transformers provides two types of insulators for our high voltage instrument transformers. Both are obtained from manufactures committed to providing the highest quality products.

PORCELAIN INSULATOR

The porcelain insulator has been in use in the electrical field for over 100 years. This material has proven itself to resist environmental aging and to be self-supporting and it is used in a wide variety of applications. Some of the advantages provide by the porcelain insulators are the following:

Stability - The strong ionic bonding and close packing of the atoms that constitute ceramics yield structures that tend to be very stable and are not generally degraded by environmental stresses. This means that UV, surface electrical activity, humidity and others should not damage the ceramic housing.

Mechanical Strength - The rigid nature of the ceramic material provides significant mechanical strength. The porcelain housing using for bushing, on our high voltage transformers are self-supporting and do not require other materials or components for strength.

Low Raw Material Costs - The principal raw material of porcelain, such as clays, feldspar and quartz are relatively inexpensive and readily available**.**

Earthquake Resistant - The porcelain insulators can withstand seismic acceleration stresses up to 0.5g.

COMPOSITE INSULATOR

Now, Ritz Instrument Transformers is introducing the Composite or Polymeric Insulator. The use of composite insulators has grown steadily. The polymeric products are demonstrating their capabilities in diverse environments and are now routinely used to prevent contamination flashover. Polymeric insulation materials offer numerous advantages, like:

Light Weight - The density of polymer materials is lower than other materials. It makes construction and erection easier and faster. The reduced weight permits the use of lighter and less costly structures and mounting arrangements. The smaller size and weight result in lower shipping cost.

Complex Geometry - The polymers insulators are typically molded therefore it may have a higher creepage distance per unit length than porcelain. Weathershed profiles can be made more complex and alternating diameter weathersheds are supplied, which improve the ac wet flashover by avoiding bridging of all sheds simultaneously during heavy wetting conditions.

Pollution Performance - The hydrophobic properties on the composite insulator have a better electrical performance in contaminated condition. Water on the surface of hydrophobic materials forms water bead, so the conductive contamination dissolved within the water beads is discontinuous. This condition results in lower leakage current flow and the probability of dry band formation, which in turn requires a higher impressed voltage to cause flashover. The higher resistance of silicone rubber helps to limit the arcing and minimizes the flashover. Another advantage of the composite insulator is that it contributes to reduce the maintenance costs, such, no need washing, no need for application of silicone coatings and reduce the inspections.

Hollow Core Housing Failure Mode - The physical properties of the polymer material mean that it will not shatter like porcelain. With the initiation of an internal fault, the expected failure mode is rupturing or bursting of the hollow structure with venting of the internal pressure, leading to an external flashover and dissipation of the fault energy outside of the housing.

Processing - The processing time for polymer insulator are shorter than for porcelain.

No hazard condition - In the event of any fault the characteristics of a composite insulator exclude the occurrence of hazardous condition to personnel and surrounding equipment.

Earthquake Resistant - Equipment using hollow core composite insulators can withstand seismic acceleration stresses up to 1 g without damage due their lower weight, high damping factor and high strength design characteristics.