Estimation of Transient over Voltages in Gas Insulated Busduct from 220kv Gas Insulated Substation

Number 8 - Article 1

Year of Publication: 2011

Authors:

M. Kondalu
Gilleshra Sreekanth Reddy
Dr.P.S.Subramanyam

Abstract

The transient over voltages are generated in gas insulated substations (GIS) during switching operation of substations in the order of a few nanoseconds. These transients have traveling wave behavior and travel to external systems through discontinuities and interface such as enclosures, bushings, cable joints etc. Depending up on configuration of the GIS and the
amplitude of the electric and magnetic fields could be of the order of a few tens of kilovolts per meter and a few hundreds of amps per meter respectively. These very fast transient over (VFTO) voltages create critical situations in protection circuit and control circuit and makes raise faults in cables, transformers and secondary circuits, which result in malfunctioning of the primary equipment. The suppression of VFTO is very important in GIS systems. In this paper, included estimation of transient voltages in the switching operations has been calculated due to transient field with respect to 220kv gas insulated substation during switching operation. The effect of Transient field have been analyzed and clearly demonstrated for substation by develop of suitable simulation model to estimate over transient voltages. The proposed approach successfully implemented in the platform of MATLAB software.

Reference

- G.V.Nagesh Kumar, J.Amarnath, B.P.Singh, K.D.Srivatsava “Particle movement in a 245 KV, 300 KV and 400 KV Gas Insulated Substations with and without dielectric coating enclosure” National Conference APSC 2004 NIT, Rourkela

Index Terms

Computer Science Power Systems

Key words
### Gas Insulated Substation (GIS) Operations
- Transient over voltages
- Switching processes
- Line faults and Control circuitry