

A Review: Polymer-based Insulation Material for HVDC Cable Application

Abstract

Demand on the usage of HVDC cables in the past was very low, this is because at that time most its application is only for underwater cable installations. However, when there are an increased in demand for using renewable energy such as solar energy, the use of polymer-based as insulaton material for HVDC became increased. This have attracted more cable manufacturers try to improve this cable quality and attract more market penetration in order make the development costs recoverable. This paper presents a review the used of polymer-based material for HVDC cable application. Comparison and discussion from previous researcher and manufacturer was done in term of material properties and quality was presented and discussed. The review was focused 4 types of polymer-based material which are: cross-linked Polyethylene (XLPE), low-density polyethylene (LDPE), high-density polyethylene (HDPE), linear low-density polyethylene (LLDPE). Each material tests result were discussed for the best usage as HVDC insulation systems. The review found, polymer based material with additional of nana filler or difference type polymer can improve dielectric properties of HVDC cable insulator. This is because these material have very good indication of the conductivity and dielectric strength of high voltage insulation for HVDC application.