Effect of RTV coating material on electric field distribution and voltage profiles on polymer insulator under lightning impulse

ABSTRACT

Lightning has been known as one of major factors that cause power line failure in Malaysia. Presence of contaminants on polymer insulator surface will reduce voltage withstand capabilities in the event of lightning and could lead to insulator failure or worst power line disruptions. This paper presents a study on effects of Room Temperature Vulcanisation (RTV) coating material in order to improve electrical performances of polymer insulator and its effect towards electric field distribution and voltage profile. This study involves both experimental and simulation works. For experimental works, polymer insulator is tested inside fog chamber and voltage breakdown under lightning impulse were evaluated for clean and salt conditions. 3-Dimensional model of polymer insulator were simulated using ANSYS Maxwell and electric field distribution and voltage profile were evaluated. From the study, it shows that RTV coating material helps to improve voltage breakdown level of insulator and reduce concentration of electric field at triple region.

Keyword: Component; Lightning; Polymer insulator; Electric field