

## **Considering the effect of angle on polymer insulator performance under wet condition**

### **ABSTRACT**

This paper reviews a study of the inclination angle of an insulator due to mechanical forces imposed by overhead conductors. The angle theoretically shortens the effective leakage path and flashover distance of the insulator, thus change the electrical performance of the insulator. To take it into consideration, this study had focused on experimental works to investigate effect of insulator inclination to the breakdown voltage and leakage current. Regards to the important of wetness to improve surface conductivity of insulator surface, authors have considered to conduct the test in wet conditions. In addition, standard lightning voltage was applied according to IEC 60060 in both positive and negative impulses. Based on the test, the performance of an insulator under positive and negative impulses was compared accordingly. A significant reduction of breakdown voltage was recorded when the angle decreased. The reduction was recorded as high as 17 %. Meanwhile, the breakdown voltage was much higher under negative impulses compared to positive impulses which showed a difference of 12 % to 14 % and the leakage current increased by 17 % due to the inclination angle. The calculation of U50 with consideration of the reduction factor was suggested and briefly discussed.

**Keyword:** Polymer insulator; Flashover path; Inclination angle; Overhead conductors