

Role of Ionic Solutions Affect Water Treeing Propagation in XLPE Insulation for High Voltage Cable

Authors : T. Boonraksa, B. Marungsri

Abstract : This paper presents the experimental results on role of ionic solutions affect water treeing propagation in cross-linked polyethylene insulation for high voltage cable. To study the water treeing expansion due to the ionic solutions, discs of 4mm thickness and 4cm diameter were taken from 115 kV XLPE insulation cable and were used as test specimen in this study. Ionic solutions composed of CuSO₄, FeSO₄, Na₂SO₄ and K₂SO₄ were used. Each specimen was immersed in 0.1 mole ionic solutions and was tested for 120 hrs. under a voltage stress at 7 kV AC rms, 1000 Hz. The results show that Na₂SO₄ and CuSO₄ solutions play an important role in the expansion of water treeing and cause degradation of the cross-linked polyethylene (XLPE) in the presence of the applied electric field.

Keywords : ionic solutions, water treeing, water treeing expansion, cross-linked polyethylene (XLPE)

Conference Title : ICPMHV 2014 : International Conference on Power Modulator and High Voltage

Conference Location : Tokyo, Japan

Conference Dates : May 29-30, 2014