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Application of Semiconductor Material in Insulation Protection of 10kV Switchgear in High Temperature and Humidity Environment

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In South China and Southwest China, 10 kV switchgear running under high temperature and high humidity, which is easier to induce switchgear partial discharge and then benefit the development of insulation fault, seriously affect the safe operation of power grid. At this stage, the protective measures of the switchgear insulation are limited to preventive measures and can't protect the insulation of the switchgear. Furthermore, semiconductor materials have been applied to improve the electric field distribution, which can effectively inhibit the occurrence of partial discharges. In this paper, the application of the semiconductor coating in the electric field distortion of the switchgear was simulated, the best coating scheme and the parameters of the semiconductor coating were obtained. Simultaneously, artificial contamination experiments were carried out with different combinations of semiconductor material and RTV coating to verify the effectiveness of partial discharge inhibition of 10kV switchgear. The application of both semiconductor material and RTV Coating can effectively inhibit the occurrence of the partial discharge of 10kV switchgear.

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