

ABSTRAK

Aldi Ahmad: Pengaruh Lapisan *RTV Silicone Rubber* Pada Isolator Porselen Dengan Polutan NaCl Terhadap Arus Bocor Dan Resistivitas Permukaan Pada Jaringan Distribusi 20 kV
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Isolator porselen pada daerah pesisir pantai sering terganggu karena akumulasi dari polutan garam yang terbawa angin akibat dari penguapan air laut. Polutan ini menempel pada isolator, meningkatkan konduktivitas permukaan dan mengakumulasi polutan NaCl. Akibatnya, hal ini menyebabkan peningkatan arus bocor dan potensi kegagalan isolator seiring waktu. Penelitian ini menganalisa bagaimana penerapan lapisan *Room Temperature Vulcanized (RTV) Silicone Rubber* mempengaruhi arus bocor dan resistivitas permukaan pada isolator porselen dalam berbagai kondisi lingkungan. Pengujian arus bocor isolator *uncoated* kondisi permukaan berpolutan arus bocor mencapai nilai tertinggi sebesar 8.560,76 μA pada tegangan 20 kV dan RH 90%, sedangkan pada isolator *coated RTV Silicone Rubber* arus bocor menurun signifikan menjadi 931,62 μA pada kondisi yang sama, hal ini menunjukkan bahwa lapisan *RTV Silicone Rubber* secara signifikan mengurangi intensitas arus bocor sebesar 89,12 %. Pada pengujian resistivitas permukaan isolator *uncoated* resistivitas permukaan menurun menjadi 262.3 M Ω pada menit ke-10 dan RH 90%, sedangkan pada isolator *coated RTV Silicone Rubber* resistivitas permukaan meningkat sebesar 1768 M Ω pada menit dan kondisi yang sama, hal ini menunjukkan bahwa isolator yang dilapisi *RTV Silicone Rubber* memiliki resistivitas permukaan yang jauh lebih tinggi dibandingkan dengan isolator tanpa lapisan. Hasil ini menekankan pentingnya penggunaan lapisan *RTV Silicone Rubber* untuk meningkatkan keandalan dan efektivitas isolator dalam kondisi lingkungan ekstrem.

Kata kunci : Arus Bocor, *RTV Silicone Rubber*, Resistivitas Permukaan, Isolator Porselen, Kelembaban, Polutan NaCl.

ABSTRACT

Aldi Ahmad : *The Effect of RTV Silicone Rubber coating on porcelain insulators with NaCl pollutants on leakage current and surface resistivity in a 20kV distribution network.*

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Porcelain insulators in coastal areas are often disturbed due to the accumulation of wind-borne salt pollutants due to seawater evaporation. These pollutants adhere to the insulator, increasing surface conductivity and accumulating NaCl pollutants. As a result, this causes an increase in leakage current and potential insulator failure over time. This study analyzes how the application of Room Temperature Vulcanized (RTV) Silicone Rubber coating affects the leakage current and surface resistivity of porcelain insulators under various environmental conditions. Testing the leakage current of uncoated insulators with polluted surfaces reached the highest value of 8,560.76 μA at a voltage of 20 kV and 90% RH, while in insulators coated with RTV Silicone Rubber the leakage current decreased significantly to 931.62 μA under the same conditions, indicating that the RTV Silicone Rubber coating significantly reduced the intensity of the leakage current by 89.12%. In the surface resistivity test of the uncoated insulator, the surface resistivity decreased to 262.3 $\text{M}\Omega$ at 10 minutes and 90% RH, while in the RTV Silicone Rubber coated insulator, the surface resistivity increased by 1768 $\text{M}\Omega$ at the same minutes and conditions, this shows that the insulator coated with RTV Silicone Rubber has a much higher surface resistivity compared to the insulator without a coating. These results emphasize the importance of using RTV Silicone Rubber coating to improve the reliability and effectiveness of the insulator in extreme environmental conditions.

Keywords: *Leakage Current, RTV Silicone Rubber, Surface Resistivity, Porcelain Insulator, Humidity, NaCl Pollutant.*

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