

INTISARI

Indonesia memiliki 3 sistem tenaga listrik yaitu sistem pembangkitan, transmisi dan distribusi. Pada sistem transmisi terdapat beberapa peralatan yang disebut MTU atau Material Transmisi Utama, *Lightning Arrester* salah satunya. *Lightning Arrester* adalah peralatan listrik yang berfungsi untuk mengamankan peralatan sistem tenaga listrik dari surja tegangan. Diperlukan pemeliharaan berkala apakah peralatan tersebut masih dalam keadaan baik atau tidak dan kira-kira dibutuhkan tindakan atau tidak. Dalam pelaksanaannya dilakukan beberapa pengujian yaitu pengujian *Leakage Current Monitoring* atau LCM dan Tahanan Isolasi. Pada laporan ini dikumpulkan kedua hasil uji tersebut selama 3 periode yang kemudian dibandingkan dengan standar.

Untuk *Leakage Current Monitoring* batas maksimal arus bocor pada sistem 150 μ A yang kemudian hasil uji dibandingkan dengan batas maksimal arus bocor. Jika besar persen adalah $\leq 90\%$ maka *Lightning Arrester* masih dalam keadaan baik, jika diantara 91%-99% maka dalam keadaan sedang dan jika $\geq 100\%$ maka dalam keadaan buruk. Pada uji tahanan isolasi jika nilai $> 1 \text{ G}\Omega$ maka bernilai baik dan jika $< 1 \text{ G}\Omega$ maka bernilai buruk.

Dilakukan *Assesment* kondisi *Lightning Arrester* 150kV Gardu Induk 150kV Cibeureum berdasarkan kedua hasil uji tersebut dan disimpulkan bahwa Bay Cigereleng 2 terjadi pemburukan isolasi, Bay Trafo 1 terjadi pemburukan isolasi pada titik ukur Bawah-Ground, Bay Trafo 2 terdeteksi adanya degradasi insulasi dan kenaikan besar arus bocor, serta Bay Cigereleng 1 dan Bay Trafo 3 yang tidak perlu tindak lanjut karena kondisi *Lightning Arrester* masih dalam keadaan baik dan normal. Karena kondisi pemburukan isolasi tersebut, dilakukan penggantian Bay Cigereleng 2 pada hari Senin, 5 Mei 2021.

Kata Kunci : *Lightning Arrester*, *Leakage Current Monitoring*, Tahanan Isolasi, Indeks Total Kondisi Peralatan

ABSTRACT

Indonesia has 3 electric power systems, namely generation, transmission and distribution systems. In the transmission system there are several equipment called MTU or Main Transmission Material, Lightning Arrester is one of them. Lightning Arrester is an electrical equipment that serves to secure electrical power system equipment from voltage surges. Periodic maintenance is required whether the equipment is still in good condition or not and whether action is needed or not. In the implementation, several tests were carried out, namely testing Leakage Current Monitoring or LCM and Insulation Resistance. In this report, the results of the two tests were collected for 3 periods which were then compared with the standard.

For Leakage Current Monitoring, the maximum limit for leakage current in the system is 150 μ A, which is then compared with the maximum limit for leakage current. If the percentage is >90% then Lightning Arrester is still in good condition, if between 91%-99% is in moderate condition and if 100% is in bad condition. In the insulation resistance test, if the value is >1 G Ω then it is good and if <1 G Ω it is bad.

An assessment of the condition of the Lightning Arrester 150kV Cibeureum 150kV Substation was carried out based on the two test results and it was concluded that Bay Cigereleng 2 was insulation degradation, Bay Transformer 1 was insulation degradation at the Bottom-Ground measuring point, Bay Transformer 2 detected insulation degradation and a large increase in leakage current, and Bay Cigereleng 1 and Bay Transformer 3 which do not need follow-up because the Lightning Arrester is still in good and normal condition. Due to the deteriorating condition of the isolation, Bay Cigereleng 2 was replaced on Monday, May 5, 2021.

Keywords : *Lightning Arrester, Leakage Current Monitoring, Insulation Resistance, Total Index of Equipment Condition*