

ABSTRAK

Minyak isolator merupakan suatu sifat bahan yang mampu memisahkan dua buah penghantar atau lebih yang berdekatan untuk mencegah adanya kebocoran arus/hubung singkat, maupun sebagai pelindung mekanis dari kerusakan yang diakibatkan oleh korosif atau *stressing*. Untuk mendiagnosa kondisi trafo melalui minyak isolator, dilakukan pengukuran secara berkala, berdasarkan IEEE (*Institute of Electrical and Electronics Engineers*) C57-104-1991 dengan pengujian DGA dan Tegangan tembus.

Pengujian *Dissolved Gas Analysis* (DGA) digunakan untuk mengetahui gas-gas terlarut dalam minyak trafo dan indikasi kegagalan di dalam trafo (*Internal Fault*). Hasil uji DGA dianalisis menggunakan metode *Total Dissolved Combustible Gas* (TDCG). Pengujian tegangan tembus untuk mengetahui kemampuan isolasi minyak dalam menahan *stress* tegangan listrik.

Hasil pengujian dan analisis DGA dengan metode TDGC menunjukkan nilai TDGC paling tinggi 880 ppm dan paling rendah 552 ppm. Penyebabnya kenaikan TDGC diakibatkan terjadinya kegagalan berupa pemburukan dan penguraian kertas selulosa dikarenakan gas karbon monoksida CO dan karbon dioksida CO₂ masing-masing trafo sangat dominan. Hasil pengujian tegangan tembus pada bulan maret rata – rata sebesar 70.7 dengan hasil perhitungan dielektrik 28,28 *kV/mm*. Hasil pengujian tegangan tembus pada bulan Juni rata – rata sebesar 44.133 dengan hasil perhitungan dielektrik 17,653 *kV/mm*. Menurut standar SPLN 49 – 1 : 1982 minyak masih dalam standar mutu.

Kata Kunci: Dissolved Gas Analysis, Gas-gas terlarut, Institute of Electrical and Electronics Engineers, Minyak isolator, Tegangan Tembus, Total Dissolved Combustible Gas.

ABSTRACT

Insulator oil is a trait of material that is able to separate two or more adjacent splits to prevent leakage of current/short circuit, as well as mechanical protection from damage caused by corrosive or stressing. To diagnose transformer condition through insulating oil, periodically carried out measurements, based on IEEE (Institute of Electrical and Electronics Engineers) C57-104-1991 with DGA testing and translucent voltage.

Dissolved Gas Analysis (DGA) testing is used to determine the dissolved gases in the transformer oil and failure indication within the Internal Fault. The DGA test results are analyzed using the Total Dissolved Combustible Gas (TDCG) method. Translucent stress testing to determine the ability of oil insulation to withstand the stresses of electrical tension.

DGA test and analysis results with the TDGC method show the highest TDGC value of 880 ppm and the lowest of 552 ppm. The cause of the TDGC increase is due to the failure of the decay and parsing of cellulose paper because carbon monoxide CO and CO₂ carbon dioxide gases are very dominant. The results of the translucent voltage test in March averages 70.7 with the result of a dielectric calculation of 28.28 kV/mm. The result of translucent voltage test in June is average of 44,133 with the result of dielectric calculation of 17.653 kV/mm. According to SPLN Standard 49 – 1:1982 oil is still in quality standard.

Keywords: Dissolved Gas Analysis, dissolved gases, Institute of Electrical and Electronics Engineers, insulating oil, translucent voltage, Total Dissolved Combustible Gas.