

ABSTRAK

Jaringan distribusi LG-02 Darussalam termasuk wilayah kerja PT. PLN (Persero) ULP Lhokseumawe Kota. Berdasarkan data tegangan ujung pada jaringan distribusi alamat gardu Gg. Damai, dan Bakso Pakde tergolong rendah. Jika mengacu pada Surat Edaran Direksi PT. PLN (Persero) Nomor: 0017. E/DIR/2014 tentang *health index* transformator, Transformator mengalami kondisi pembebanan yang kurang baik jika pembebanan melebihi 80% dari kapasitasnya. Dimana Persentase pembeban trafo alamat Gg. Damai 88,5% dan Bakso Pakde 94,4%. Hal tersebut menyebabkan tegangan antar fasa pelayanan konsumen paling ujung turun sebesar 370 Volt dari tegangan nominal 400 Volt. Berdasarkan SPLN T6.001-2013, pada kondisi pelayanan normal direkomendasikan bahwa tegangan pada terminal pasok perbedaannya tidak boleh lebih besar $\pm 10\%$ dari tegangan nominal sistem. Toleransi tegangan memungkinkan penurunan hingga 10% dari tegangan nominal yaitu maksimal 360 Volt antar fasa. Jika tidak segera diatasi, kemungkinan jatuh tegangan akan terus mengalami peningkatan yang signifikan. Oleh karena itu, untuk mengatasi permasalahan jatuh tegangan dan rugi daya, penulis melakukan rencana perbaikan jaringan menggunakan *software* ETAP 19.0.1 agar besarnya nilai tegangan pada sisi konsumen dan besar pembebanan trafo sesuai standar PLN. Perbaikan jaringan distribusi tegangan rendah meliputi penyisipan trafo. Setelah dilakukan perbaikan, kedua gardu diatas mengalami penurunan drop tegangan +2,5% atau mengalami kenaikan sekitar 10 Volt.

Kata kunci: *drop tegangan, losses, sisip trafo, ETAP*

ABSTRACT

The LG-02 Darussalam distribution network system includes the working area of PT. PLN (Persero) ULP Lhokseumawe City. Based on end voltage data on the TR distribution network, substation address Gg. Peaceful, and Bakso Pakde is relatively low. It turns out that if we refer to the Circular of the Directors of PT. PLN (Persero) Number: 0017. E/DIR/2014 concerning transformer health index, it is known that transformers experience unfavorable loading conditions, namely if the loading exceeds 80% of its capacity. Where is the percentage of load on the transformer address Gg. Peace 88.5% and Bakso Pakde 94.4%. This causes the voltage between the end consumer service phases to drop by 370 Volts from the nominal voltage of 400 Volts. Based on SPLN T6.001-2013, under normal service conditions it is recommended that the voltage difference at the supply terminals should not be greater than $\pm 10\%$ of the system nominal voltage. Voltage tolerance allows a reduction of up to 10% of the nominal voltage, namely a maximum of 360 Volts between phases. If not addressed immediately, the possibility of voltage drops will continue to increase significantly. Therefore, to overcome the problem of voltage drops and power losses, the author carries out a network repair plan using ETAP 19.0.1 software so that the voltage value on the consumer side and the transformer loading size comply with PLN standards. Repairs to the low voltage distribution network include inserting transformers. After repairs were carried out, the two substations above experienced a decrease in voltage drop of +2.5% or an increase of around 10 Volts.

Key words: *voltage drop, losses, transformer insert, ETAP*