ABSTRACT

The grounding system plays a very important role in the protection system. The grounding system is used as a discharge path for the fault current to the ground. Given the importance of the grounding system to ensure the safety of the electric power system and living things, especially humans in the area where the Jabodebek LRT has 21 traction substations and involves high voltage, it is necessary to evaluate the electric power system grounding system for the Jabodebek LRT which is the goal. from research.

Evaluation of the grounding system (grounding) at LRT Jabodebek using the IEEE Std 80/2000 standard entitled IEEE Guide For Safety in AC Substation Grounding. The research method used is calculation, ETAP simulation, and field measurements.

The results of the study indicate that the Jabodebek LRT grounding system, especially in cross-service 1 is categorized as good and in accordance with standards. The results of field measurements show that the grounding resistance value of TPSS *Cross Services 1 starting from* TPSS Harjamukti *to* TPSS Cawang *is very good ranging from* 0.02 Ω - 0.04 Ω. Vtouch *calculation* = 3.443 V*;* Vtouch *simulation* = 3,445.2 V*;* Vstep *calculation* = 13.302 V; Vstep *simulation* = 13.309.8 V.

UNIVERSITAS MERCU BUANA

***Keywords**: Grounding system resistance, touch voltage, step voltage, mesh / grid grounding*

http://mercubuana.ac.id/

ABSTRAK

Sistem pentanahan memegang peranan yang sangat penting dalam sistem proteksi. Sistem pentanahan digunakan sebagai jalur pelepasan arus gangguan ke tanah. Mengingat pentingnya sistem pentanahan untuk menjamin keselamatan sistem tenaga listrik maupun makhluk hidup khususnya manusia yang ada di area tersebut yang mana LRT Jabodebek memiliki 21 gardu traksi serta melibatkan tegangan yang tinggi, maka perlu dilakukan evaluasi terhadap sistem pentanahan sistem tenaga listrik untuk LRT Jabodebek.

Evaluasi sistem pentanahan (*grounding*) di LRT Jabodebek menggunakan standar IEEE Std 80/2000 berjudul IEEE *Guide For Safety in AC Substation Grounding*. Metode penelitian yang digunakan adalah perhitungan, simulasi ETAP, dan pengukuran lapangan.

Hasil dari penelitian menunjukkan bahwa sistem pentanahan LRT Jabodebek khususnya di lintas pelayanan 1 dikategorikan baik dan sesuai dengan standar. Hasil dari pengukuran lapangan diperoleh bahwa nilai resistansi grounding TPSS Lintas Pelayanan 1 mulai dari TPSS Harjamukti sampai TPSS Cawang sangat baik berkisar 0.02 Ω - 0.04 Ω. Vtouch perhitungan = 3.443 V ; Vtouch simulasi = 3.445,2 V ; Vstep perhitungan = 13.302 V ; Vstep simulasi = 13.309,8 V.

UNIVERSITAS MERCU BUANA

Kata kunci : Tahanan sistem pentanahan, tegangan sentuh, tegangan langkah, pentanahan mesh/grid

http://mercubuana.ac.id/