

ABSTRAK

Aji Maulana : Perencanaan Sistem Pentanahan *Grounding* Pada *Workshop* 89 Teknik Elektro Fakultas Teknik Di Universitas Negeri Medan. Skripsi. Fakultas Teknik Universitas Negeri Medan. 2026

Perencanaan sistem pentanahan *Grounding* Pada *Workshop* 89 Teknik Elektro Fakultas Teknik Di Universitas Negeri Medan bertujuan untuk: 1) Merencanakan sistem pentanahan yang berlokasi di *Workshop* 89 Teknik Elektro yang memenuhi standar PUIL 2000 agar instalasi kelistrikan di gedung dapat beroperasi secara aman, handal, efisien serta mampu memberikan perlindungan maksimal terhadap peralatan listrik dan penggunaannya. 2) Menghasilkan rancangan sistem pentanahan *grounding* dengan nilai resistansi tanah di bawah $5\ \Omega$ yang menjadi syarat dalam PUIL 2000. Penelitian ini menggunakan metode eksperimen dengan melakukan pengukuran tahanan jenis tanah terhadap data resistansi tanah aktual sebagai dasar dalam perhitungan resistansi tanah, jumlah elektroda, kedalaman pada pemasangan elektroda, serta jarak antar elektroda. Langkah pertama pada perencanaan sistem pentanahan *grounding* standar PUIL 2000 yaitu survei lokasi, pengukuran tahanan jenis tanah, analisis desain sistem pentanahan *grounding* jumlah elektroda yang dipakai, pemilihan material yang tepat serta penentuan metode pemasangan elektroda. Penanaman elektroda menggunakan satu batang elektroda maka hasil pengukuran menunjukkan bahwa resistansi tanah di yang berlokasi di *Workshop* 89 Teknik Elektro sebesar $4,7\ \Omega$. Penanaman 2 elektroda yang di pasang secara paralel diperoleh nilai resistansi $2,3\ \Omega$ yang berarti aman dan handal sesuai standar PUIL 2000. Berdasarkan hasil dirancangan dan diterapkan maka dapat disimpulkan bahwa sistem pentanahan *grounding* yang dibuat yang berlokasi di *Workshop* 89 Teknik Elektro Di Universitas Negeri Medan dinyatakan layak memenuhi standar PUIL 2000 yang efektif dan handal untuk melindungi peralatan listrik, dengan meningkatkan keselamatan instalasi listrik dengan memberikan jaminan keamanan bagi mahasiswa dan dosen, serta peralatan listrik yang lain.

Kata Kunci: Sistem Pentanahan, Resistansi Tanah PUIL 2000, Elektroda Batang.

ABSTRACT

Aji Maulana : *Planning a Grounding System in the 89th Electrical Engineering Workshop, Faculty of Engineering, State University of Medan. Thesis. Faculty of Engineering, State University of Medan. 2026*

Planning of Grounding System At Workshop 89 Electrical Engineering Faculty of Engineering At State University of Medan aims to: 1) Plan a grounding system located in Workshop 89 Electrical Engineering that meets PUIL 2000 standards so that electrical installations in buildings can operate safely, reliably, efficiently and are able to provide maximum protection to electrical equipment and its use. 2) Produce a grounding system design with a soil resistance value below 5 Ω which is a requirement in PUIL 2000. This study uses an experimental method by measuring the soil resistivity of actual soil resistance data as a basis for calculating soil resistance, the number of electrodes, the depth of electrode installation, and the distance between electrodes. The first step in planning a PUIL 2000 standard grounding system is a site survey, measuring soil resistivity, analyzing the design of the grounding system, the number of electrodes used, selecting the right material and determining the method of electrode installation. Planting electrodes using one electrode rod, the measurement results show that the soil resistance located in Workshop 89 Electrical Engineering is 4.7 Ω . The installation of 2 electrodes installed in parallel obtained a resistance value of 2.3 Ω which means it is safe and reliable according to the PUIL 2000 standard. Based on the results of the design and implementation, it can be concluded that the grounding system made which is located in the Electrical Engineering Workshop 89 at Medan State University is declared worthy of meeting the PUIL 2000 standard which is effective and reliable for protecting electrical equipment, by increasing the safety of electrical installations by providing security guarantees for students and lecturers, as well as other electrical equipment.

Keywords: *Grounding System, PUIL 2000 Soil Resistance, Rod Electrode.*

