

ABSTRAK

Noel Putra Surya Tua Sinaga: Evaluasi Sitem Instalasi Listrik Gedung Rumah Sakit Doloksanggul. Skripsi. Fakultas Teknik Universitas Negeri Medan. 2025.

Penelitian ini bertujuan untuk mengevaluasi sistem instalasi listrik di Rumah Sakit Umum Daerah Doloksanggul berdasarkan standar PUIL 2011, dengan fokus pada sistem penerangan, sistem tenaga, dan panel LVMDP, untuk mengatasi masalah *trip* listrik yang sering terjadi di ruang laboratorium dan gizi. Penelitian menggunakan pendekatan kuantitatif dengan metode pengukuran langsung menggunakan multimeter dan *clamp meter* dan inspeksi visual. Data yang diukur meliputi tegangan, arus, kapasitas hantar arus (KHA) kabel, dan kapasitas MCB/MCCB. Hasil penelitian menunjukkan bahwa total beban maksimum rumah sakit mencapai 114,2 kW, dengan beban terbesar dari ruang PICU/NICU (15.735 W), Ruang Operasi (15.405 W), dan Radiologi (14.945 W). Sistem penerangan di beberapa ruangan, seperti Kantor BPJS dan Loker *Medical Record*, melebihi standar lux PUIL 2011 (100–300 lux), menyebabkan pemborosan energi. Panel LVMDP menunjukkan ketidaksesuaian, seperti penggunaan MCCB dengan rating berlebih (160–250 A) dan penurunan tegangan di IGD (210 V) serta rawat pasien (206,6 V) yang melebihi batas 5%. Ketidakseimbangan distribusi beban antar fasa juga terdeteksi. Penelitian ini merekomendasikan penggantian MCB/MCCB sesuai beban aktual, perbaikan ukuran kabel, dan *redesign* distribusi fasa untuk meningkatkan keandalan dan keamanan sistem kelistrikan.

Kata kunci: instalasi listrik, Rumah Sakit Doloksanggul, PUIL 2011, beban listrik, sistem proteksi.

ABSTRACT

Noel Putra Surya Tua Sinaga: *Evaluation of the Electrical Installation System of Doloksanggul General Hospital Building*. Thesis. Faculty of Engineering, Universitas Negeri Medan. 2025.

This study aims to evaluate the electrical installation system at Doloksanggul General Hospital based on the PUIL 2011 standard, focusing on the lighting system, power system, and LVMDP panel, to address frequent electrical trips in the laboratory and nutrition rooms. A quantitative approach was employed, utilizing direct measurements with a multimeter and clamp meter, along with visual inspections. The measured data included voltage, current, cable current-carrying capacity (KHA), and MCB/MCCB capacity. The results indicate that the hospital's maximum load reaches 114.2 kW, with the highest loads from the PICU/NICU (15,735 W), Operating Room (15,405 W), and Radiology (14,945 W). The lighting system in several rooms, such as the BPJS Office and Medical Record Counter, exceeds the PUIL 2011 lux standard (100–300 lux), leading to energy waste. The LVMDP panel shows non-compliance, including the use of overrated MCCBs (160–250 A) and voltage drops in the Emergency Unit (210 V) and patient wards (206.6 V) exceeding the 5% limit. Imbalanced load distribution across phases was also detected. This study recommends replacing MCB/MCCB to match actual loads, improving cable sizing, and redesigning phase distribution to enhance the reliability and safety of the electrical system.

Keywords: electrical installation, Doloksanggul General Hospital, PUIL 2011, electrical load, protection system.