RINGKASAN

Perencanaan jaringan distribusi listrik bawah tanah (*underground*) tegangan menengah 20 kV di Universitas Jambi dibahas dalam skripsi ini sebagai solusi atas sistem distribusi *overhead* yang tidak estetis dan rentan terhadap gangguan alam dan hewan. Dalam penelitian ini, data beban listrik dikumpulkan dari setiap fakultas dan unit kampus, dihitung ukuran kabel penghantar, dan dipilih MCCB dan Kabel XLPE 3 x 150 mm^2 dengan konduktor tembaga digunakan. Ini dipilih karena dapat menghantar arus tinggi dan tahan terhadap lingkungan. Perangkat lunak ETAP 21 digunakan untuk simulasi aliran daya dan analisis susut tegangan dalam proses perencanaan. Hasil simulasi menunjukkan bahwa sistem dianggap layak karena susut tegangan berada dalam batas toleransi PUIL 2011. Panjang total sirkuit mencapai ±1.540 meter kabel dengan biaya investasi yaitu sebesar Rp. 12.959.123.641,00. Sistem ini tidak hanya menjadikan kampus lebih aman dan tahan gangguan, tetapi juga mendukung konsep kampus hijau. Diharapkan bahwa jaringan bawah tanah akan memberikan Universitas Jambi sistem kelistrikan yang andal, efektif, dan berkelanjutan.

Kata Kunci : Perencanaan Jaringan Distribusi *Underground*, Tegangan 20 kV, Etap21, Universitas Jambi

SUMMARY

The planning of a 20 kV medium voltage underground electricity distribution network at Jambi University is discussed in this thesis as a solution to the overhead distribution system which is unaesthetic and vulnerable to natural and animal disturbances.. In this study, electrical load data was collected from each faculty and campus unit, the size of the conductor cable was calculated, and MCB and XLPE Cable 3 x 150 mm2 with copper conductors were selected. This was chosen because it can conduct high currents and is resistant to the environment. ETAP 21 software was used for power flow simulation and voltage drop analysis in the planning process. The simulation results showed that the system was considered feasible because the voltage drop was within the tolerance limit of PUIL 2011. The total length of the circuit reached ±1.540 meters of cable with an investment cost of Rp. 12,959,123,641.00. This system not only makes the campus safer and more resistant to disturbances, but also supports the concept of a green campus. It is expected that the underground network will provide Jambi University with a reliable, effective, and sustainable electricity system.

***Keywords**: Planning Underground Distribution Network, 20 kV Voltage, Etap 21 Jambi University*