# ABSTRAK

## ANALISIS EFSIENSI TRANSFORMATOR DAYA 30 MVA 70/20 kV TERHADAP KONDISI OPERASI AKTUAL DI GARDU INDUK PT. PLN (PERSERO) KERAMASAN

**(2026 : xv + 52 Halaman + Daftar Tabel + Daftar Gambar + Daftar Lampiran)**

**M. Farid**
**062330310502**
**Jurusan Teknik Elektro**
**Program Studi D-III Teknik Listrik Politeknik Negeri Sriwijaya**

Transformator daya merupakan peralatan utama pada sistem tenaga listrik yang berfungsi menyalurkan energi listrik dengan tingkat efisiensi yang tinggi. Kondisi pembebanan yang berubah-ubah selama operasi dapat memengaruhi besarnya rugi-rugi daya dan kinerja transformator. Penelitian ini bertujuan untuk menganalisis tingkat efisiensi Transformator Daya 30 MVA 70/20 kV berdasarkan kondisi operasi aktual di Gardu Induk Keramasan PT. PLN (Persero). Metode penelitian yang digunakan meliputi studi literatur, observasi lapangan, serta pengolahan data operasional yang diperoleh dari logsheet harian transformator selama periode pengamatan. Data yang dianalisis meliputi tegangan, arus, daya semu, rugi inti, dan rugi tembaga pada kondisi beban puncak, beban rata-rata, dan beban terendah. Hasil analisis menunjukkan bahwa perubahan tingkat pembebanan memengaruhi besarnya rugi-rugi total transformator, di mana peningkatan daya semu menyebabkan rugi tembaga semakin besar. Meskipun demikian, transformator masih memiliki tingkat efisiensi yang tinggi dan mampu beroperasi secara andal dalam memenuhi kebutuhan penyaluran tenaga listrik.

**Kata kunci: Transformator Daya, Efisiensi, Daya Semu, Rugi- rugi, Beban.**

# ABSTRACT

## *ANALYSIS OF THE EFFICIENCY OF A 30 MVA 70/20 KV POWER TRANSFORMER BASED ON ACTUAL OPERATING CONDITIONS AT KERAMASAN SUBSTATION OF PT PLN (PERSERO)*

***(2026: xv + 52 Pages + List of Tables + List of Figures + List of Appendices)***

**M. Farid**
**062330310502**
***Department of Electrical Engineering***
***D-III Electrical Engineering Study Program State Polytechnic of Sriwijaya***

*Power transformers are one of the main components in electrical power systems that function to distribute electrical energy with a high level of efficiency. Variations in loading conditions during operation can affect power losses and transformer performance. This study aims to analyze the efficiency level of a 30 MVA 70/20 kV power transformer based on actual operating conditions at Keramasan Substation of PT PLN (Persero). The research method consisted of a literature review, field observations, and operational data processing obtained from the transformer's daily log sheets during the observation period. The analyzed data included voltage, current, apparent power, core losses, and copper losses under peak load, average load, and minimum load conditions. The results indicate that changes in loading levels affect the total transformer losses, where an increase in apparent power leads to higher copper losses. Nevertheless, the transformer still demonstrates a high efficiency level and is capable of operating reliably to meet electrical power distribution demands.*

***Keywords: Power Transformer, Efficiency, Apparent Power, Losses, Load.***