

ABSTRAK

Ketersediaan energi listrik dituntut untuk selalu ada dan kontiyu, sehingga diperlukan pembangkit listrik yang handal dan efisien. Turbin uap bekerja dalam temperatur yang tinggi dan jangka waktu yang lama, sehingga turbin uap dituntut harus mampu beroperasi dengan tingkat stabilitas yang tinggi dari keadaan tanpa beban hingga ke beban penuh. Seiring berjalannya waktu, dengan kondisi tersebut diperkirakan turbin uap mengalami penurunan kinerja. Untuk mengatasinya, maka turbin uap perlu *di*overhaul. Penelitian ini bertujuan untuk mengetahui dampak *overhaul* terhadap kinerja turbin uap PLTU X. Pengambilan data dilakukan dengan metode analisis kuantitatif data sekunder. Untuk menganalisanya digunakan metode perhitungan berdasarkan kesetimbangan masa uap dan energi dalam entalpi yang masuk dan keluar turbin dengan daya keluaran generator (output generator). Dari hasil analisis termodinamika didapatkan adanya peningkatan kinerja turbin uap setelah dilakukan *overhaul* yaitu daya turbin mengalami peningkatan sebesar 29,413 MW, efisiensi isentropik turbin uap meningkat sebesar 0,234%, THR mengalami penurunan sebesar 278,08 kcal/kWh dan efisiensi turbin uap mengalami peningkatan sebesar 2,78%.

Kata kunci: PLTU, turbin uap, kinerja, efisiensi.



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ANALYSIS OF STEAM TURBINE PERFORMANCE BEFORE AND AFTER OVERHAUL AT PLTU X

ABSTRACT

The availability of electrical energy is demanded to always be there and continuous, so that a reliable and efficient power plant is needed. Steam turbines work at high temperatures and for long periods of time, so that steam turbines are required to be able to operate with a high level of stability from no-load to full load. Over time, with these conditions it is estimated that the steam turbine performance will decrease. To overcome this, the steam turbine needs to be overhauled. This study aims to determine the impact of overhaul on the performance of the PLTU X steam turbine. Data collection was carried out using secondary quantitative data analysis methods. To analyze it, a calculation method is used based on the mass balance of steam and energy in the enthalpies entering and leaving the turbine with generator output power. From the results of the thermodynamic analysis, it was found that there was an increase in the performance of the steam turbine after the overhaul was carried out, namely the turbine power increased by 29.413 MW, the isentropic efficiency of the steam turbine increased by 0.234%, THR decreased by 278.08 kcal/kWh and the efficiency of the steam turbine increased by 2,78%.

Keyword: *PLTU, steam turbin, performance steam turbin, efficiency.*



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