

ABSTRAK

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Program Studi : Teknik Mesin
Judul : Analisis Perubahan Tekanan *Vacuum* Kondensor Terhadap Laju Perpindahan Panas dan Efektivitas Kondensor PLTU Unit 6 Suralaya.

Telah dilakukan penelitian tentang analisis perubahan tekanan *vacuum* kondensor terhadap laju perpindahan panas dan efektivitas kondensor PLTU Unit 6 Suralaya, Metode yang digunakan yaitu menggunakan metode perhitungan *Log Mean Temperature Different* untuk menghitung laju perpindahan panas dan menggunakan metode penghitungan NTU untuk menghitung nilai efektivitas pada kondensor. hasil perhitungan penelitian berikut diperoleh nilai terbesar selama penelitian mulai dari tanggal 10 Mei 2024 – 16 Mei 2024 jam 00:00 – 23:00 bahwa pada jam 15:00 saat tekanan *vacuum* kondensor sebesar 697,29 mmHg, laju perpindahan panas sebesar 261888,14 kW, nilai perbedaan suhu rata-rata logaritmik (*LMTD*) sebesar 6,551427 °C dan efektivitasnya 86,09 %. Sedangkan nilai terendah tercatat pada pukul 07:00 saat tekanan *vacuum* kondensor sebesar 696,81 mmHg dengan laju perpindahan panas sebesar 113457,6 kW, nilai perbedaan suhu rata-rata logaritmik (*LMTD*) sebesar 2,842801 °C, dan nilai efektivitas sebesar 85,60%. Dapat ditarik kesimpulan bahwa semakin besar nilai tekanan *vacuum* kondensor maka nilai *LMTD*, Laju perpindahan panas dan efektivitas sebuah kondensor juga semakin besar.

Kata Kunci :

LMTD, Laju Perpindahan Panas, Efektivitas

ABSTRACT

Name : Jodi Imansyah

Study Program : Mechanical Engineering

Title : Analysis of Changes in Condenser Vacuum Pressure on Heat Transfer Rates and Condenser Effectiveness of PLTU Unit 6 Suralaya.

This research has been conducted on analyzing changes in condenser *vacuum* pressure on the heat transfer rate and effectiveness of the Suralaya Unit 6 PLTU condenser. The method used is using the Log Mean Temperature Different calculation method to calculate the heat transfer rate and using the NTU calculation method to calculate the effectiveness value of the condenser. The results of the following research calculations obtained the greatest value during the study starting from May 10, 2024 - May 16, 2024 at 00:00 - 23:00 that at 15:00 when the condenser *vacuum* pressure was 697.29 mmHg, the heat transfer rate was 261888.14 kW, the logarithmic mean temperature difference (LMTD) value was 6.551427 °C and the effectiveness was 86.09%. While the lowest value was recorded at 07:00 when the *vacuum* condenser pressure was 696.81 mmHg with a heat transfer rate of 113457.6 kW, a logarithmic average temperature difference (LMTD) value of 2.842801 °C, and an effectiveness value of 85.60%. It can be concluded that the greater the *vacuum* pressure value of the condenser, the greater the LMTD value, heat transfer rate and effectiveness of a condenser.

Keyword :

LMTD, Heat Transfer Rate, Effectiveness