ANALISIS PERHITUNGAN EFISIENSI MESIN TURBIN PADA SISTEM PEMBANGKIT LISTRIK TENAGA AIR (PLTA) DI PT.INDONESIA POWER UNIT PEMBANGKIT MRICA SUB-UNIT PLTA WONOGIRI.

Supian Sauri (20140120094)
Teknik Elektro, Universitas Muhammadiyah Yogyakarta
E-mail: supianpds@gmail.com

INTISARI

Efisiensi turbin merupakan suatu ukuran unjuk kerja atau performa dari mesin turbin untuk menghasilkan suatu daya dimana perbandingannya daya yang dihasilkan dengan kinerja mesin turbin. Beberapa faktor yang mempengaruhi efisiensi turbin yaitu besarnya debit air yang mengalir, massa jenis air, pengaruh percepatan gravitasi bumi, dan ketinggian jatuh air (head). Penelitian dilakukan di PLTA Wonogiri, data yang diambil secara langsung sesuai dengan keadaan dilapangan yaitu data kondisi pembangkitan meliputi unit yang beroperasi, daya yang dihasilkan, besarnya debit air, produksi kWh, tagangan trafo, temperature trafo, elevasi waduk, *elevasi intake*, delta H, *elevasi tailrace,spill way* atau *hollow jet*, dan total bahan bakar solar. Nilai efisiensi rata-rata mesin turbin unit 1 tertinggi di bulan Juli 2017 sebesar 92.5 % , sedangkan untuk mesin unit 2 nilai efisiensi rata-rata tertinggidi bulan April 2017 sebesar 90.9%. Nilai efisiensi rata-rata mesin turbin unit 1 terendah dibulan Januari 2017 sebesar 72.4% dan untuk unit 2 dibulan November 2017 sebesar 68.1%. Total nilai rata-rata efisiensi mesin turbin ditahun 2017 dari bulan Januari-Desember 2017 diperoleh nilai rata-rata efisiensi adalah unit 1 sebesar 83.3% dan unit 2 sebesar 84.8%.

Kata Kunci : Efisiensi, PLTA, Mesin Turbin, PLTA Wonogiri.

THE ANALYSIS OF TURBINE ENGINE EFFICIENCY CALCULATION ON HYDROPOWER PLANT IN PT. INDONESIA POWER PLANT UNIT OF MRICA SUB- UNIT OF PLTA WONOGIRI

Supian Sauri (20140120094)
Teknik Elektro, Universitas Muhammadiyah Yogyakarta
E-mail: supianpds@gmail.com

ABSTRACT

Turbine efficiency is a measure of turbine perfomance to produce a power in comparison of power generated by the turbine engine and the turbine performance. Some factors that influence turbine efficiency are the debit of water flowing, water density, earth gravity acceleration, and the height of water falling (head). The research was conducted in PLTA Wonogiri and the data was taken according to the situation in the field, such as operating unit, power generated, water debit, kWh (power) production, voltagetransformer, temperature transformer, reservoir elevation, intake elevation, H delta, tailrace elevation, spill way or hollow jet, and the amount of diesel fuel. The highest average value of turbine engine efficiency of unit 1 was on July 2017, which is 92.5%. Furthermore, the highest efficiency of turbine engine in unit 2 was recorded on April 2017, which is 90.9%. In terms of the lowest efficiency, it occured on January 2017 with 72.4% efficiency and on November 2017 with 68.1% efficiency, respectively for unit 1 and 2. The total average value of turbine engine efficiency in January to December 2017 for unit 1 is 83.3 % and unit 2 is 84.8 %.

Keywords: Efficiency, Hydropower, Turbine Engine, PLTA Wonogiri.