

ABSTRACT

Along with the increase of population, demand for electrical energy supply continues to rise. Electrification ratio in Indonesia is still low due to the limited supply of electrical energy in Indonesia. Demand for electrical energy will continue to grow so that the price rates of electrical supply keep rising. P.T. PLN Indonesia already provides transmission Air Line High Voltage (SUTT), Extra High Voltage Air Line (SUTET) and network distribution of Medium Voltage and Low Voltage (TM / TR). Unfortunately the channels and the network required is not optimally utilized. Therefore some efforts needed to boost the efficiency of network in available channels. In order to do that, changing the amount of input voltage to the network by taking advantage of several electronic components such as inductors and capacitors are required.

In this final assignment I have designed a device to capture electromagnetic wave (induced electromagnetic force) in the medium voltage network of 20 KV, which can capture the magnetic field around current carrying wire with 317mV output voltage. Four capacitors and four diodes wired in parallel, to raise (step-up) the output voltage also with a reason to save energy during usage. Ferrite-core coils are used to capture the magnetic field around current carrying wire, where its frequency is 50 Hz by the standard of P.T. PLN.

In the end of testing and analysis, the resulting output voltage of each device is at 0.934 V dan 1.0 V. These results are in accordance with the use of four capacitors wired in series. By analyzing the network circuit, raising (step-up) the output voltage depends on the amount of capacitors wired also the breakdown voltage of each capacitor.

Keywords: *Utilization of electromagnetic waves, Medium Voltage Network (JTM), voltage quadrupler, capasitor, diode dan solenoide.*