ABSTRAK

Penggunaan beban non linier seperti komputer dapat menyebabkan terjadinya harmonisa pada sistem kelistrikan. Pemakaian komputer di Gedung Direktorat TIK UPI merupakan contoh penggunaan beban non linier dalam jumlah besar. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh penggunaan filter pasif (*low pass filter*) terhadap harmonisa arus di Gedung Direktorat TIK UPI. Metode yang digunakan pada penelitian ini dimulai dengan melakukan pengukuran harmonisa di gedung Direktorat TIK UPI. Selanjutnya dirancang suatu simulasi rangkaian sumber harmonisa yang melebihi standar IEEE 519-1992 berdasarkan data hasil pengukuran. Simulasi rangkaian menggunakan perangkat lunak PSIM 9.0. Karena hasil simulasi harmonisa arus melebihi standar, maka perlu dirancang sebuah filter pasif (*low pass filter*) agar harmonisa arus dapat diturunkan dan berada dalam batas standar IEEE 519-1992. Berdasarkan hasil simulasi, THDi sebelum dipasang filter pasif (*low pass filter*) adalah 114,69%, 115,15%, dan 114,24% pada fasa R, S, dan T. Sedangkan THDi setelah dipasang filter pasif (*low pass filter*) menjadi 12,02%, 13,49%, dan 13,89% pada fasa R, S, dan T.

Kata kunci: Beban nonlinear, Komputer, Harmonisa, Filter Pasif (*Low Pass Filter*)

ABSTRACT

Nonlinear loads such as computers can cause harmonics in the electricity system. The use of computers in Direktorat TIK building in UPI is one of the examples of the use of nonlinear loads in abundance. This study was aimed to discover the effect of the use of passive filter (low pass filter) to the current harmonics at Direktorat TIK building in UPI. The study was conducted first by measuring the harmonics at Direktorat TIK building in UPI. After that, a simulation of a harmonic source circuit which surpassed the standard of IEEE 519-1992 was built based on the result of the measurements. The circuit simulation used PSIM 9.0 software. Since the result of harmonics simulation surpassed the standard, it was necessary to build a passive filter (low pass filter) so the current harmonics could be decreased to the point where it met the standard of IEEE 519-1992. Based on the results of the simulation, before the passive filter (low pass filter) was installed, the THDi was 114,69%, 115,15%, and 114,24% in phase R, S and T. After the passive filter (low pass filter) was installed, the THDi was decreased to 12,02%, 13,49%, and 13,89% in phase R, S and T.

Key words: Nonlinear loads, Computer, Harmonics, Passive Filter (Low Pass Filter)