

INTISARI

Harmonisa merupakan salah satu gangguan yang terdapat pada sistem kelistrikan gedung. Harmonisa yang berasal dari beban non-linier yang dapat memunculkan gelombang frekuensi kelipatan bulat dari frekuensi fundamentalnya. Penelitian Analisis Harmonisa Arus dan Tegangan pada Gedung B Universitas 'Aisyiyah Yogyakarta bertujuan untuk mengetahui nilai harmonisa pada sistem kelistrikan dengan acuan standar IEEE 519-1992. Parameter pengukuran yaitu tegangan, arus, *Total Harmonic Distortion Voltage* (THD_V), *Total Harmonic Distortion Current* (THD_I), dan *Total Demand Distortion Current* (TDD_I). Pengukuran menggunakan alat *Power Quality and Energy Analyze* METREL MI 2892. Penelitian bertempat di panel *Sub-Distribution Panel* (SDP) Gedung B Universitas 'Aisyiyah Yogyakarta. Waktu pengukuran selama seminggu dengan pengaturan waktu pada alat selama 24 jam dan selang waktu perekaman selama 30 menit. Hasil dari pengukuran menunjukkan nilai harmonisa arus paling tinggi sebesar 50.38% dan harmonisa tegangan 5.35% yang ada di Gedung B Universitas 'Aisyiyah Yogyakarta melebihi batas standar IEEE 519-1992 untuk harmonisa tegangan batas maksimum 5% dan harmonisa arus maksimal sebesar 8%. Harmonisa yang melebihi standar harus direduksi dengan menggunakan filter pasif *single tuned*. Nilai spesifikasi filter pasif *single tuned* untuk orde ke-3 $X_n = 1297.8 \Omega$; $X_L = 1297.8 \Omega$; $X_C = 1297.8 \Omega$; $R = 43.26 \Omega$; $P = 3.338 \text{ KW}$; $L = 1.425 \text{ H}$; $C = 0.846 \times 10^{-6} \text{ F}$ dan untuk orde ke-5 $X_n = 731.7 \Omega$; $X_L = 731.7 \Omega$; $X_C = 731.7 \Omega$; $R = 24.39 \Omega$; $P = 5.92 \text{ KW}$; $L = 47.556 \text{ H}$; $C = 0.883 \times 10^{-6} \text{ F}$.

Kata kunci: Harmonisa, THD_V , THD_I , TDD_I , *single tuned*

ABSTRACT

Harmonic distortion is one of the disorders in the building's electrical system. The harmonic distortion that comes from a non-linear load that could bring a wave of frequency multiples of the fundamental frequency. The study Analyses Current and Voltage Harmonics at Building B of Universitas 'Aisyiyah Yogyakarta aims to find out the value of harmonic distortion in the electrical system with the reference of the IEEE 519-1992. Parameter measurement of voltage, current, Total Harmonic Distortion Voltage (THDV), Total Harmonic Current Distortion (THDI), and Total Demand Distortion Current (TDDI). The measurement of the use of Power Quality and Energy Analyze METREL MI 2892. Studies located in panel Sub Distribution Panel (SDP) Building B of Universitas 'Aisyiyah Yogyakarta. Time measurement for a week with the time setting on the appliance for 24 hours and time-lapse recording for 30 minutes. The results of the measurements show the highest harmonic value of 50.38% and the harmonic voltage of 5.35% in Building B University isy Aisyiyah Yogyakarta exceeds the IEEE standard limit 519-1992 for maximum voltage harmonics of 5% and maximum harmonics of 8%. Harmonics that exceed the standard must be reduced by using a single tuned passive filter. The result of the value of the single-tuned passive filter specification for 3rd order is $X_n = 1297.8 \Omega$; $X_L = 1297.8 \Omega$; $X_C = 1297.8 \Omega$; $R = 43.26 \Omega$; $P = 3,338 \text{ KW}$; $L = 1.425 \text{ H}$; $C = 0.846 \mu\text{F}$ and for 5th order is $X_n = 731.7 \Omega$; $X_L = 731.7 \Omega$; $X_C = 731.7 \Omega$; $R = 24.39 \Omega$; $P = 5.92 \text{ KW}$; $L = 47,556 \text{ H}$; $C = 0.883 \mu\text{F}$.

Keywords: Harmonic, THD_V , THD_I , TDD_I , single tuned