

ABSTRACT

Increasing energy demand for fuel oil, encouraging the development of alternative energy substitutes for fuel energy, such as research and development of renewable energy. One of them is picohidro power plant system, which is a small-scale generator with power output less than 5 KW. In each generating system a load-control system is required to keep the power released stable. This affects the lifetime generator as well as the quality of electrical power generated. The typed load will affect the stability of the generator output, so an electronic load control system is required. In this study, we designed an electronic load control system with the aim of maintaining frequency fluctuations when there is a change in power consumption to consumers. In this research, we designed an electronic load control system with the aim of maintaining frequency fluctuations when there is a change in power consumption to consumers. This research can keep the generated frequency value at the permissible frequency tolerance of 49 - 51 Hz, with fuzzy logic configuration as self tuning K_p and K_i value on PI Controller. From the result of the control system that has been made, the average frequency error value generated equal to 0.1 Hz with set point frequency 50 Hz.

Keywords: *picohydro, Electronic Load Controller, frequency control, fuzzy – PI control system*