

ABSTRACT

Solar energy is a potential alternate energy source in Indonesia. A photovoltaic system used for convert solar energy to electrical energy. However, the efficiency from photovoltaic is relative low. Maximum efficiency is achieved when photovoltaic system works at it is Maximum Power Point (MPP), where MPP is depends on environmental condition, such as temperature and radiation. Maximum Power Point Tracking (MPPT) is a system that works in order to make photovoltaic system works at it is maximum efficiency. This research, MPPT system uses buck-boost converter in order to move operating point of photovoltaic and fuzzy method as the MPPT algorithm uses to search MPP. Different types of membership functions, such as triangular, trapezoidal, gaussian and generalized bell compared and see its effect on performance or response of MPPT in order to find maximum power point. Matlab-Simulink® software used to see the effect of membership function on performance or response of MPPT in order to find maximum power point. From simulation result, MPPT system has successfully search the maximum power point, even environmental condition changed, MPPT can search the new maximum power point. The shape of membership function effect the oscillation ratio at the maximum power point, where generalized bell gives smallest oscillation compared to the other membership functions, with oscillation ratio of 2.00%.

Keyword: *Photovoltaic system, MPPT, Fuzzy Logic Controller (FLC), Matlab-Simulink®.*