

ABSTRACT

The utilization of renewable energy in Indonesia has not been maximized because about 10 MWp can be utilized, even though Indonesia has the potential to obtain energy of 4.8 KWH / m² or equivalent to 112,000 GWp. By looking at the potential, the existing solution is to increase PLTS (solar power plants) and maximize existing PLTS (solar power plants), by designing MPC (PREDICTIVE MODEL CONTROL) as a method to control dc motors. It is connected to PV (Photovoltaic).

The Predictive Control Model (MPC) control system controls photovoltaic panels with DC motor actuators connected to PV (photovoltaic) panels. Thus, the PV (Photovoltaic) panel automatically moves following the position of the sun. Furthermore, photovoltaic panels always get sunlight with the angle coming perpendicular to the surface plane of the photovoltaic, so it always obtains maximum energy from the sun.

In this study, the MPC Method (Predictive Control Model) used MPC Designer Matlab and simulated the system with Simulink Matlab. As a result, the DC motor can move the PV (Photovoltaic) panel in accordance with the angle reference of the sun's position given. While the system response characteristics, the angle of position of the panel to the position overshoot by 0.5%, in contrast to the rise time is worth 18,752 ks.

Keywords: *Photovoltaic, MPC (Predictive Control Model), DC Motor*