

ABSTRACT

In the process of converting wind energy into electricity, a generator is needed to convert wind energy into electric. The development of generator technology has increased by design, size, construction, material, and manufacture technology. This study simulates an umbrella variation to improve efficiency by reducing leaky flux at the stator or in other words increasing the ability of the stator to capture more magnetic flux, where umbrella is a modification of the geometry of the stator teeth. The object of this research is testing the umbrella variation simulation with variations in rotational speed and loading variations in terms of the value of efficiency output power and regulation voltage. Tests are carried out with variations in rotational speed from 100 to 2000 rpm, as well as variations in the load values of 10 ohm, 20 ohms, 40 ohms, 60 ohms, 80 ohms, and 100 ohms. obtained the highest efficiency value at a speed of 100 rpm which is on the umbrella Triangle Type with a value of 84.9% in a load of 10 ohms with an output power of 40.76 watts and a regulation voltage of 17.5%. While at the speed of 2000 rpm by looking at the efficiency and regulation voltage of the No Umbrella Type the best performance is with an efficiency value of 75.1% with an output power of 1138.63 watt and a regulation voltage of 15.3% at a load of 100 ohms. It turns out that with the simulation of the umbrella variation model, speed variation and load variation. can be determined that the turbine will be built for low speed or high speed. Based on the results obtained, the Triangle Type is the best among the other variations by reviewing the value of the power output of 2546.13 watts with an efficiency of 83.05% and the voltage regulation of 48.63%.

Keywords: *Magnet infolityca, permanent magnet synchronus generator, wind turbine.*

