Abstract:

In this paper, an intelligent low-cost wind turbine is designed which can rotate the rotor hub towards wind direction. The smart wind turbine technology has developed by using six rotor blades, squirrel cage induction generator (SCIG), and yaw mechanism. The yaw mechanism relates to two stepper motors through support tower. Based on the wind direction, the yaw mechanism will control the stepper motors. Finally, this stepper motors will move the wind turbine towards the wind direction. Conventionally, the hub of wind turbine is kept at fixed position. However, this kind of arrangement is not suitable where in some places (e.g. Bangladesh), the wind directions can be changed frequently. Therefore, it is necessary to move the rotor hub continuously towards the wind direction so that it can capture maximum amount of wind power. So, a smart wind turbine with yaw mechanism is designed in this paper.

Kewwords: SCIG, yaw mechanism, gear ratio, wind turbine, wind direction, sensor, stepper motor.