Abstract

The usage of squirrel cage induction machines in wind generation is mostly preferred as a generator of choice. The squirrel cage induction machine is reliable, simple, light weight, cheap and requires very less maintenance. At constant frequency the induction generator is connected to the utility. For constant frequency application, the induction generator runs at small value of slip i.e. practically constant speed. The wind turbine works at maximum efficiency only for a small range of wind speed deviation. For variable speed application, an
induction generator demands an interface to convert the variable frequency output of the generator to the fixed frequency. This system is discussed using self-excited generator because a simple diode bridge requires performing the ac/dc conversion. The successive dc/ac conversion will be performed using various techniques. The use of a thyristor bridge is accessible for large power conversion and has higher reliability and lower cost. The firing angle of the inverter bridge can be controlled for tracking the optimum power curve of the wind turbine. With only thyristors and diodes used in power conversion, the system can be scaled up to a very high power and high voltage applications.

References

- Boldea, I., Nasar, S. A. Induction machines handbook; (CRC Press, Boca Raton, 2001)
Index Terms

Computer Science
Control Systems

Keywords

Wind Energy  Variable Speed Generation System  renewable Energy  Self Excitation