

What is a synchronous generator & DFIG?

Synchronous Generators (SG), and DFIGs, can be regarded as one of the most functional generators in wind turbines. Utilizing a DFIG for wind turbines has the following advantages: (a) producing the maximum power at variable speeds.

How do DFIG generators work?

On the other hand, in low speeds, the stator winding is disconnected from the grid and gets shorted in a way that the generator works as a single fed inductive generator in which the rotor is connected to the grid through a converter. This type of connection can be utilized as a tool for starting DFIG. Fig. 9.

Why do wind turbines use DFIG rotors?

A DFIG can supply power with steady voltage and frequency while the rotor turns with a different speed. Today, almost 99% of the wind turbines' generators use the power converters because of cost advantage. Over 70% of the wind turbines are operated with wound rotor DFIGs in 2009.

What type of connection is used for a 2 MW DFIG?

In, for the design of a 2 MW, 690 V and 1700 A DFIG the stator winding connection is of the delta type. In this reference, this kind of connection is used for the inductive generators of the wind turbines since the rated current of the stator windings can be decreased and the third harmonic of the line current is eliminated in this type.

What are the most important failures in DFIG wind turbines?

To investigate the insulation system, first, the different types of the most important failures were investigated. It was stated that in the DFIG wind turbines, the speed of the wind varies, i.e., the wind variations are really important.

What rpm should a 2 MW generator run?

The nominal speeds have been around 1500, 1487, 1650, 1660, 1680, 1750 and 1980 rpm. According to these data, the rated speed can be determined around 1600-1700 rpm for a 2 MW generator. The designer must consider the limitation of speed operation and efficiency.

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