

DEVELOPMENT OF A 600KW BRUSHLESS DFIG FOR WIND TURBINES

LEAD ORGANISATION

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COST AND DURATION

The Carbon Trust contribution towards this project is £250,000. The project started in November 2008 and is due for completion in April 2011.

PROJECT REFERENCE NUMBER

077-143

OBJECTIVES

The aim of this project is to prove and quantify the performance and advantages of a 600kW wind turbine with a brushless doubly fed induction generator (BDFIG) at its core, which will represent a low-cost, low-maintenance and highly reliable drive train for wind turbine applications.

SUMMARY

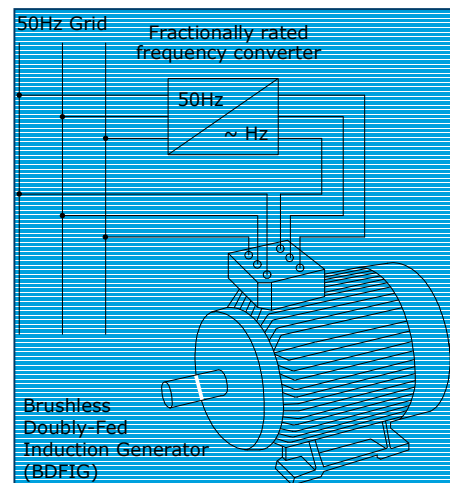
In over 85% of newly installed wind turbines, electricity is generated by a DFIG that has slip rings on its rotating part for frequency regulation.

Studies have shown that problems with brushgear and slip rings are a significant issue in wind turbine operation and reliability, and that the problem will be more severe in machines that are located offshore where there are stronger winds and accessibility is restricted.

Using brushless machines is expected to address these issues and help extend the uptake of wind generation in situations where the limitations of current DFIG technology are significant barriers.

In this project, the following work will be undertaken:

- Design and manufacture a 600kW BDFIG



BDFIG operation

- Design and develop the generator control system and integrate it with the power electronics converter
- Test and verify the performance of the generator system on a test bed
- Retrofit the generator and the associated control system on a 600kW wind turbine in Germany and test for 12 months.

The results of this project should provide a platform for the development of full-scale industrial wind turbines.

