Modeling and simulation of wind energy chain conversion

S. Bellarbi\textsuperscript{a,*}, N. Kasbadji merzouk\textsuperscript{b}, A. Malek\textsuperscript{a}, C. Larbes\textsuperscript{c}

\textsuperscript{a}Center for Development of Renewable Energy, Bouzarah, W. Algiers, Algeria
Email: sbellarbi@cder.dz
\textsuperscript{b}Solar Equipment Development Unit/EPST/CDER, W. Tipaza, Algeria
\textsuperscript{c}Ecole Nationale Supérieure Polytechnique, W. Algiers, Algeria

Received 13 March 2012; Accepted 18 July 2012

ABSTRACT

Alongside the substantial market for wind generation of high power systems grows smaller power (about 100 W to several kW) which is especially dedicated to remote sites. The chain of energy conversion is very different from those of great power, they are often based on the use of a three-phase alternator with permanent magnets debiting directly through a rectifier diodes in a generally electrochemical battery low voltage (12–48 V). In this article, we propose a model of the conversion chain, few conventional, for the estimation of energy production.

Keywords: Wind turbine generator; Synchronous generator; Permanent magnetic; Continuous source; Fuzzy logic; Simulation

*Corresponding author.

Presented at the International Conference on Desalination for the Environment, Clean Water and Energy, European Desalination Society, 23–26 April 2012, Barcelona, Spain