



(1)

Steady-state Modeling and Control of a Microgrid Supplying Irrigation Load in Toshka Area

Mazen Abdel-Salam, Adel Ahmed, Hamdy Ziedan, Rashad Kamel, Khairy Sayed, Mahmoud Amery and Mohamed Swify

Abstract:

This paper is aimed at sizing solar-wind-battery standalone microgrid for supplying irrigation and domestic loads in Toshka area, Toshka, Egypt. Not only the MG system components but also the interconnection cables and feeders are sized. Steady-state power flow through the MG system is analysed at varying sun irradiation and wind speed. Modeling of the MG components and their control of system voltages, currents and powers are investigated. Power flows during different MG operation conditions including absence of wind and sun as well as sudden disconnection of the load are studied

Keywords:

Hybrid Solar-Wind , Irrigation System , Toshka Area , control system , power flow

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IECON 2012 - 38th Annual Conference on IEEE Industrial Electronics Society , , 6



(2)

Analysis of Wind Turbine Driven Permanent Magnet Synchronous Generator under Different Loading Conditions

Gaber El-Saady, El-Nobi A.Ibrahim, Hamdy Ziedan and Mohammed M. Soliman

Abstract:

This paper proposes the configuration of a wind turbine generating system equipped with Permanent Magnet Synchronous Generator (PMSG). There are different types of synchronous generators, but the PMSG is chosen which has better performance due to higher efficiency and less maintenance. Since it can be used without a gearbox also implies a reduction of the weight of the nacelle and a reduction of costs. The model includes a wind turbine model, drive train model and PMSG model. The equations that explain their behavior have been introduced. The generator model is established in the d-q synchronous rotating reference frame. The proposed Wind Turbine Generator System (WTGS) has been implemented in Matlab/Simulink software. The PMSG is operating in stand-alone which is loaded with different types of loads. The simulation results indicate the ability of wind driven PMSG to operate over wide range of operating conditions at different loading conditions and show effect of different load types in operation.

Keywords:

Permanent Magnet Synchronous Generator (PMSG), Wind Turbine, Wind Energy and WTGS

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(3)

Analysis of Wind Turbine Driven Permanent Magnet Synchronous Generator under Different Loading Conditions

Gaber El-Saady, El-Nobi A.Ibrahim, Hamdy Ziedan and Mohammed M. Soliman

Abstract:

This paper proposes the configuration of a wind turbine generating system equipped with permanent magnet synchronous generator (PMSG). There are different types of synchronous generators, but the PMSG is chosen in order to obtain its model. It offers better performance due to higher efficiency and less maintenance since it does not have rotor current and can be used without a gearbox, which also implies a reduction of the weight of the nacelle and a reduction of costs. Wind turbine and drive train have been modelled and the equations that explain their behaviour have been introduced. The generator model is established in the dq synchronous rotating reference frame. The PMSG is operating in stand-alone which is loaded with different types of loads. The proposed system has been implemented in MATLAB /SIMULINK software.

Keywords:

Permanent Magnet Synchronous Generator(PMSG), Wind Turbine, Modeling, WTGS simulation and modeling.

Published In:

16th International Middle- East Power Systems Conference -MEPCON'2014 , . . .



(4)

Modeling and Operation of Permanent Magnet Synchronous Generator Wind Energy Conversion System Connected with Grid

Gaber El-Saady, El-Nobi A. Ibrahim, Hamdy Ziedan and Mohammed M. Soliman

Abstract:

Wind is one of the most distinguished renewable sources of energy. Wind Energy Conversion System (WECS) is based on a variable speed wind turbine with direct driven Permanent Magnet Synchronous Generator (PMSG). WECS transmits its electrical power to an AC grid using advanced power electronic converter system. The modelling and operation of a grid connected wind generation system based on a gearless PMSG is being studied. Implementation of the machine side converter control strategy develop a maximum power point tracking (MPPT) method using direct driven PMSG. The grid side converter is used to control active and reactive powers injected into the grid and maintaining the dc link voltage constant. The PMSG is connected to the grid by means of a fully controlled back-to-back converter with a voltage source inverter (VSI) which consists of a pulse width modulation (PWM) and an intermediate DC link circuit. DC-Link Over-Voltage protection Scheme is used to protect the system under fault conditions. The effect of change wind speed and faults on the operation is being studied in this paper. The modeling of wind power generation system with PMSG and power electronic converter interface along with the control scheme is implemented using a MATLAB/SIMULINK simulation package.

Keywords:

Permanent Magnet Synchronous Generator (PMSG), WECS, Fully controlled back-to-back converter, PWM, Voltage Source Inverter, MPPT

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17th International Middle East Power Systems Conference . . .



(5)

Analysis of a Corona-Discharge Based Electrostatic Motor

Mazen Abdel-Salam, Adel Ahmed, Hamdy Ziedan and Fahd Diab

Abstract:

This paper is aimed at proposing a new design of a corona-discharge based electrostatic motor with a cylindrical rotor made from aluminum foil and multi copper strip stator electrodes. The stator electrodes are alternately stressed positively and negatively. The onset voltage of corona discharge is calculated based on the condition of discharge sustenance at stator electrodes. The corona currents emitted from positively and negatively stressed electrodes are calculated being dependent on the applied voltage and motor geometry. This calls at first for calculation of the spatial distribution of electric field within the motor volume using the accurate charge simulation technique. The calculated corona onset voltage and current-voltage characteristics of the motor agreed reasonably with those measured experimentally for three motors built-in the laboratory. The dependency of the motor speed on the applied voltage is reported for the different investigated motors.

Keywords:

Electrostatic motor, ionic wind, corona-discharge, field mapping, corona current, motor speed

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International Journal of Plasma Environmental Science and Technology, Japan , 8-1 , 60-69



(6)

Advanced protection schemes for DFIG based wind turbines during the grid faults

Abofard, Alaa Eldin M.; El-Zohri, Emad H.; Mahmoud, Heba A.; Ziedan, Hamdy A.

Abstract:

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Keywords:

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2016 International Conference on System Reliability and Science, ICSRS 2016 - Proceedings , NULL , p 33-41



(7)

A new proposed dynamic arc model for flashover performance of a non-uniform polluted insulator string under HVAC stress

El-Zohri, Emad H.; Ziedan, H.; Procházka, R.

Abstract:

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Keywords:

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Published In:

Electric Power Systems Research , v 119 , p 278-286



(8)

-Current doubler rectifier for arc welding machines with a phase shift ZVS three-level DC-DC converter

Alanazi, Meshari D.; Elbaksawi, Osama; Abofard, Alaa Eldin M.; Sayed, Khairy; Ziedan, Hamdy A.

Abstract:

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Keywords:

NULL

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