

Solar Energy South Africa

Solar brushless motor power generation efficiency



Overview

How to improve efficiency of brushless DC motors in generating mode?

This paper makes a comparative analysis of Efficiency improvement of Brushless DC (BLDC) motors in generating mode by controlling the varying load conditions. Materials & Methods: Proportional integral (PI) controller and proportional integral derivative (PID) controllers are implemented to improve efficiency of BLDC motors.

Are brushless DC motors energy saving?

Power saving is a real challenge nowadays owing to the increasing power demand. The brushless DC (BLDC) motor exists as an energy-saving-electromechanical system . When compared with an induction motor, the BLDC motors possess high efficiency, high power density and high power factor .

What is sensorless BLDC motor driven solar PV fed water pumping system?

The proposed sensorless BLDC motor driven solar PV fed water pumping system involves various control strategies such as MPPT of solar PV array, and start-up technique and speed control of motor. These controls are separately discussed in the following sections.

What is a brushless DC motor?

The brushless DC (BLDC) motor exists as an energy-saving-electromechanical system . When compared with an induction motor, the BLDC motors possess high efficiency, high power density and high power factor . An increased capacity and compactness are the additional features of this motor.

What are the efficiencies of a brushless system?

The theoretical analysis is done in Octave. There are two main efficiencies to consider in a brushless system: motor efficiency and propeller efficiency. In order to focus on motor efficiency, we will simplify propeller efficiency and say

that the bigger the propeller, the higher its efficiency.

Can BLDC motor drive a grid-interfaced solar PV fed water pumping system?

A grid-interfaced solar PV fed water pumping using a BLDC motor drive is presented in . However, no experimental analysis is carried out and study is restricted to software-based simulation. An experimental analysis of the proposed system, in this work, along with the detailed design and control methodologies, is carried out.

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An Improved Efficiency Permanent Magnet Brushless

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In order to optimise the output power, i.e. to track the maximum power of the PV generator, various Maximum Power Point Tracker techniques or MPPT are used such as: fixed voltage control, power calculation, incremental conductance ...

Solar Powered Speed Control of Brushless DC ...

2021. This paper describes the overall working and implementation of the speed control of BLDC motor using PWM signal of an Arduino Uno board. Brushless Direct Current (BLDC) motor are more popular in a variety of motor ...



Simple brushless DC motor drive for solar photovoltaic array fed water

accomplished under any kind of change in solar insolation level. A BLDC motor of 1.3 kW rated power is selected and each stage of the proposed system are designed accordingly, as ...

Brushless DC motor-driven grid-interfaced solar water pumping ...

technology with a BLDC motor is proposed till date. The solar water pumping is made reliable and energy efficient, in this work using BLDC motor, with an interface of PV array to the utility. A ...



Simple brushless DC motor drive for solar photovoltaic ...

This study deals with a buck-boost converter controlled solar photovoltaic (SPV) array fed water pumping in order to achieve the maximum efficiency of an SPV array and the soft starting of a permanent magnet ...

Energy regeneration technique for electric vehicles ...

Owing to better torque-speed characteristic, high efficiency, long operating life, higher speed ranges, and low maintenance, brushless motors are widely used in vehicular technology . For example, outer rotor BLDC motors ...



New trends in electric motors and selection for ...

The PM inset motor utilises the advantages of the high power density and efficiency of the brushless DC motor and advantages of high starting torque and wide constant power range of DC series motor. The originality of ...

Brushless DC motor-driven grid-interfaced solar water ...

The solar water pumping is made reliable and energy efficient, in this work using BLDC motor, with an interface of PV array to the utility. A power sharing control is proposed to permit the flow of power from utility to the ...



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Grid interfaced solar PV powered brushless DC motor driven water

A high efficiency and reduced sensor based brushless DC (BLDC) motor drive is used to run the water pump. The power transfer from the utility grid to the common DC bus is enabled through ...

INTEGRATED DESIGN
EASY TO TRANSPORT AND INSTALL,
FLEXIBLE DEPLOYMENT



Solar PV powered-sensorless BLDC motor driven water ...

This study deals with a position sensorless brushless DC (BLDC) motor-driven solar photovoltaic (PV) fed water pump. A technique based on the back electromotive force (back-EMF) zero crossing is proposed for ...

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