جامعة المنوفية

كلية الهندسة

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نوع البحث: أكاديمي تاريخ اعتماد تسجيل البحث: 2013/02/14

عنوان البحث:

طريقة البحث:

This paper presents a new control strategy of a stand-alone self-excited induction generator (SEIG) driven by a variable speed wind turbine. The proposed system consists of a three phase squirrel-cage induction machine connected to a wind turbine through a step-up gear box. A current controlled voltage source inverter (CCeVSI) with an electronic load controller (ELC) is connected in parallel with the main consumer load to the AC terminals of the induction machine. The proposed control strategy is based on fuzzy logic control principles which enhance the dynamic performance of the proposed system. Three fuzzy logic PI controllers and one hysteresis current controller (HCC) are used to extract the maximum available energy from the wind turbine as well as to regulate the generator terminal voltage simultaneously against wind speed and main load variations. However, in order to extract the maximum available energy from the turbine over a wide range of wind speeds, the captured energy is limited due to electrical constraints. Therefore the control strategy proposed three modes of control operation. The steady state characteristics of the proposed system are obtained and examined in order to design the required control parameters. The proposed system is modeled and simulated using Matlab/Simulink software program to examine the dynamic characteristics of the system with proposed control strategy. Dynamic simulation results demonstrate the effectiveness of the proposed control strategy.

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In this paper, the equations describing the performance of the electric vehicle are derived. Performance characteristics for each part in the vehicle system are obtained when the vehicle is accelerated under a variable terminal voltage while the turn on, turn off angles are constants.

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طريقة البحث:

In this paper the steady state characteristics of a self tuned field oriented control induction motor drive are presented. The induction motor will be self tuning after one or more of its parameters varied. Both basic types of field oriented control have some sensitivity to machine parameters and provide non-ideal torque control characteristics when control parameters differ from actual machine parameters. In general, both steady state torque control and dynamic response differ from the ideal instantaneous torque control achieved by a correctly tuned controller

جامعة المنوفية

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In practical applications, the field orientation control technique encounters many serious problems. These problems could indeed undermine the application of induction motors unless they could be solved. The most important problems are to develop an accurate motor model, and that the control algorithm is sensitive to motor parameter variations. Unfortunately, the motor parameters do vary with operating conditions in practice, and any parameter variation or mismatch will degrade the control performance. The effect of parameter variations on the performance characteristics of induction motors with field oriented control is studied in this paper. The variation of induction motor characteristics from starting up to synchronous speed is investigated

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طريقة البحث:

The use of induction motors in industry is extensive. These motors are exposed to a wide variety of environments and conditions, which age the motor and make it subject to inter-turn faults. One major cause of these faults is breakdown of the turn insulation leading to damage the ground insulation wall. Early detection of inter turn shorts during motor operation would eliminate consequential damage to adjacent coils and the stator core reducing repair costs and motor outage time. This paper deals a modeling, simulation and detection of induction motor inter turn short circuit faults. A new detection method for inter-turn short circuit faults in stator windings using sum of stator currents was presented. The simulation and experimental results are reported to demonstrate the effectiveness of the proposed technique.

جامعة المنوفية

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طريقة البحث:

Permanent Magnet Synchronous Motors (PMSM) are widely applied in industrial and robotic applications due to their high efficiency, low inertia and high torque – to - volume ratio. So, this paper proposes two simulation dynamic models for ac Interior Permanent Magnet Synchronous Motor (IPMSM), and ac Surface Permanent Magnet Synchronous Motor (SPMSM) with the aid of MATLAB – Simulink. The modeling procedures are described and simulation results are presented. These dynamic models capable of predicting the machine's behaviour for this machine type. The model takes the core loss in its consideration, to show its effect on torque ripple. These non – linear models of the PMSM in d-q reference frame are defined. The dynamic models are developed by coupling electrical equations and mechanical equations of the PMSM. All simulation results are presented for all machine's variable characteristics. The validity of our model here is verified using V \ f control, at various frequencies values. These models will be used in future, in sensorless speed control

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عنوان البحث:

طرق التحكم فى محرك الممانعة المغناطيسية النبضى المستخدم فى المركبة الكهربية خلال التسارع

طريقة البحث:

أفضل الطرق للحد من الإنبعاثات وتقليل الطاقة المستخدمة بواسطة المركبات هي استخدام أنظمة دفع أكثر كفاءة فى استخدام الطاقة مثل المركبة الكهربائية. المركبات الكهربائية تعتبر الحل الواعد لتقليل مشكلة الإنبعاثات وذلك لأنها عديمة الإنبعاثات. هذه المركبات تعتمد على محرك كهربى فى نظام الدفع الخاص بها وكذلك تستخدم البطاريات كوسيلة لتخزين الطاقة.