Demagnetization switch energy storage motor

This paper, from an energy efficiency point of view, proposes to analyze the tolerance ability of different electrified vehicles on motor demagnetization faults, via PMSM flux density degradation modeling, efficiency estimation and dynamic programming (DP) based powertrain energy management. The relationship between different demagnetization ...

Reliable fault diagnosis and condition monitoring are essential for permanent magnet synchronous motor (PMSM) drive systems with high-reliability requirements. PMSMs can be subject to various types of damage during operation. Magnetic damage is a unique fault of PMSM and concerns the permanent magnet (PM) of the rotor. PM damage may be ...

Switch vendors often include a graph in their datasheet to show the maximum inductive load versus inductive current that can be safely handled. Demagnetization Energy Equation 1 defines the energy stored in an inductive load, and Equation 2 defines the energy dissipated by the high-side switch: (Eq. 1) energy stored in a inductive load (Eq.

The high-capacity magnetizing and demagnetization machine is composed of a control system, a single-phase voltage doubling capacitive conversion type power supply with quasi constant-current charge, an energy storage capacitor set, a composite electronic switch, a bit magnetic field coil and a plurality of safety protection systems.

The electric drive system, depending on the arrangement position of the motor, can be basically divided into two types: motor centralized drive systems and motor distributed drive systems [12][13 ...

In order to improve the energy storage efficiency of vehicle-mounted flywheel and reduce the standby loss of flywheel, this paper proposes a minimum suspension loss control strategy for single-winding bearingless synchronous reluctance motor in the flywheel standby state, aiming at the large loss of traditional suspension control strategy. Based on the premise ...

1. Introduction. The high-performance servo drive systems, characterized by high precision, fast response and large torque, have been extensively utilized in many fields, such as robotics, aerospace, etc [1], [2].As the requirement for small self-weight and the demand for output precision grows higher, the direct-drive motor is gradually replacing the conventional ...

This paper presents a review of the most common power converters and torque ripple minimisation approaches for switched reluctance motors (SRMs). Unlike conventional three-phase AC motors, namely squirrel cage induction motors and permanent magnet synchronous motors, which require a typical

three-phase inverter for operation, the switched reluctance ...

This paper proposes a reduced switch multilevel converter for switched reluctance motor (SRM). The proposed converter increase voltage across the winding, incorporate scalable structure, flexible voltage across the phases, with the reduced number of component count without employing extra capacitors, and delivers multilevel voltage. The performance of the SRM drive ...

The hysteresis current controlled pulsewidth modulation scheme with hard freewheeling and the commutation angle dynamic shift controller are proposed to enhance the flywheel discharging generating performance. This paper presents the development of a switched-reluctance machine (SRM) driven flywheel system, its charging/discharging controls, and ...

However, the excitation and demagnetization voltages are limited by the supply voltage in conventional SRM drives [15]. Given the availability of energy storage and a limited space envelop in PHEVs, the integration of the multi-level converter and energy storage systems is very practical and effective [16]-[19].

Fault detection and diagnosis (FDD) is of utmost importance in ensuring the safety and reliability of electric vehicles (EVs). The EV"s power train and energy storage, namely the electric motor drive and battery system, are critical components that are susceptible to different types of faults. Failure to detect and address these faults in a timely manner can lead ...

The permanent magnet synchronous motor (PMSM) is an important type of synchronous motor. Compared with the conventional synchronous motor, its stator is also the symmetrical three-phase windings, but for its rotor, a special-shaped rare-earth permanent magnet is used instead of the field windings [].This means that the motor has a simple ...

The reduced switch multilevel converter for switched reluctance motor (SRM) is discussed in this paper. This proposed converter boasts several advantageous features, such as increased voltage ...

Downloadable (with restrictions)! Due to possible overheat, abrasion or mechanical vibrations, demagnetization fault is inevitable in permanent magnet synchronous motors (PMSMs), which could greatly decrease the motor"s efficiency and hence an electrified vehicle"s performance. This paper, from an energy efficiency point of view, proposes to analyze the tolerance ability of ...

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