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Design of a HTS axial flux concentration motor for embedded applications

El Hadj Ailam, Abdelfettah Hocine and **Mohamed Nadjib Benallal**
University of Khemis Miliana, Algeria

This paper deals with the design of an original superconducting motor. The topology of the motor is based on the flux concentration principle when a high flux density is first generated using a HTS solenoid supplied by a DC current. Secondly, HTS bulks, which are considered diamagnetic materials, modulate the created flux density. The obtained configuration will have a spatial variation of the flux density in the air-gap of the motor. The designed motor has a high specific torque in comparison to conventional one which makes it a good candidate for embedded applications such as aircraft, electrical train and navy propulsion.

ailam_elhadj@yahoo.fr

An efficient asymmetric cascaded H-bridge inverter for photovoltaic system

Zaouche Khelil, Talha Abdelaziz and **Berkouk El Madjid**
University of Sciences and Technology Houari Boumediene, Algeria
University of Algiers, Algeria

This paper presents a single-phase seven levels cascaded and asymmetric H-bridge inverter for grid-connected photovoltaic system with non-linear power load. The asymmetric cascaded H-bridge inverter appears to be the perfect candidate for photovoltaic applications; thanks to its modularity, scalability and distributed maximum power point tracking possibility. However, the power mismatch from cascaded individual photovoltaic inverters can bring DC-link voltage drift, involving loss of the maximum power point tracking and reducing the effectiveness of the system. This paper, addresses this issue. The operations and performances of the suggested control strategy are verified by simulation using Matlab/Simulink software. The tests results confirm the feasibility and reliability of the developed control scheme. According to the authors' knowledge, this paper is the first work which deals with the drift in the DC-link voltages, inherent to an asymmetric cascaded H-bridge inverter fed by photovoltaic sources.

zaouche.khelil@gmail.com