

IMPLEMENTATION OF SENSORLESS SPEED CONTROL FOR TWO-PHASE INDUCTION MOTOR DRIVE USING ISFOC STRATEGY*

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Abstract— This paper presents a new technique based on model reference adaptive system (MRAS) observer for sensorless speed control of Two-Phase Induction Motor (TPIM). The MRAS identification is performed by means of comparison of stator fluxes obtained from both stator and rotor equations with stator voltage and current measurements. Simulation and experimental results for a 1.1 kW TPIM set-up are presented and analysed using a dSpace system with a DS1104 controller board based on digital signal processor (DSP) TMS320F240. Simulation and experimental results at nominal, low and zero speeds confirm the effectiveness of the proposed sensorless speed controlled TPIM drive.

Keywords— Two-phase induction motor (TPIM), indirect stator-field-oriented control (ISFOC), model reference adaptive system (MRAS)

1. INTRODUCTION

Two-Phase Induction Motor (TPIM) is widely used in several industrial and domestic applications. In those applications the motor runs at constant frequency and is fed directly from the ac grid without any type of control strategy. The TPIM is found in air conditioners, washers, dryers, industrial machinery, fans, compressors, tools, blowers, vacuum cleaners, household appliances and many other applications. The reduction in the cost of the power electronic circuitry provides economically justifiable applications for adjustable speed Two-Phase Induction Motor Drives (TPIMD). In recent years, several methods that use inverters for the variable speed control of TPIM have been proposed [1]-[15]. An alternative approach is to use a 6 switch three phase Voltage-Source Inverter (VSI) bridge, connecting the two windings of the motor as an unbalanced load between the phases, as shown in Fig. 3. This is a more cost effective solution [1], [2], [9], [11], [16]. Recently, Stator Field Oriented Control (SFOC) of TPIMD has been gaining wide attention in literature [1]-[3]. In vector control, the flux linkage magnitude and the electromagnetic torque are controlled independently [14]-[15]. The SFOC represents a better solution to satisfy the industrial requirements. The field orientation is relatively straightforward in all operating conditions if the rotor speed is accurately known, which traditionally necessitates a sensor on the shaft of the motor. However, there are several reasons for preferring a system without the sensor. The cost of the speed sensor, at least for machines with ratings less than 10 kW, is in the same range as the cost of the motor itself. The

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web jan 26 2023 1 01 superintendent s presentation of proposed operating budget meeting jan 26 2023 january 26 2023 category 1 budget hearing 7 00 p m type information file attachments

[calvert county board of education boarddocs lt](#) - Jul 15 2023

web sep 14 2023 the calvert county board of education generally holds two meetings a month except in december june july and august the meeting dates can be found on the ccps website these meetings are held at the brooks administration building prince frederick md the public is encouraged to watch the meeting via live feed on the

calendar calvert county public school district - May 13 2023

web sep 13 two hour late arrival for students professional learning all day sep 14 board of education meeting 3 30 pm 5 30 pm sep 27 hs theatre improv workshop 8 00 am 1 30 pm

calvert county public schools - Jun 14 2023

web calvert county public schools will hold a school board election for 2 seats on november 8 2022 school board members are selected at large meaning voters will be able to vote for 2 of the 4 candidates on the ballot the candidates are lisa grenis jana post camille khaleesi and tracy mcguire click each candidate s name to learn

[calvert county board of education youtube](#) - Dec 08 2022

web calvert county maryland board of education meetings and work sessions successfully meeting the challenges that face the school district not the least of w

board of education description - Apr 12 2023

web the board adopts legislative positions on issues pertinent to the education of students in calvert county they consider adjusting school geographical attendance areas more commonly referred to as redistricting when a school is constructed closed an addition to an existing school is

education calvert county md official website - Oct 06 2022

web the following objectives are aimed at developing a multi faceted community program for substance abuse prevention instituted by the board of education community agencies to involve the services of community agencies in support programs that deal with drug abuse

board of education calvert county public school district - Aug 16 2023

web calvert county board of education members are elected for a four year term as representatives of their communities school board members mirror the diverse democracies they serve local control of education through the board of education has made it possible for schools to enable students to fulfill their potential

jul 14 2022 board of education calvert county public schools - Nov 07 2022

web jul 14 2022 now therefore be it resolved that the board of education of calvert county commend coaches and students for outstanding year and be it fully resolved that the school board wishes them every success in the future motion second a motion and a second all in favor congratulations

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