IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 10, May 2023

An Integrated Power Converter-Based Brushless DC Motor Drive System

Mr. Sukdeo L. Patil and Dr. Kishor Porate
PG Student, Department of Electrical Engineering[1]
Assistant Professor, Department of Electrical Engineering Department [2]
Priyadarshini College of Engineering, Nagpur, India

Abstract: *Brushless DC (BLDC) are replacing DC motors in wide range of applications such as household appliances, automotive and aviation. These applications require a very robust, high power density and efficient motor for operation. BLDCs are commutated electronically unlike the DC motor. BLDCs are controlled using a microcontroller which powers a three phase power semiconductor bridge. This semiconductor bridge provides power to the stator windings based on the control algorithm. The motor is electronically commutated, and the control technique/ algorithm required for commutation can be achieved either by using a sensor or a sensorless approach. To achieve the desired level of performance the motor also can be controlled using a velocity feedback loop. Sensorless control techniques such as Direct Back Electromotive Force (BackEMF), Indirect Back EMF Integration and Field Oriented Control (FOC) are studied and discussed. To achieve a desired level of performance in various applications that require the motor to operate at constant speed over various loads, the motor has to be operated using a suitable velocity control loop. These types of controllers are achieved by using a conventional proportional- integral (PI) controller.*

Keywords: Speed Controller, Boost Converter, Current Quality , Power Electronics Circuits

REFERENCES

[1]. S. Rambabu, "MODELING AND CONTROL OF A BRUSHLESS DCMOTOR,"M.S. Thesis, National Institute of Technology, Rourkela, 2007.
[2]. R. Gambhir and A. K. Jha, "Brushless DC Motor : Construction and Applications," Int. J. Eng. Sci., vol. 2, no. 5, pp. 72–77, 2013.
[3]. L. Zhong, M. F. Rahman, W. Y. Hu, and K. Lim, "Analysis of direct torque control in permanent magnet synchronous motor drives," IEEE Transactions on Power Electronics, vol. 12, pp. 528-536, 1997.
[4]. Galil, "Brushless Sine Drives- Application Note". [Online]. Available: http://www.galilmc.com/support/servotrends/st_04_11/sine-drive-setup.php

BIOGRAPHY

I , Mr.Sukdeo Patil , a students of Post graduate program in Engineering at Priyadarshini college of Engineering , Nagpur (Maharashtra)