



AIUB DSpace Publication Details

Title:	Integral Plus Proportional Controller Based Speed Control of Direct Torque Controlled IPMSM
Author(s) Name:	Mohammad Abdul Mannan
Contact Email(s):	mdmannan@aiub.edu
Published Journal Name:	American Academic & Scholarly Research Journal
Type of Publication:	Journal
Volume:	5 Issue 2
Publisher:	American Academic & Scholarly Research Center
Publication Date:	March 2013
ISSN:	2162-3228
URL:	https://aasrc.org/aasrj/index.php/aasrj/article/view/736
Other Related Info.:	Page 80-90

Citation: Mohammad Abdul Mannan, “Integral Plus Proportional Controller Based Speed Control of Direct Torque Controlled IPMSM”, American Academic & Scholarly Research Journal, Vol. 5, No. 2, pp. 80 – 90, Mar. 2013.



AIUB DSpace Publication Details

Abstract:

Recently, interior permanent magnet synchronous motors (IPMSMs) have gained an increasing popularity in a variety of industrial applications. As the technology gets improved, studies on IPMSM such as direct torque control (DTC) method have been improved as well. The main idea in DTC is to use the motor flux and torque as basic control variables. To control speed of an IPMSM incorporated of DTC, in this paper, the authors design and simulate a controller, which is called integral plus proportional (IP) controller, to control the speed of IPMSM incorporated DTC. In order to obtain the stable performance of speed of IPMSM, the gains of designed IP controller are chosen by choosing the proper value of poles. Moreover, the chosen gains of IP controller confirm that the steady state error and the overshoot problems can be minimized and the controller becomes robust against the disturbance of load torque. The effectiveness of our designed IP controller to control speed of IPMSM incorporated with DTC method is verified by Matlab/Simulink software. It is seen from simulation works that the performance of IP controller is better as compared with the conventional proportional integral (PI) controller.

Keywords: Direct Torque Control, Speed Controller, PI Controller, IP Controller, Interior Permanent Magnet Synchronous Motor.