Title: Speed Control of A Doubly Fed Induction Motor using Integral Plus Proportional Controller

Author(s) Name: Al-Mayhedee Zubair, Mohammad Abdul Mannan, Md. Kamrul Hassan, and Junji Tamura

Contact Email(s): mdmannan@aiub.edu

Published Journal Name: Journal of Power Electronics & Power Systems

Type of Publication: Journal

Volume: 7   Issue   3

Publisher: STM Journals

Publication Date: 2017

ISSN: 2321–4244

DOI: https://doi.org/10.37591/.v7i3.12

URL: https://engineeringjournals.stmjournals.in/index.php/JoPEPS/article/view/12

Other Related Info.: Pages 38-46

Citation: Al-Mayhedee Zubair, Mohammad Abdul Mannan, Md. Kamrul Hassan, and Junji Tamura, "Speed Control of A Doubly Fed Induction Motor using Integral

Faculty of Engineering
American International University-

Abstract:

Conventionally, the speed control manipulate of Doubly-Fed Induction Motor (DFIM) has been developed primarily which is based on traditional Proportional-Plus-Integral (PI) controller due to its simple construction and implementation. The steady-state error minimization, overshoot removal and disturbance rejection are not possible in which the benefits of PI controller are chosen through trial and errors approach. The steady-state error and disturbance rejection may be viable, if the benefits of Proportional-Plus-Integral controller are chosen through right on the poles. But the overshoot elimination is not possible where the Proportional-Plus-Integral based controller is designed. In this paper, Integral-Plus-Proportional (IP) controller is proposed to design for speed control of the Doubly-Fed Induction Motor. The Integral-Plus-Proportional controller is well suited to minimize the overshoot problem that is arisen in Proportional-Plus-Integral controller. The performance of proposed Integral-Plus-Proportional controller for speed control of Doubly-Fed Induction Motor system has been analyzed and investigated through the simulation works. The outcomes of simulation works are illustrated to show the effectiveness of recommend Integral-Plus-Proportional controller in comparison with traditional Proportional-Plus-Integral controller. The proposed Integral-Plus-Proportional controller shows the much better performance over Proportional-Plus-Integral controller in phrases of minimization of overshoot.

Keywords: DFIM, vector control, PI controller, IP controller