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: 7.53
Volume 4, Issue 1, March 2024

Automatic Power Factor Compensation using PIC Microcontroller

Prof. Waghchaure S. J.[1], Mr. Irfan Shaikh[2], Mr. Fardin Shaikh[3], Mr, Nitinlagad[4], Mr, Adil Pathan[5]
Professor, Department of Electrical Engineering[1]
Students, Department of Electrical Engineering[2,3,4,5]
Adsul's Technical Campus, Chas, Maharashtra, India

Abstract: *This paper presents the design and implementation of an Automatic Power Factor Compensation (APFC) system using a PIC microcontroller for enhancing energy efficiency in industrial applications. The system aims to mitigate the effects of poor power factor by dynamically adjusting compensation elements to maintain power factor close to unity. Key components of the system include voltage and current sensors, a PIC microcontroller, and power factor correction capacitors. The microcontroller continuously monitors the power factor and controls the connection of capacitors based on real-time measurements. Experimental results demonstrate the effectiveness of the proposed APFC system in improving energy efficiency and reducing electricity costs. The integration of advanced control algorithms and microcontroller technology offers a reliable and cost-effective solution for optimizing power factor in industrial environments*

Keywords: Automatic Power Factor Compensation, PIC Microcontroller, Power Efficiency, Industrial Applications.

REFERENCES

[1]. Oskar García, Member, IEEE, José A. Cobos, Member, IEEE, Roberto Prieto, Member, IEEE, Pedro Alou, and Javier Uceda, Senior Member, IEEE "Single Phase Power Factor Correction: A Survey." IEEE TRANSACTIONS ON POWER ELECTRONICS, VOL. 18, NO. 3, MAY 2003.
[2]. Jones, L. D.; Blackwell, D. (1983) "Energy Saver Power Factor Controller for Synchronous Motors", IEEE Transactions on Power Apparatus and Systems, Volume: 5, Issue: 5, Pages: 1391-1394.
[3]. Kulkarni Kaumudi, Kumbhar Pooja, Patil Priyanka, Prof.Madhuri International Namjoshi,"Automatic power factor correction using PIC microcontroller", Engineering Research Journal (IERJ) Volume 2 Issue 1 Page 13-16, ISSN 2395-1621, February 2016.
[4]. Barsoum, Nader (2007) "Programming of PIC MicroController for Power Factor Correction" IEEE Conference on Modeling &Simulation, Pages:19-25.
[5]. https://circuitdigest.com/article/16x2-lcd-display-module-pinout-datasheet.
[6]. https://components101.com/switches/5v-single-channel-relay-module-pinout-features-applications-working-datasheet