

SISTEM KENDALI KECEPATAN MOTOR 3 FASA PADA MESIN PENGHANCUR KERTAS

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ABSTRACT

In modern industrial applications, the demand for efficient and flexible drive systems is increasing, especially for paper shredding machines that must handle various load conditions. This study aims to design and implement a speed control system for a three-phase induction motor using a Programmable Logic Controller (PLC) and a Variable Speed Drive (VSD). The VSD adjusts the motor's frequency and voltage based on operational requirements, while the PLC serves as the main control unit, managing the motor's start and stop functions according to predefined logic. The system is equipped with a rotary encoder to monitor real-time motor speed and features soft start and soft stop to minimize inrush current and mechanical stress during power transitions. Test results demonstrate that the system effectively maintains stable and efficient motor speed control under varying load conditions. This design offers a practical solution to enhance energy efficiency and operational reliability for paper shredding applications in recycling processes.

Keywords: *Three-phase motor, PLC, VSD, paper shredding machine.*