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2007

N AND DEVELOPMENT OF A PROGRAMMABLE LOGIC CONTROLLER-BASED COFFEE PACKAGER

DESIGN PROJECT

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May 2007

DESIGN AND DEVELOPMENT OF A PROGRAMMABLE LOGIC CONTROLLER-BASED COFFEE PACKAGER

Undergraduate Design Project
Submitted to the Faculty of the
Cavite State University
Indang, Cavite

In partial fulfillment
of the requirements for the degree of
Bachelor of Science in Computer Engineering

00007280

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DP-241

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ABSTRACT

DIOMAMPO, RAQUEL N. and SANTIAGO, CAMILLE I. "Design and Development of a Programmable Logic Controller-Based Coffee Packager" Bachelor of Science in Computer Engineering. Cavite State University, Indang Cavite. May 2007. Adviser: Emeline C. Guevarra.

The design and development of Programmable Logic Controller-Based Coffee Packager was conducted at Silang, Cavite. The study generally aimed to construct and evaluate a Programmable Logic Controller-Based Coffee Packager that would automatically pack ground coffee.

The PLC-based coffee packager comprised of software and hardware. The hardware of the system was consisted of programmable logic controller circuit, relays, power supply, terminal blocks, pcb board dot matrix, proximity sensor, gauge #18 stranded wires, DC motors, brass rollers, conveyor belt, toggle switch, push buttons, circuit breaker, royal cord and the coffee packager. The software used to control the operation of the machine was Ladder Diagram. It was programmed in the PLC using the MELSEC software program provided by its manufacturer, the Mitsubishi Electric Corporation.

The Programmable Logic Controller-based machine for Coffee Packager can packed the desired pre-selected weight of ground coffee beans, however, the accuracy is less than 100%. The average percent error of weight was 14 percent in the trials made for 50 grams, 150 grams and 250 grams.

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DESIGN AND DEVELOPMENT OF A PROGRAMMABLE LOGIC CONTROLLER-BASED COFFEE PACKAGER[1/]

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[1/] An undergraduate design project submitted to the faculty of the Department of Computer and Electronics Engineering, Cavite State University (CvSU). Indang Cavite in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Engineering with Contribution No. CoE-2006-07-007. Prepared under the supervision of Mrs. Emeline C. Guevarra.

INTRODUCTION

Technological advancements in automation over the past decades have contributed greatly to improve the productivity of virtually all manufacturing throughout the world. Automation is the technology concerned with application of mechanical, electronic and computer-based systems to operate and control production. The Programmable Logic Controller (PLC) is now the latest means of automation used to control manufacturing and chemical process systems. PLC is a user friendly, microprocessor specialized computer that carries out control function of many types and level of complexity. The programming of PLC is done using a special technique called ladder logic, which allows sequences logical actions to be set up, inter-linked and timed. The use of PLC has the advantage of containing everything needed to handle high power loads in automating machines. PLC has shorter but powerful programs compared to other form of automation