DESIGN AND DEVELOPMENT OF AN AUTOMATED TEA PACKAGING MACHINE

THESIS

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April 2016

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Undergraduate Thesis
Submitted to the Faculty of the
College of Engineering and Information Technology
Cavite State University
Indang, Cavite

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

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April 2016

ABSTRACT

SIDOCON, RUDOLF ROY R. and REYES, JOHN THADEUS L., Design and Development of an Automated Tea Packaging Machine. Undergraduate Design Project. Bachelor of Science in Computer Engineering. Cavite State University, Indang, Cavite. April, 2016. Adviser: Engr. Marivic G. Dizon.

The main objective of the study was to design and develop an automated tea packaging machine. Specifically, it aimed to (1) design and construct the control unit for the automated tea packaging machine; (2) develop a program that will control the system; (3) design and fabricate the machine; (4) test and evaluate the performance through pilot testing of the automated tea packaging machine; and (5) determine the cost computation.

The design project was composed of PIC16F877A microcontroller, photo-electric sensor for detecting the presence of leaves inside the volumetric tube, photo interrupter sensor for the alignment of turn table and volumetric filler, DC geared motor for the vibration of sieve for filtering, DC geared motor for controlling the rotation of volumetric filler, DC geared motors for the rotation of feeder, DC geared motor for controlling the rotation of the turn table, another DC geared motors for the movement of sealer and impulse sealer for sealing purpose. The microcontroller was responsible for the operation of the system of the automated tea packaging machine which depended on the data sent by the sensors.

The project was tested and evaluated at the faculty room of the Engineering Science building, Department of Computer and Electronics Engineering on March 2016 to determine number of tea bags sealed and packed within five, ten and fifteen minutes,

the efficiency of the sealer was also evaluated, and last, comparing the desired weight and actual weight from the weighing scale.

Based on the results of the evaluation, the machine can packaged and sealed grounded tea leaves; the software can control the whole performance of the machine and makes the packaging and sealing easier than manual method because of its continuous operation; the machine volumetric filler capability was designed to dispense only for variety of dry free-flowing substances. The weight of the packed and sealed tea bags was not accurate when different kind of materials sample were used; the design of sealer of the machine was 80.36 percent effective in sealing process; the power consumption of the machine when performing the operation was 92.4Wh or 0.0924KWh, while 22Wh or 0.022KWh when the machine was idle; and all materials were acquired and used for the development of the project and was utilized efficiently. The cost of all materials used in the study amounted to P 37,738.74.

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DESIGN AND DEVELOPMENT OF AN AUTOMATED TEA PACKAGING MACHINE

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An undergraduate design project submitted to the faculty of Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Computer Engineering with Contribution No. CEIT-2015-16-2-076. Prepared under the supervision of Mrs. Marivic G. Dizon.

INTRODUCTION

Most Asian are accustomed to drinking all kinds of tea, but Filipinos having been colonized by Spaniards for nearly 400 years and the Americans for another 50 years are different. They have strong preference for coffee and soft drinks. (Entrepreneur Staff, 2015)

According to Patricia Go, URC marketing services and advertising director, "The Filipinos have long been coffee and soda drinkers but they noticed that the Filipinos were becoming more concerned with their well-being and were taking better care of themselves".