

“Review on Performances and Evaluation of Coconut Vending Machine”

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Abstract: In this automation world vending machine plays important role in product selling without shopkeeper. The coconut vending machine can serve coconut for drinking coconut water to customer. The concept behind this project to improve the efficiency of selling the coconut with zero effort for cutting of coconut. This research work includes the study of problems that were faced during the effort for cutting of young coconut in commercial purpose. By studying such problem the need of efficient coconut cutting machine was developed. If the developed machine is commercialize the problem of use of coconut water at hotels and restaurants will get benefited. The purpose of this research is to develop, test, and evaluate the young coconut vending machine. This research work include the description of such a machine which will not only used to cut the coconut but also can be a used to drink coconut water at parks and beaches and anywhere. This machine consume very less space. The application and mechanism of this machine reduces the cost of fabrication.

This project involves the process of designing the different parts of the vending machine considering the forces and ergonomic factor for people to use. This project mainly about generating a new concept of coconut vending that would make easier to bring anywhere and easier to vend. After design has completed, it was transformed to its real product where the design is use for guidelines.

Index Terms – Coconut, Vending machine, Actuator, Coin sensor, Controller

I. INTRODUCTION

In last few decades, the vending machine becomes an important thing in people's day to day routine. The vending machine is recognized as a tool to aid modern and healthy living style. The vending machine is an auto self-serviced medium, which is able to cater or provide a customers require men by pressing buttons. Request generated by the consumer is an actual instructions for a machine to operate. The mechanical and electrical circuitry performs all automatic work to eliminate manual work. Initially, the customer needs to decide what they want from a vending machine, as per that, by using a digital keypad or a touch system, they have to submit an order. The machine will generate the bill for the customer, as soon as the customer pays the bill by using currency, Debit or Credit cards, the machine will start dispensing process. The order placed by a customer is an input data for the machine. As a result, at the end of the process the customer obtains requested product from the machine. This is the general operation of the vending machine from start to end. The vending machines can be designed for specific functions like for beverages or food or other items. They offer portability, low cost, comfort, and also use less space for setting up and can be installed in 24/7 service places. Vending machines discussed in reference papers are based on CMOS, SED and Micro-controllers technology [1–5].

So, we have to decide to make coconut vending machine. This project to improve the efficiency of selling the coconut with zero effort for cutting of coconut. Coconut is the “tree of heaven”, provides many necessities of life including food and shelter. Water from tender coconut is a common refreshing drink and has been used as an excellent isotonic in several tropical countries. It is not only a thirst-quenching liquid, but also a mineral drink, which is beneficial to human health. It contains traces of proteins, fats, and minerals like Na, K, Ca, Fe, Cu, P, S, Cl, and vitamin C, vitamins of the B group like nicotinic acid, pantothenic acid, riboflavin and biotin. Coconut water contains organic compounds possessing healthy growth promoting properties. It carries nutrients and oxygen to cells, raise the human metabolism, boost human immune system, detoxify and fight viruses, control diabetes and also aids the human body in fighting against viruses that causes flue, herpes and AIDS.

These kinds of vending machines operate based on the application of electronics engineering, mechanical engineering and electrical engineering, which are collectively termed as the Mechatronics. Thus, it is proposed in this project to design and fabricate an automatic coconut vending machine, with the application of mechatronics principles, so as to reduce the time taken and the human effort taken to deliver the coconut to the customer in required quantity, and also meet the higher demand for coconut juice, such as at hospitals, gardens, marketplace, near educational institutions and almost everlasting demand in summer season at any places.

This project involves the process of designing the different parts of the vending machine considering the forces and ergonomic factor for people to use. This project mainly about generating a new concept of coconut vending that would make easier to build anywhere and easy for customer. After design has completed, it was transformed to its real product where the design is use for guidelines. The performance and fabrication of this project cost factor is most important. In the other vending machines has very complicated shapes and are very costly but these coconut vending machine conducted very easy mechanism hence it has very low cost. Its cost is very cheap rather than other vending machines. Hence any retailers buy this machine easily.

The vending machine culture is, too, old as per the history. The first kind of vending machine was introduced in century 2-3 B.C. in Egypt. It was a mechanical machine which was created to sell water in Egypt. After that in the 19th century, vending machines for various functions were introduced during the industrial revolution in the United Kingdom. The first ever commercialized vending machine for post-cards, which can be accessed through coins, was introduced in London.



Fig1.1. Green coconut

II. LITERATURE REVIEW

The innovation in such types of new thinking is that, it increase the level of easily work doing by adding the various mechanism and the engineering techniques.

In the old cutting process or the work for cutting the coconut is too hard and so more energy is required, to improve the working condition this type of idea is developed.

It will really helpful for human being or the person who wants to open this own business related to coconut juice centers. This ideas being going to improve his business speed with high earning, also with the high improved the quality of juice i.e. coconut water.

An important object of the present invention is to provide a machine for cutting the one coconut immediately after the other, to the end that one machine can cuts coconut rapidly to supply a number of workman who have to job of removing the coconut.

SINGH, Rishi (Flat- 402, Plot No. 505 Surya Lukkani Residency, Road No. 10, Kakatiya Hills, Madhapur, Hyderabad 1, 500081, IN) (1), Automated Tender Coconut or Tender Coconut water vending machine is specially designed for dispensing tender coconut water or tender coconut with one or any combination of the following options: 1. Buyer can purchase tender coconut with a hole/slit made, to reach coconut water in the kernel just before dispensing, as means for buyer to drink natural coconut water, using a straw 2. Buyer can purchase tender coconut with a groove as means for buyer to shove/extend groove from outer surface to inner kernel and scoop out the inside endosperm of coconut. Same can be used as takeaway option by buyer 3. Buyer can purchase tender coconut water which is dispensed in a disposable glass, after a hole/slit is made in tender coconut to pour fresh coconut water to a disposable glass.

Satip Rattanapaskorn, and Kiattisak Roonprasang “Design and development of semi-automatic cutting machine for young coconuts” (2) this research work includes the study of problems that were faced during the cutting of young coconut in commercial purpose. By studying such problem the need of efficient coconut cutting machine was developed. If the developed machine is commercialize the problem of use of coconut water at hotels and restaurants will get benefited. The purpose of this research is to develop, test, and evaluate the young coconut fruit cutting machine. This research work include the description of such a machine which will not only used to cut the coconut but also can be used to drink coconut water at parks and beaches. The application of screw jack for the development of this machine reduces the cost of fabrication.

M.A. Oommen, *Kerala economy since independence* (Oxford & IBH Pub. Co., New Delhi, 1979).(3) In India, coconut is cultivated mainly in the coastal tracts of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Orissa, West Bengal, Pondicherry, and Maharashtra and in the islands of Lakshadweep, Andaman and Nicobar. By the late 1970s it accounted for some 68% of total production in India and at one stage some 899, 198 hectares were reportedly under cultivation. Today Kerala produces roughly 45% of India's coconuts, with some 92% of total production lying in the southern Indian states and Kerala's neighbors [1].

III. OBJECTIVES

The aim of this is to give the complete design information about the coin based coconut vending machine. The design of cutting mechanism of the machine was the major objectives of design, so that the machine thus designed could be stationed easily at any place. Also the machine had to be simple in design and construction such that it could aid easy maintenance. Thus it is important of it to have a zero usage of effort. Accordingly the mechanism was designed. The conceptualized machine should also have the ability to punch and cutting of coconut of different size and hence the size and other design aspects were chosen accordingly. This project is a fabricated of the coconut vending machine where all the factors are considered like.

IV. METHODOLOGY

The Automatic Coconut Vending Machine works under the methodology of the mechatronics system with the objective to provide automation. Generally the automation deals with the elimination of manual work using electronic processing of mechanical work control mechanism. It consists of three main units which include:

- A. Input unit
- B. Processing unit
- C. Output unit

Input Unit:

The input unit of the Coin based coconut vending machine comprises of the components required to receive the coin from the customer and sensing the genuineness of the coin.

Processing unit:

The processing unit comprises of the components required to ensure the reception of the genuine coin. It further, signals the output unit to deliver the number of coconut with proper punch with the help of actuator to the customer, on insertion of a genuine coin inside the coconut vending machine.

Output unit:

The output unit comprises of the components required to deliver the paper to the customer. It works on the instruction from the processing unit.

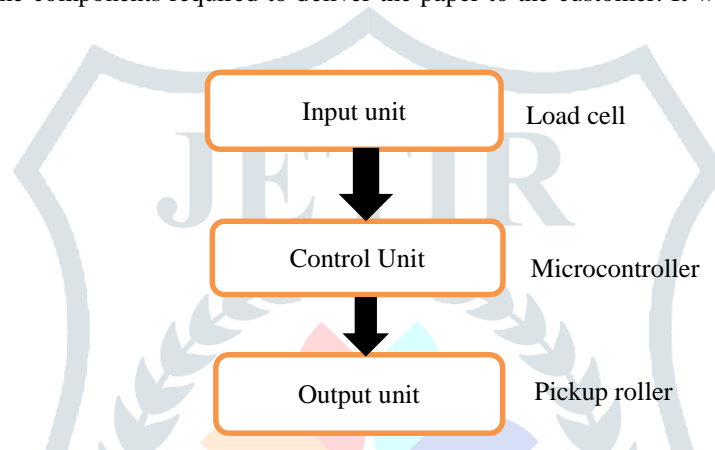
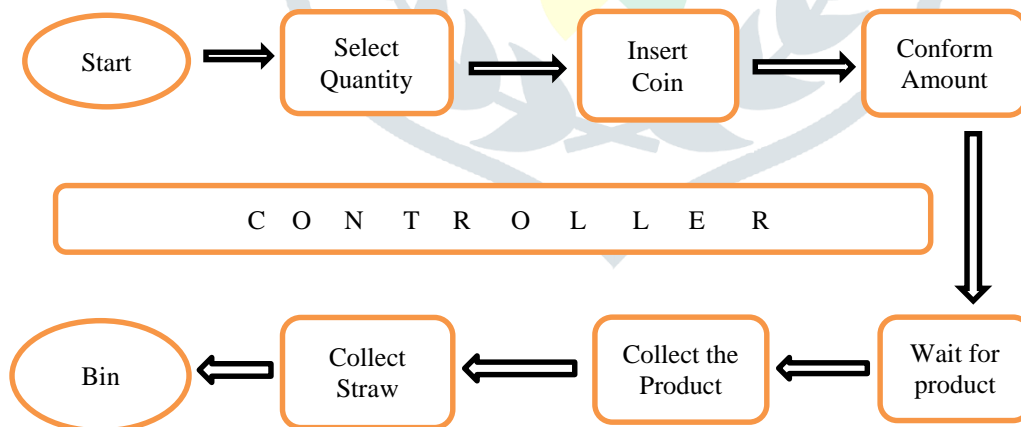


Fig. 1 Simple representation of coconut vending machin

V. COMPONENTS AND FLOW CHART



Vending machine interface action is mostly divided into four important steps of click, browse, confirm and return. Click, browse and confirm are the three important steps as the main important action. Phase return is considered as an coincidental performance, that is, return demands are constructed when the costumer handles incorrectly. Return is splitted into two kinds: return to the previous step and return to the start sheet.

Choose - browse - (return) – establish the correctness that can be deliberated into the less time for $T=a+b+c$ as stated by to buying operation. Buy time is being enlarged when the return performance appears.

Then the total time for the buy action can be decided as $T_0=a+b+c+d$. They hypothesize that increase the time of buy are 2 return actions:

1. The first time to considering for the return button.
2. Returning to the start sheet, click on the return button and halting on each sheet before this one. The concept of model is shown in above figure.

It market viability with improving intellectual benefits or regulation, shortens buy time and stay away from performance defeats.

The basic step in designing of any system is to design power supply required for that system. In our supply circuitry, most of the component requirement is 5V as an operating voltage and the total current requirement of the power supply is not more than 300 mA. The standard supply voltage is 230 V so in order to convert the 230 V, circuit includes step down transformer, which convert 230 V into 12 V. Further, this 12 V gets converted into 5V with the help of regulator IC 7805. Diode bridge rectifier converts the ac voltage into dc voltage.

1. Here we put Actuator & Coin based Coconut vending machine using microcontroller. The system is capable of fully automated coconut dispensing using DC Pump.
2. Using the keypad, consumer will be able to select amount of coconut they want. All the information will be showing on LCD display screen. Depending on the quantity or the amount filled by consumer, controller will allow the machine to fill the desired quantity of water in the container.
3. The system also has a coin detector that is used to sense particular coins and send information to the microcontroller about valid coins. The system uses real coin detection machine that detects valid coins for water dispensing. The microcontroller now processes the information send by the sensor to determine if the coin inserted or not. On detecting valid coins the system now sends a signal to the controller and then it starts the DC Pump to pour water for time allotted by the pot.

VI. CONCLUSION

We are proposing the modern system of coconut vending machine, which is works efficiently and this machine consume less time for perform the operation with less effort . the coconut vending machine very easy to use and any person can handle this machine. This machine can reduce human efforts with improved accuracy.

VII. REFERENCES

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