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ARECA LEAF PROCESSING USING PIC CONTROLLER

Punya S Gouda[1] Nikhil Ram[2] S Athulya[3] M Julie[4] Dr. Veena C.S[5]

[1,2,3,4]UG Students[5]Project Guide

[1,2,3,4,5]Department of Electronics and Communication Engineering

[1,2,3,4,5] Sambhram Institute of Technology,Bengaluru-97,India.

ABSTRACT

Research suggest that eating hot meals on plastic plates could actually be harmful to health. Plastic plate responds very slowly to bacterial decomposition in the soil, thus making the soil infertile and also releases poisonous gases on burning, which can cause respiratory problems thus causing a big threat to environment. With the ban in plastic, has led to increase in the production of decomposable raw material industry such as ARECA leaf plate industry. This project focuses on the processing unit the ARECA leaf plate industry thus reducing the manual work and energy involved in operation like soaking, cleaning, washing and segregation and cutting. Hereby increasing the production rate and efficiency. The time consumption in the process is reduced to a greater extent. Areca nut plates are accessible in different sizes as per pass on sizes. These plates are helpful, airtight, light in weight, solid, biodegradable. The venture 'Plan and examination of areca nut plate making machine lessens the assembling time and expands the creation requiring little to no effort.

Keywords: **Areca leaf, Environmental sensors, pick and place robot, cutting plates.**

I.INRODUCTION

India's agriculture sector accounts for 13.7% of the GDP and 50% of workforce are involved. Leaf cups and plates are traditionally made by hand in Indian villages. These are commonly used for serving food at marriages, religions and social functions. The laborious craft can now be converted into a machine operation to make these containers in elegant shapes and sizes.With the ban in use of plastics, there is a steep increase in the production of areca plates. To meet this need, small industries have developed and thus producing plates where the availability of raw materials is high. The main objective of this project deals with the steps involving the pre-processing operation like soaking, cleaning, washing and segregation of areca leaves and finally cutting them into the required shape and size. As all the above mentioned processes need to continuously done in order to increasing production rate. These operations consume a lot of man power, energy and time. This project is mainly intended for increasing the productivity and decreasing manpower in production of areca leaf plates. This proposed project currently doesn't exist. All those works are done manually. The development of this project is done using PIC controller, Robotic ARM and different sensors for temperature detection and also for

edge detection .The segregation unit separates out the incoming areca leaf as defined by the dimensions loaded in the program, A leaf cutting mechanism is attached towards the end so as to cut the plates in the desired shape and size.Association of this paper is as shown in the following way section III analyses the development of system, the diverse proposed methods used in this paper are presents in this section. In section IV different hardware equipment's used in this paper are present. The experimental results are present in section VII. And finally section VIII concludes this paper.

II. EXISTING SYSTEM

The existing system is mainly focusing on the cutting operation and punching operation are done independently in the current self-loader areca nut plate making machine. The upper and lower pass on are warmed by warming curl which is controlled by power. As an areca nut leaf sheath is set between the passes on, the development of the bite the dust causes punching and cutting procedure in the sheath.

III. PROPOSED SYSTEM

The proposed system for ARECA LEAF-PROCESSING SYSTEM using PIC controller has been presented in this section. Figure I shows the block diagram of proposed system hardware.

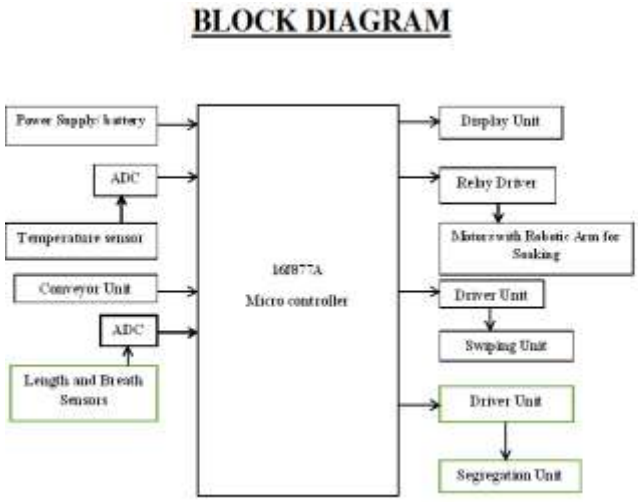

Fig I. Proposed System Block Diagram

The raw material used in the project is the Areca nut sheath, which is an extension of the leaf. It is a hard material and has a good tensile strength. The raw material of areca nut sheaths are not plucked from the trees but are collected once the leaves fall from the tress, thus it does not lead to environmental degradation in the region on this count.

Manufacturing of areca nut leaf plates and bowls:

The dried sheaths are placed inside the machine using the required die size to manufacture plates and bowls of different sizes. An effective cutting mechanism has been developed that ensures cutting of the products in the machine itself without use of external scissors.

Our project is on 3rd stage of this production process i.e Cleaning of sheaths, this process has 4 different stages

Stage 1:

Dry areca sheets are kept in the storage compartment before it's been used, in this stage sheets are picked one by one from the compartment and cleaned in order to remove the sand on it,

Stage 2:

These dry Areca leaf sheaths are soaked in water and thoroughly cleaned to eliminate the sand and other dirt particles. Soaking time depends on the environmental temperature ,then the leaves are so arranged so as to drain the water.

Stage 3:

After the stage 2 to segregation process begins to segregate the proper and improper size leaves ,the size of the leaves can be determined using the edge sensors.

Stage 4:

The segregated leaves are then fed to the cutting unit to cut as per the required shape and size.

IV. HARDWARE RESOURCES

This section reports the different hardware used in this proposed system. The experimental set up for the proposed ARECA LEAF PROCESSING SYSTEM by using PIC Controller is shown in figure II.

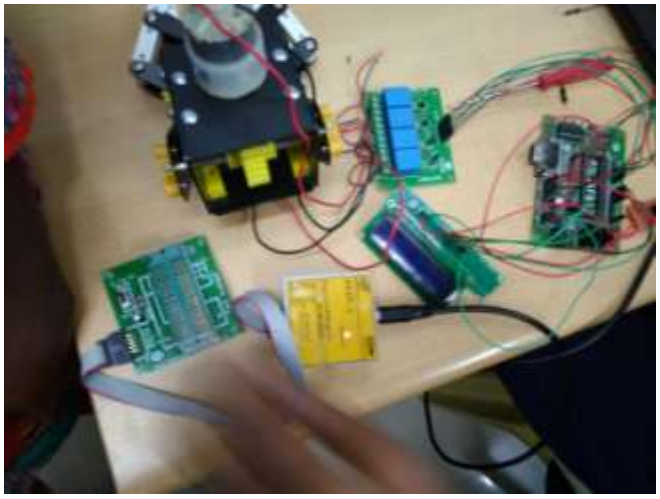

Figure II. Harware components

A. PIC CONTROLLER

A controller used for interfacing various units of the system and then accordingly programming the device for better use.

B. 16X2 LCD

A device for displaying the on going function in the system. It also helps in figuring out the errors at any stage of the process.

C. ROBOTIC ARM

It is a mechanical model use to perform picking and soaking function. It is programmed manually and the delay time is set according to the requirements.

D. CONVEYER BELT

A device that carries any item to move it to another level or another compartment. This is an inclined or elevated system. It is usually made of rubber for smaller applications and other materials for larger applications.

E. TEMPRATURE SENSORS

MQ4 sensor is used to continuously monitor the temperature and accordingly perform the required operation.

F. IR SENSORS

These are used as edge sensors. They are used for length and breadth detection in the segregation unit.

G. CUTTING UNIT

The two hard metallic plates given with the sharp edges are compressed towards each other so as to cut the areca leaf in the required shape and size.

V. WASTE DISPOSAL

Food plates thrown after eating will be naturally degraded within 60 days of time like any plant matter. Manufacturing waste of Areca sheaths will be used for vermin compost, dry fodder for animals, bio-fuel bricks.

VI. MARKET DEMAND

There are more than 5,000 leaf cup making machines in operation in U.P., Bihar, M.P., Jharkhand, Himachal Pradesh, Gujarat, Maharashtra, A.P., Karnataka. There is a large scope for setting up cottage scale units. As the current market has started focusing on environmental friendly products, market development for the product does not receive much resistance. Existence of the concentrated marketing unit TPMPL can be considered as a successful move in the direction.

VII.EXPERIMENTAL RESULTS

The outcome of this project is a fully integrated and automated machine for soaking, cleaning and segregation purpose of areca leaf. The system continuously monitors the external weather conditions and varies the soaking time accordingly. Also the breadth of each leaf is measured and segregated accordingly. Also at the end of this process, the leaf is clean and ready for further processing.

VIII. CONCLUSION

PARAMETER	EXISTING TECHNOLOGY	PROPOSED TECHNOLOGY
PRODUCTION RATE / HOUR	90-100 PLATES	140-150 PLATES
TIME CONSUMPTION/ PLATE	30-40 MINS	20-25 MINS
LABOUR INVLOVED	MORE	LESS

PARAMETER	MANUAL SYSTEM	PROPOSED SYSTEM	PERCENTAGE OF IMPROVEMENT
SOAKING	20-30MINS	20-30MINS	
CLEANING	2MINS	10SECS	
SEGREGATION		90-95%	25%

PARAMETER	MANUAL SYSTEM	PROPOSED SYSTEM	PERCENTAGE OF IMPROVEMENT
DIAMETER OF PLATE			
DEPTH OF PLATE			
WASTAGE			

The ARECA LEAF PROCESSING SYSTEM helps in increasing the efficiency of production of plates. It also reduces the human effort. Barring few challenges that exist in all small scale industries, the project exhibits tremendous potential for capturing both the national and international market with its unique environment friendly product. Generating an alternative source of livelihood as the project uses locally available raw material and low cost technology, it has emerged as a viable livelihood generation option in rural areas.

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REFERENCES

[1].Aaron Hedge S,JohDeal(2014),"Areca Nut Farming in Sounthern India A Case Study"Internatonal Journal of Business and Social Science.

[2]..Mohanraj K S,Vijaykumar p, SenthilkumarR , Gokul KarthikA proposed Design And Analysis of Semi Automatic Paper cum areca nut Plate making machine.International Research Journal of Engineering and Technology(IRJET).Volume 4,May 2017.

[3].Dr. Bimal Kanta Nayak assessed an impact of traditional leaf plate making .International Journal of Management and Social Science Researches(IJMSSR).Volume4,No.7, July 2015.

[4].Dhrititi-The Courage Within.Web 10December2011<http://www.dhriiti.org/en/>.