Automatic Dishwashing Machine

Chavan Shrikant Yashwant¹ Kawade Sudhir B² Dhumal Chetan Ashok³ Take Pradip Ramesh⁴

¹,²,³,⁴ Department of Electronics & Telecommunication Engineering
⁴SCSCOE, Rahuri Factory, India

Abstract—This paper represents the modified design of utensils automatic washer machine. In this, the adjustable conveyor containing utensils tends to rotate, and passing theses utensils under three section scrubbing, water sprinkler and cleaner. The dishwasher has made cleaning and drying dishes much easier and more efficiently. Conveyor is rotated by using motors. This leads to making the design simpler and better than the present dishwashers.

Key words: ADM, Automatic Dishwashing Machine

I. INTRODUCTION

Here we are building one machine by using conveyor belt system, motors, sensors and controller. It will start cleaning from the scrubbing section after that rinsing will takes place and at last drying of dishes is done. In this project, system consists of three sections first is scrubbing, second is rinsing, and third is cleaning. A conveyor belt mechanism is used to execute the dish washing process. Scrubber is attached to a motor which rotates and scrub the dishes. A spray pump is used to wash the dishes after scrubbing process. A cleaner or sponge is attached to a motor along conveyor line to dry the dishes. Thus the cleaning gets completed. A sliding mechanism is used to collect the cleaned dishes. The water used in cleaning the dishes will be collected in separate vessel below the machine. All the water gets collected at one place because of innovative collector design. The IR sensor along with its signal conditioning circuit is used for counting the number of dishes and also it is used for monitor of dishes whether it comes under specific section or not. If dish is not detected then that respective section remains in off condition. The number of dishes cleaned will be shown on LCD this is done with the help of IR sensor.

II. LITERATURE SURVEY

In Literature survey of Automatic Dishwashing Machine many inventions had been done about this project. Many solutions have been provided to focus on issue of Automatic Dishwashing System.

In 1917, Mrs. Cochrane introduced an electric motor to operate the centrifugal water pump [1]. In this solution she also introduced the spraying arms. In that model, the rinse phase was also introduced., the Walker Brothers Company patented a dishwasher machine [2].

In the 1950s, the automation dishwashers machines did not wash dish well, their technological level started to improve quickly so that the transition from hand to automatic washing. The introduction of electric appliances in modern kitchens, has determined the born of a new era and the dishwasher manufacturers have seen a rapid increase of the production volumes for this appliance [3].

In paper “An automatically Controlled Dishwashing Machine” written by “Wesley C. Cox” they conclude that in order to improve the Dishwashing process without human efforts and the removal of any bacteria which may remain by rinsing with clear water. The essential steps in washing of eating utensils are the removal of all soil by washing for the optimum length of time with water in which a suitable detergent has been added in proper concentration [4].

In paper “Field Studies on Two- and Three-Compartment Sink Manual Dishwashing” written by Morris a. Shiffman, They observe that improperly cleaned and sanitized dishes constitute a health hazard. There is no question that used dishes and silverware carry mouth microorganisms. Mallmann and Devereux in 1935 examined beverage Glasses for the presence of streptococci [5].

III. BLOCK DIAGRAM

Fig. 1: Block Diagram of Automatic Dishwashing Machine

A. Block Diagram Description

This system consists of three sections first is scrubbing, second is rinsing, and third is cleaning. A conveyor belt mechanism is used to execute the dish washing process. Scrubber is attached to a motor which rotates and scrub the dishes. A spray pump is used to wash the dishes after scrubbing process. A cleaner or sponge is attached to a dc motor to dry the dishes. Thus the cleaning gets completed. A sliding mechanism is used to collect the cleaned dishes. The water used in cleaning the dishes will be collected in separate vessel below the machine.

All the water gets collected at one place because of innovative collector design. The IR sensor along with its signal conditioning circuit is used for counting the number of dishes and also it is used for monitor of dishes whether it comes under specific section or not. If dish is not detected then that respective section remains in off condition. The number of...
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IV. ADVANTAGES
- Very useful in reducing human effort
- More no of dishes can be washed in very short time
- Better utilization of water
- Saves time

V. APPLICATIONS
- It is used in large scale kitchens such as hotels, restaurants, marriage ceremonies etc. where there is requirement of more no. of dishes.
- Nowadays in schools also there is system of mid-day meals. Due to improper cleaning of dishes different health issues occur. So for this we can use this system.

VI. CONCLUSION
This design of automatic dishwasher can be used to wash eating utensils very cleanly and with the ease. As the motors selected can consume much less power so it will be the electrically better. Manual wash is usually done with cold water but hot water this helps to kill harmful germs. And the utensils come out dry which means that there is no need for drying them manually afterwards or leaving them out for drying them which reduces human efforts to great extent. This is very much efficient in cleaning the dishes without human intervention. This saves lot of time and man power.

REFERENCES