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Semi Automatic Dish Washing Machine

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Abstract: Semi Automatic Dish Washing Machine Are mainly impact on human efforts behind washes Vessel. In this digitalized society people are very busy in their daily working schedule. So any one cannot time for working as a kitchens employee, for this problem many more company are launched dish washer that work in very small period time and washes vessel. But problem behind this the machines are very expensive and not every one are capable to buy this expensive machine. So we try to solve this problem for small families. Our machine are easy in work every one can use them easily. After taking some information about market strategy and financial condition of the families we present our project in minimum price. That everyone can buy them. By using our machine, People can washes vessel in small period, our machines is not a contain IoT based any material so in some time when washes vessel timing required or some problem are also occurred. According to price we provide best from us we try to give you better quality machines that can help to minimize your extra time. Some company are launched very digital technology contains machine but not can buy them so we also give attention on outer design of our machine.

Key words- environmental friendly, scrubbing, drainage system, Rinsing machine

1. INTRODUCTION

Main aim of Design and Fabrication of dish washer machine is to reduce human efforts and time with innovative simple design which is also environmental friendly. A dishwasher is a low cost machine made up of easily and ready available parts in daily life. The model of design and fabrication of dish washer machine is new concept which in its one washing cycle does all the operation of conventional dishwashing I e. spraying soda water, scrubbing with brush and clean water similar to fully semi automatic washer machines in market. The dishwasher operates with the help of DC motor chain conveyor. In most of families people wash dishes most commonly done activity in the world , detergent is chemically harmful. As far as manual process is concerned in house of I diagram ,Washing is done by hand scrubbing which is straining to the muscles through its energy and postural requirement . In May also lead to clinical. antomical disorders task are performed by the women's and some can be very physically challenging and time consuming .So in several ways in which we can improve their lifestyle and one aspect that we can improve on is the way they wash their dishes . Currently the daily routine of washing dishes is performed by the women , and can be very labour intensive as it is done for up sevral hours each week. The same can be experienced in marriage ceremony with caterers. In today's automatic and digital era it is barely possible to find any field that implemented automation which reduce human efforts, improve production rate and also increase efficiency. Then it could be the biggest use of various canteens like manufacturing, Pharmaceutical Industry, Hospitality field and even Household or Kitchen automation. But still our country is not getting enough benefits from automation and the reason behind this limitation is less knowledge about automatic product, High device cost kind of non sence feeling about atomized device. However this fear is not seen in the product which does not involves much sensors complex. The main purpose of fabrication of semi-automatic dish washer machine is to reducing time energy. This machine needs less energy as compare to automatic dish washing machine because this machine has less no. of working parts. This machine is manufactured at low cost as compared to automatic dish washing machine and it has low maintenance cost. By using this machine, we consume water and clean more dishes automatically. By using this mechanism, we clean the utensils very fast. For washing dishes, we used the chemical product such as detergent or soap and it is harmful for human skin. The semi-automatic dish washer machine is manufactured for solve all this problem. We can use this machine in Restaurants, Marriage ceremony and big programs where more no. of dishes are used. This machine is easy to operate and affordable to middle class and lower classes

2. PROBLEM STATEMENT:

To design semi-automatic dish washing machine to reduce time and make it easy.

3. SYSTEM DESIGN

The semi-automatic dishwasher machine is designed to offer a more affordable and efficient cleaning solution compared to fully automatic dishwashers, while still providing significant convenience for users. Here's the breakdown of the system design:

- **Components**:
  - **Water Pump**: Pumps water from the tank into the spray arms.
  - **Heating Element**: Heats the water to the required temperature for effective cleaning.
  - **Spray Arms**: Rotating arms that spray water and detergent over the dishes.
  - **Detergent Dispenser**: Dispenses detergent automatically during the wash cycle.
  - **Control Panel**: Allows users to set wash cycles and water temperature.
  - **Sensors**: For detecting water levels, temperature, and cycle progress.
  - **Drainage System**: For draining dirty water after each cycle.
  - **Drying System**: Optional, to aid in drying dishes post-wash using heated air.

- **Working Process**:

Loading: Dishes are manually loaded into racks inside the dishwasher.
Water Filling: The machine fills the washing chamber with water, which is pre-heated by the heating element.
Washing: Water and detergent are sprayed over the dishes via rotating spray arms.
Rinsing: After washing, the dirty water is drained, and clean water is used for rinsing.

4. WORKING OF SYSTEM:

Power Supply and Protection

The machine is powered by a 6A power supply, which first passes through a fuse to protect the system from overcurrent. The fuse ensures that in case of a short circuit or overload, the circuit is broken to prevent damage.

Main Switch and Cut-Off Switch (Sensor)

After the fuse, the power is routed through a main switch, which acts as the primary control to turn the machine on or off. After the main switch, a cut-off switch (sensor) is connected. This cut-off switch likely functions as a safety mechanism, ensuring the machine operates only when certain conditions are met (e.g., door closed or sufficient water supply).

Timer Switch Control

The second terminal of the cut-off switch is connected to a timer switch. This timer switch regulates the operation of the washing cycle, allowing the machine to run for a specific duration before automatically turning off. The second terminal of the timer switch is then connected to other components to control various functions.

AC Motor Operation

The AC motor is controlled through the timer switch. When the timer activates, it powers the AC motor, which is likely used to rotate the washing drum. The rotation ensures that water and detergent reach all surfaces of the dishes for efficient cleaning.

Pump Operation for Water Flow

A pump switch is included in the circuit, which controls a water pump. The pump is responsible for circulating water into the washing drum, ensuring dishes are properly rinsed. The pump may also help drain dirty water after the wash cycle is complete.

Shampoo Motor for Detergent Dispensing

A separate shampoo motor is used to dispense detergent or soap solution into the drum. This motor ensures that the right amount of cleaning solution is mixed with water for effective dishwashing.

Additional Features (UV Light and Copper Pipe for Water Flow)

UV Light: If included, the UV light provides sanitization by killing bacteria and germs after the washing cycle.Copper Pipe for Water Flow: A copper pipe directs water efficiently into the drum. Copper also has antibacterial properties, which help maintain hygiene.

5. ACTUAL MODEL DIAGRAM

Figure no 1.

6. METHODOLOGY:

We are trying to reduce human efforts in dishwashing process. The dishwasher has made cleaning dishes much easier an more efficient. This project work has been conceived having studied the difficulty survey in the regard in our home, revealed the facts that mostly some difficulty occurs in washing the dish by hand. The in washing the any type of plates. Washing power contains the chemical substances and this is reacting with human hand. Now the project has mainly concentrated on this difficulty, and hence a suitable

device has been designed. Such that the dish washing can be done without application of any impact force. By using semiautomatic dishwasher, we can reduce time as well as human efforts significantly. In conventional dish washing process large amount of human power as well as quantity of water is used. So keeping that in mind, to reduce this Design and fabrication of dish washer machine we will develop.

The motor is coupled with the belt conveyor is used to convey plates. Clamps are used to hold plate against scrubber. The high forced normal water is sprayed on dish by water pump and wash. Detergent water is sprayed on dish while scrubbing. Then it is passed to pure water stage for complete washing. Once the wash is finished, the water is drained.

7. FUNCTION:

Alluminum Partition Sheet:

Aluminum is strong and resistance material, making the partition long lasting and allowing for customization to suit different interior styles.

Metal Frame Structure:

Provides structural support for the entire system, including the acrylic sheets, containers, and other components.

Water Pump:

Used to pump seawater into the system and/or to transfer the distilled water to storage.

8. SCOPE:

- The main objective of the project is to clean dishes.
- This project is design to reduce the human efforts.
- To reduce the time of cleaning.
- To make available low cost DISH WASHING MACHINE.
- Fast response compares the manual work.

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