Design and Fabrication of Automatic Dishwasher

Bhor Rohan Bhimaji , Choudhari Onkar Kisan, Deshmukh Kishor Sopan, Hegade Abhinav Uttam, Prof. Gaikwad Swapnil.

S.B.Patil College of Engineering, Department of Mechanical Engineering, GAT No.58, Vangali Village, Pune-Solapur highway, Indapur, Pune – 413106, Savitribai Phule pune university

Abstract

This paper represents the new and simple design of semi-automatic mechanical dishwasher. This design over comes the high cost and large space required to previous dishwasher

Main objective of semi-automatic dishwashing machine is to reduce the cost of fully automatic dish washing machine and give good cleaning performance. It requires less energy and less water consumption. Time of washing dish can be adjusted as per customer requirement. In this system multi jet Technology is used to clean Utensils. Multi jet system will be used to clean utensil from all side.

I. INTRODUCTION

From past 20 years automation in every field is increasing rapidly. Human always tries to reduce his mechanical efforts with the help of mechanical linkages of robots. In that automation home appliances and household working machines are getting special demand.

In western countries this automation has is growing rapidly. In earlier years the many home appliances has invented and were globally accepted such as dishwasher. The working speed and quality working of dishwasher made it an essential and useful home appliance.

Using various engineering design perspectives dishwasher can be considered as complex system containing electro technical, electro chemical and mechanical linkages. Whose combination makes dishwasher more useful and easy to use.

It works in mainly three parts as follows:

1. Impact of water jets on plates and dishes: - Spraying of water on dishes to make them washable. It also resins the major waste on the dish so that it does not trouble in further cleaning.
2. Chemical reaction of water application of scrubber: - Injecting the chemical reacted water i.e. washing liquid on the plates to create the foam on plates and remove the remaining unwanted stuffs with help of the scrubber.
3. Thermal reaction of water: - In this step we are going to spray the hot water on the dishes to clean the remaining foam and unwanted stuff from the plates.

II. CONSTRUCTION

There will be rack mounted on the funnel with the help of the supports. In which plates to be washed will be kept in circular manner. According to design there will be maximum 16 plates placed in the rack. And they will move in circular motion as per the station will perform work on it.

Next part is the funnel which is situated at the lower end of the rack. All waste washed at the first stage and as well as at third stage will be drained out through the funnel to the outlet.

Now the last and important assembly is of stations at the top of the machine. This includes the four stations in circular manner and will work in following sequence.

1. Water jet sprayer
2. Detergent and scrubber applier
3. Water jet sprayer

There will be also one stepper motor which will control the movement of the rack and also the vertical movement of the scrubber.

III. WORKING

When whole assembly is ready we have to put the plates in the rack and bring it under the four stations where processing is to be done. It will work in work in following manner.

1. At first station there will be the washing process carried on the plates; all unwanted stuff will be removed from plates.
2. At second station the detergent water will be sprayed in the plate and simultaneously scrubber will be applied on the plates for the cleaning the plates and make them oil free.

3. Then again water will be sprayed on the plates to rinse the washed stuff.

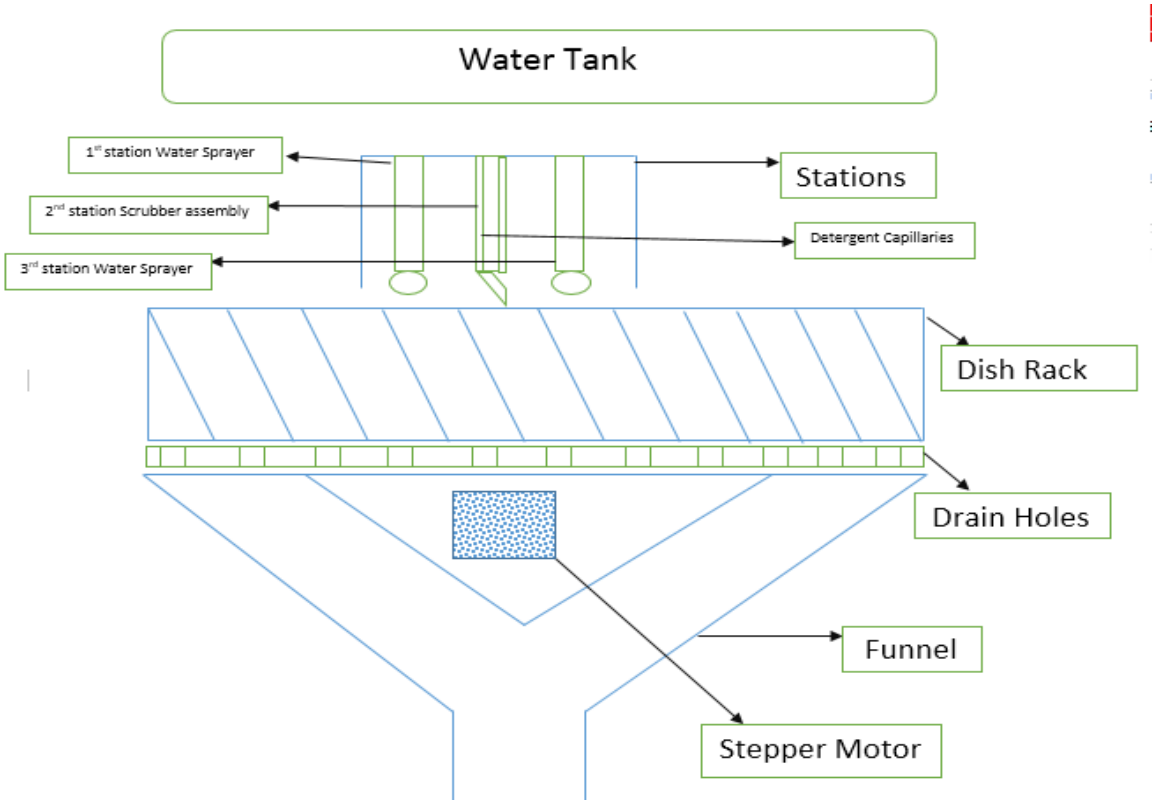

Fig. Front View of the Dishwasher Assembly

IV. CONCLUSION

This dishwasher can be used to clean any shape and any size utensils changing rack and scrubber. This dishwasher is easy to manufacture as well as easy to use.

V. FUTURE SCOPE

This project is very useful in the smart city project. This project can be further also modified as a mechatronics machine (this will make this machine fully automatic and more user friendly).

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