

# MINI WATER CAN CLEANING MACHINE

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## Abstract

The main goal of this project is to develop a mechanical system for cleaning domestic cylindrical water can. The mechanical system includes two main mechanisms which are rack and pinion gear mechanism and reciprocating four bar linkage mechanism. The rack and pinion arrangement is used to move whole mechanical system up and down for cleaning the can. The rack is fixed on the motor and the four-bar mechanism is attached to the motor shaft. PVC brushes are attached to the ends of the four-bar linkage. Four bar linkage is made in such a way that it can be adjusted according to inside diameter of the tank. When the motor is started the linkage rotates and with the help of brushes, cleaning of wall and base of tank takes place. The purpose of this project is to reduce the human efforts and to avoid the chemical influence on health of person entering the tank for cleaning. In this modern world, cleaning of overhead tanks manually is a tedious job. To overcome this we have aimed at tackling the disadvantages of cleaning overhead tanks, so an automatic system overhead tank cleaning is designed to provide high safety, high efficiency, less time for cleaning and to avoid environmental pollution problems. Purpose of this paper is to clean domestic cylindrical water tank with the help of mechatronics system. The mechatronics system consists of a grooved gear rod attached to two arms with brushes at ends. The two arms are connected to the gear rod by nut. By rotating the gear rod, the up and down motion of the two arms is achieved. The gear rod is rotated with the help of a D.C gear motor. The main grooved shaft is powered by an A.C motor. The motor and the shaft are connected by a rubber belt. The clockwise rotation of the main shaft will make the arms move and vice versa. The whole operation is controlled by a circuit consisting of relay switches, buttons, and PIC microcontroller. The number of times for the operation to repeat can be fed into the circuit. The achievement of this project is reduction of cost and very much used for small scale industries...

Keywords: Water can, Motor, Water pumper, Iron rod, Brushes, Pipes, Wood..

## 1. INTRODUCTION

We observe that many small scale industries and large scale industries doesn't contain any automation based machine used in cleaning of overhead water can. This is because of the irregular shape and various heights of the can locations. With previous survey made an attempt to make a machine by automation process for cleaning can. An alternate solution has made a plan to solve this problem. In India, the usage of cans by the people is approximately 71% After studies made the information that have faced a lot of difficulties like continuous work in the dirty places, irregular payment and other various reasons. Continuous work and irregular payment may also be the major reason for this attempt. So came to a conclusion that cleaning the water can using automation process can be useful to solve all these problems. In this case, machine has the capability to clean the can easily and quickly. Designing of our machine is based on the survey report conducted.

## 2. RELATED WORK

These are some of the existing Smart cleaning designs that have been implemented:

### (1) Cleaning the water can with brushes and pipes

### (2) cleaning the water tanks by the syntax process

The process of cleaning the water cans with the brushes and also with the pipes is the most traditional method of cleaning. And also this requires a lot of man power and also very much hard work. This iterative solutions consists of very much drawbacks and also doesn't clean the water mineral can properly without any dirt or bacteria present in the can. This requires man power and then also it doesn't properly clean the can in the corners and edges.... This contains a lot of man power which goes into the vain and does not clean and we have the machine cleaning the can perfectly with lots of cost of approximately 1lakh and also this cant be affordable by the small scale industries. As the technology is developing day by day. But the water can cleaning system remains same with the traditional process.. Now a days the chemical fertilisers are used large in number the overuse of these chemical fertilizers has hardened the soil and decreased fertility and polluted air and water thus causing many environmental problems. There is a guy named Rahul who suffered a lot by drinking water from can which was not cleaned by the person properly. We

designed the water system cleaner using rpm motor and brushes and the other componets. As a model we investigated the water cleansing system on two wells that placed in rural and urban areas for small scale industries..The main theme is purifying the dirty water and the properties and the chemical composition of purified water is to fit with the requirements of the clean water..

### 3. IMPLEMENTATION

As we are modifying the existing water can cleaning method from manual cleaning and base level cleaning process to automated can cleaning machine. Where our projects also giving health to the people by cleaning the can properly without any dirt remains. So, we are changing the cleaning methods to the Mini water can cleaning machine. By this solution we can be able to clean our clean by the brushes which is connected to the iron rod. Where this iron rod will be rotated with the help of the RPM Motor and the can cleans with the two types of water stores in the containers (water and soap water). Where this containers is connected to the RPM Motor with a pipe and thus the can cleans without any dirt remains over and no matter of short circuit..

The main objective of this project is to develop a water can cleaning machine different from the traditional system

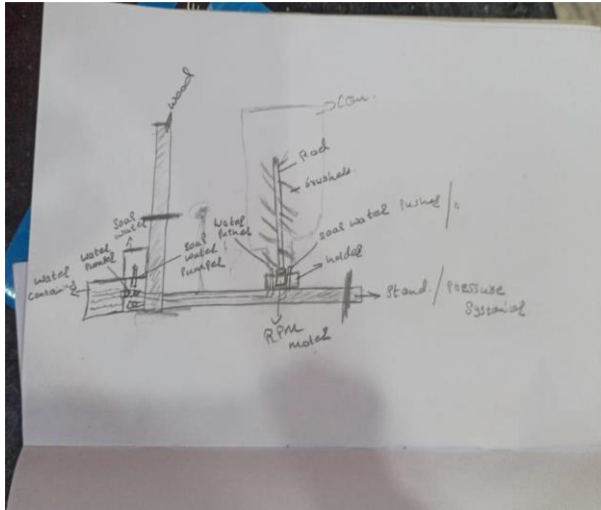
The objective of the project as follows:

- \* Develop a can cleaning machine apart from pipes and brushes
- \* Improve the security which is fully automated and electrically safe.
- \* no question arises for the short circuit
- \* Eliminating the need to store the pipes and brushes
- \* Eliminate thefrauds which are done by industries by not cleaning the can properly.
- \* Provide user friendly and easier system.
- \* Save the time

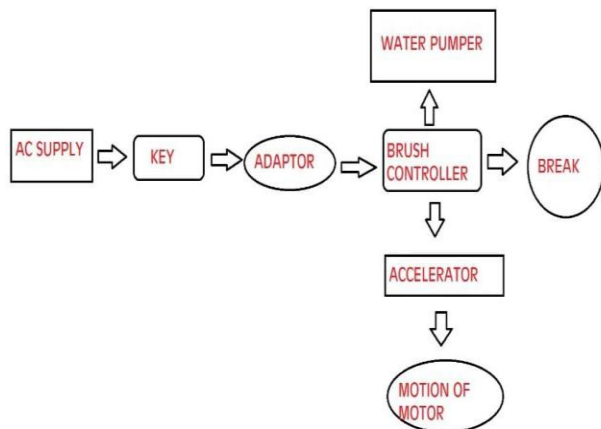
### 4. EXPERIMENT RESULT



By this proposed solution we can increase the efficiency of cleaning the cans and also make the cleaning process more quickly and easier which is affordable for the small scale industries..



Design



**Block Diagram**

The equipment which we are using is very low of cost and are used in an effectively manner. And also this are to be used by

small scale indusrires and this is very useful to them. And the hardware description we use is very typical and also we should be carefully on the supply as we have lots of electrical componemts.

**5. CONCLUSION**

So, in order to save the health of the humans we started implementing this idea where

It provides high security

No question arises to short circuit

Protects from drinking contaminated water

Fully automatic high technology

No need of keeping the brushes and pipes safe to clean

We modified traditional can cleaning system to fully automated cleaning machine which helps small scale industries

**6. REFERENCES**

(PDF) Automatic Overhead Water Tank Cleaning System: A Review and an Approach (researchgate.net)

existing solutions

how to clear water pipeline at home by pressure pump. plumbingdesi knowledge. - YouTube

water can cleaning with brushes - YouTube