PROJECT TITLE: DESIGN AND DEVELOPMENT OF AUTOMATED OVERHEAD WATER TANK CLEANER

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Keywords:
DC Motors, Hollow shaft, Nylon brushes, Water pump, Arms

Introduction:
In a recent research it was discovered that no robot-based machine is used as part of cleaning the upper tank. This is the result of the unpredictable shape and the different dimensions of the tank areas. With previous reviews it has affected the effort to build a machine through the mechanization process to clean the tank. A replacement agreement has reached an agreement to address this problem. In India, the use of tanks by the general population is about 71% after the examinations have made data that have faced a significant amount of problems, such as persistent work in disordered places, sporadic delivery and different reasons Constant work and unpredictable installation can also be the important purpose behind this effort. So we came to the conclusion that cleaning the upper tank using the mechanization process can be invaluable for tackling each of these problems. For this situation, the machine has the ability to clean the tank effortlessly and quickly. The planning of our machine depends on the direct study relationship. In this avant-garde world, the physical cleaning of air tanks is a repetitive activity.

To overcome this, we have tried to solve the disadvantages of cleaning the overhead tanks, so the automatic cleaning of the upper tank of the system is designed to provide high safety, high efficiency, less time for cleaning and avoid problems of environmental contamination. The aim of this project is to clean the domestic cylindrical water tank with the help of a mechanical system. The mechanical system consists of a bar attached to the arms with brushes at the ends. The two arms are connected to the rod with a nut. By rotating the pole, you can move the arms up and down. The auction is rotated with the help of a D.C. This manual has been prepared as a guide for people who will operate and maintain your tank cleaning machine.

The path to a long life for your tank cleaning machine will, reliably on maintenance that has be a precisely organized for varies part like framework; You will appreciate that a tank cleaning has a dirty and difficult task requires more consideration than one that works in perfect condition.

Objectives:
The main objective of this project is to develop an automated water tank cleaner is using rotating brushes with less time and human effort.
Methodology:

Automatic cleaning of the water tank saves time and money. If you are cleaning your tanks manually or using the fill and empty method, you may be surprised at how much you can save through automation. Automated tank cleaning is best suited for apartment complexes and businesses or buildings installed with large water tanks. Nowadays, professionals and companies working with automatic tank cleaning equipment arrive at their doors with their equipment to clean the water tanks in a few hours. The advantage of automated tank cleaning equipment is that it saves you time. In addition, you do not need to enter the water tank to clean it. Companies that offer automatic tank cleaning equipment usually offer a demonstration of their products that allows them to choose the right product they need for tank cleaning. Selection of the appropriate tank cleaning nozzle allows for efficient cleaning. Be sure to use the filter to prevent particles in the liquid from clogging the nozzles or stopping their rotation. The process of automatic tank cleaning begins with the cleaning of the manhole and dirt, mud and surrounding algae. Then, using a special high-pressure jet wall, all interiors are cleaned. Dirt and sludge are removed using a vacuum pump and an industrial pump. After cleaning the water tank, the water tank is disinfected using chlorine or antibacterial agents. Some professional cleaning service providers use the UV radiator to kill the remaining bacteria. The cleaning process ends with the residual chlorine test left in the tank.

Reasons for cleaning overhead water tanks: waterborne internal diseases, skin diseases, foul odor, bad taste, different color

Hardware Requirements:

1. Low Speed High Torque Dc Motors,
2. Car Wiper Motor
3. Mild Steel Or Low Carbon Steel
4. Hollow Shaft
5. Nylon Brushes
6. Water Pump
7. Arms
8. Connecting Lever
9. Bearing
10. Bush

Software Requirements: AutoCAD
Results:

Automatic tank cleaning machines that work the same way as a wall cleaner. In this project, a DC motor of about 12 V, which operates at 60 rpm, is used to rotate the lateral axes continuously. An AC motor of about 0.25 HP operating at 1440 rpm is used to rotate the shaft at a fixed speed. The shaft is mounted on the motor on the T-shaped rod. The machine is connected to the top of the tank. After complete configuration, the motor rotates and the brushes rotate on the surface of the tank. Spring compression is a mechanism that joins the brush and the shaft. Finally, the water is drained by the outlet of the tank.

Conclusion:

In this work the automated water tank cleaner was successfully developed to clean the water tanks using rotating brushes. This strategy is more effective and safer than the conventional methods of cleaning which takes less time and human effort. Water splashes everywhere along the dividers in the tank and the rotating brushes clean the external separators.

Scope for Future work:

- Design and build the water tank cleaning robot. For example, build the robot that can operate under the water and for specific storage tank with a flat surface only.
- Study and design controller that can control the movement of the robot.
- Develop the mechanism in the robot such as camera video that provided to allow an operator to monitor the progress of the vehicles.