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Solar Power Operated Water TrashCollector

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Abstract: For the last two decades, almost all urban water bodies in India are suffering because of pollution and they are used for disposing untreated local sewages and solid waste. In many cases, those water bodies turned into landfills and get wasted. For example, at the beginning of 1960's Bangalore had 262 lakes, now only 10 hold water. To overcome these problems, the government of India has taken initiatives and implemented many schemes. By taking this into consideration, this project "Solar Operated Water Trash Collector" is to remove garbage, debris and solid waste from water bodies and make it clean.The main aim of this concept is to reduce man power and time consumption for cleaning the river.

Index Terms – At Mega 328 Controller, RF Module, LED, Solar Panel

I. INTRODUCTION

Waste water is defined as flow of used water from homes, business industries, commercial activities and institutions which are subjected to the treatment plants by a carefully designed and engineered network of pipes. The biggest impact of cleaning the chemical wastes can cause respiratory diseases and it plays a challenging issue for the municipality officers. Nowadays, even though automation plays a vital role in all industrial applications in the proper disposal of sewages from industries and sewage cleaning is still a challenging task. Drainage pipes are used for the disposal of sewage and unfortunately sometimes there may be loss of human life while cleaning the blockages in the drainage pipes. As such condition the river cleaning machine is used to solve such type of problems.

II. PROBLEM STATEMENT:

Impurities in water can be dangerous and cause diseases. As far as drainage system is concerned, the function of main drainage system is to collect, transport and dispose of water through outfall or outlet. Impurities in drainage water can be just empty bottles, polythene bags, paper, etc. It is an industrial working prototype of a fully solar powered water purification system that can operate its floating bin and remotely. The system is indigenous and efficient for river cleaning purposes.

III. AIM AND OBJECTIVES:

The main aim of the project is to reduce the man power, time consumption for cleaning the river. To reduce the pollution in water bodies. Facility of removing waste particulate floating on water surface. To maintain the automation during working towards cleaning River. To perform the fast & reliable operation during cleaning River. Improve the water quality of a water bodies. To work for society for clean up a section of a stream or river. To record the amount of garbage removed

IV. LITURATURE SURVEY

1.Design and Fabrication of Remote-Controlled Sewage CleaningMachine:

The motive of the project is to automate the sewage cleaning process in drainage, to reduce the spreading of diseases to human. The black water cleaning process helps to prevent pest infestations by reducing the residues that can attract and support pests. It also improves the shelf life and sensory quality of food products. In the proposed system, the machine is operated with remote control to clean the sewage. Hence, this system avoids the impacts from the sewage waste and its harmful gases. This helps to prevent the mosquito generation from the wastage.

2.Review on Advance River Cleaner:

River water is used for irrigation which in return gives food. To the people. They also maintain the ecology of region and bring prosperity. We made this project to clean the river. After implementing this project, we can control the pollution of river it is very beneficial for our society. In this project turbine rotates by flow of river water and through the mechanical gear arrangement we arrange two conveyor belts. The first conveyor belt is used to pick solid waste from river and the second conveyor belt is used to draw solid.

3. Design and Fabrication of River Waste Collector:

The "River Waste Collector" used in that places where there is waste debris in the water body which are to be removed. This machine consist of different size of Fins in which garbage's are going to collect in between them. This also reduce the difficulties which we face when collection of debris take place. In this machine one end of fins is fixed and another side is movable, with the help of servo motors we lift the fins from movable side. All the waste debris are get collected at tank placed at the end of boat.

V. METHDOLOGY:

This Paper explains the arrangement of conveyor which is place on shaft of motor. Due rotation of motor conveyor rotated. As the conveyor is move, it collect water debris, waste garbage and plastics from water bodies and get lifted in upward direction and dropped in the tray. Propeller is used to drive the machine with help of PMDC motor. The RF transmitter and receiver which use to control the machine remotely. By using this four bar mechanism, it rotated at a particular angle intended to collect the garbage for the model.

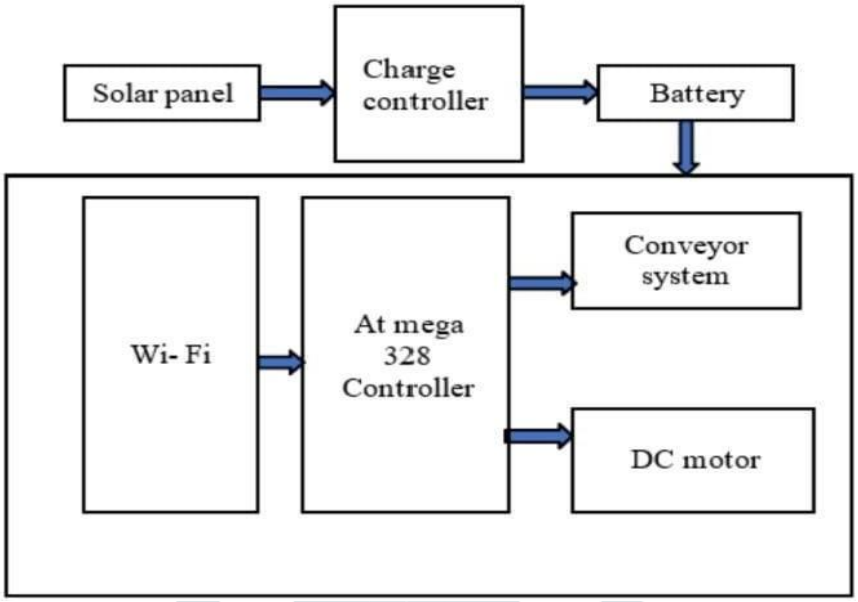

Fig 1. Block diagram of solar powered water trash collector

The proposed methodology has main aim is to lift waste debris from the water surface and dispose them in the tray. It consists arrangement of conveyor which is place on shaft of motor. Due rotation of motor conveyor rotated. As the the conveyor is move, it collect water debris, waste garbage and plastics from water bodies. As the machine is placed in the water the waste debris in water will get lifted and it moves in upward direction. As the waste debris reaches the upper extreme position it will get dropped in the tray. Hence this will result in cleaning of water surfaces and safe collection of waste debris from water. Propeller is used to drive the machine on the river and run with help of PMDC motor. The total electrical devices are controlled by RF transmitter and receiver which use to control the machine remotely.

Collecting Mechanism is used in our project to overcome real time issue as due to water tension garbage is difficult to collect. By using this four-bar mechanism, it rotated at a particular angle intended to collect the garbage for the model. It has two window open and close as user wishes. Using remote to ON and OFF the mechanism. Water wheel is bolted on shaft which is placed on base frame. The purpose of water wheel (propeller) is to move the machine forward or backward on water. Motor is use to rotate the water wheel with the help of chain drive mechanism.

In this project tracking system is also implemented which is helpful to adjust angle of solar panel with respect to sunrays. So that we get output of solar more.

VI. RESULT :

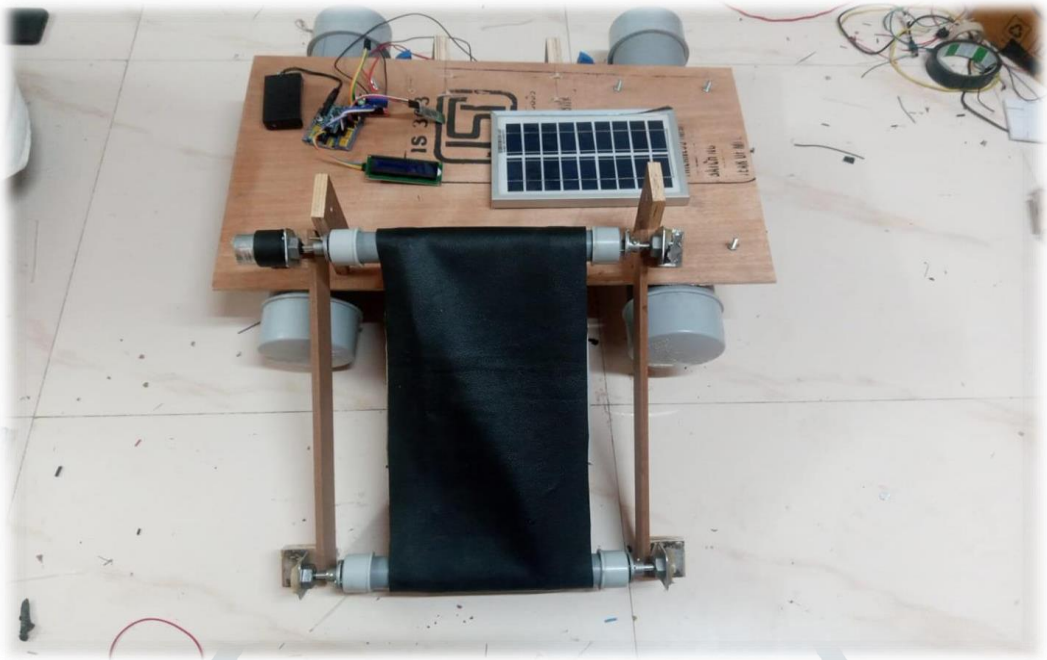

Fig 2. Prototype Model

Prototype model gives following result:

1. Pollutant level in water bodies is reduced.
2. Decrease the risk for aquatic life from the pollution.
3. Can also be helpful to collect organic waste from water bodies' impurities like dead aquaticanimals etc.
4. The work of cleaning swimming pool or fountains reduced as it can be done through remote control now.

VII. CONCLUSION

Cleaning of water bodies is always been a huge problem. Due to which the aquatic life of animals is destroying. So, to maintain a good balance between the aquatic life, this automatic water cleaning machine is introduced. This machine is easy in operations and its manufacturing cost is also low. Hence this water cleaning machine is very useful. Water cleaning machine is designed to make system very much economical and helpful to remove water impurities like plastic, trashes and other day to day waste which is floating on the surface.

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