

## BOREWELL RESCUE ROBOT

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### **Abstract**

*-This robot is used to rescue the child from borewell. It is fast, economical and safe. It has the facility to monitor trapped child, supply oxygen and provide a supporting platform to lift up the child. This system will attach a harness to child using robotic arms for picking up. The robotic arm has motor attached to it for picking and placing. The proposed system will easily rescue the child within short time without major injury. Visualizing the child is made possible with infrared waterproof cameras and a high resolution TV monitor. This is a light weight machine that will go down into the bore well pipe and save the child's life systematically by performing the required action.*

**Key Words:** Bore well rescue robot, Atmega 8.

### **INTRODUCTION**

In order to meet the ever increasing demand for water bore wells are dug. But these are usually left uncovered and children often fall down. Normal rescue operation strategy involves digging a parallel pit to achieve the child and adjacent holes are made to walls of bore well. But these are time consuming and may cost life. A multifunctional, reprogrammable and intelligent manipulator designed to perform a task is a 'robot'. Using a robotic structure it is possible to rescue a child within a short time.

### **OVERVIEW**

Robot for bore well rescue offers solution to this situation. It is fast, economical and safe. It has the facility to monitor trapped child, supply oxygen and provide a supporting platform to lift up the child. This system will attach a harness to child using robotic arms for picking up. This system includes a camera module to monitor the child which is connected to the mobile and display on monitor. The oxygen pumps are used to supply the oxygen into the borewell. The proposed system will easily rescue the child within short time without major injury. Visualizing the child is made possible with infrared waterproof cameras and a high resolution monitor. This is a light weight machine that will go down into the bore well pipe and save the child's life systematically by performing the required action.

### **EXISTING SYSTEM**

The main objective of this project is to make it possible for a child fall inside bore well to rescue without any injury. This goal is achieved by controlling a robot to take of the child inside the bore well which is controlled by the person from outside. In existing system, a big hole is dug beside the bore well up to the depth where the child is stuck. A small delay in this resources accumulation may reduce the chances of saving child alive. If the area

beside the bore hole contains rocks below certain depth, in such cases the chance of saving child alive is very low. Lack of oxygen inside the bore well and lack of light sources causes the major difficulty during the rescue operation. There is no such special equipment for rescuing the child trapped inside the bore well. There is no proper technique to rescue victims of such accidents. When the local arrangements do not work, army is called in. In most cases reported so far, a parallel hole is dug up and then a horizontal path is made to reach to the subject's body. It is not only a time taking process, but also risky in various ways. Moreover it involves a lot of energy and expensive resources which are not easily available everywhere and in this process we always need big space around trapped bore that we can dig. Whatever may be the case the success ratio depends on lots of factors like availability of time taken for transportation of machinery to the situation, human resources and mainly the response time of various government organizations. In India according to the NCRB report of 2011 there are 5 average deaths per day in the license bore wells. At present there is no proper solution for this problem; in this paper the model of a robot arm which can be used for rescue operation is explained.

### PROPOSED SYSTEM

This work is aimed towards the construction and designing of a robotic system to work in borehole rescue operations and to detect child inside the borewell. The robot has arms at its front to the child from borewell.

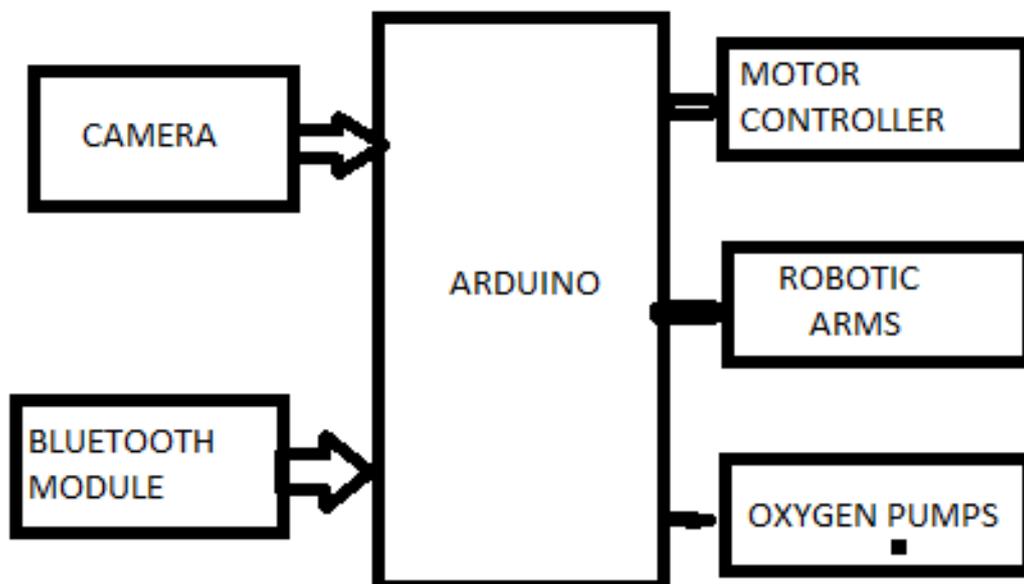


Fig 1. Block diagram of Borewell rescue robot

**Arduino Section:** This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

**Bluetooth module:** HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. The HC-05 Bluetooth Module can be used in a Master or Slave configuration, making it a great solution for wireless communication.

**Camera module:** A camera module is used to monitor the child inside the borewell. This camera module plays a main role in rescue operation. The camera module is used to identify the location of the child inside the borewell. At continuous monitoring of the child.

**Oxygen pumps:** The oxygen pumps are used to supply the oxygen into the borewell because inside the borewell at a deep

Depth the oxygen reduces so, by using this we can save the child by supplying oxygen.

**Robotic Arms:** Robotic arms are used to lift the child from the borewell. These robotic arms are controlled by the user commands. The robotic arms are attached to the dc motor with gear head combination, by this the robotic Arms can rotate up and down.

## APPLICATIONS

**As bore well child saver:** - The main application of the machine is in the rescue operation of the child from the bore well.

**Miscellaneous Application:** This type of robot capable of climb vertical pipes or drive through horizontal or inclined pipes may be used in the following areas.

- In manufacturing industries.
- In space programs.
- In radio active or highly hazardous environment.
- In under water operation

## RESULT

Proposed design model as bore well rescue robot which is able to rescue a child trapped inside bore well. It can detect the child by using camera module, the robotic arms are used to lift the child from borewell. The oxygen pumps are used to supply the oxygen into the borewell. The proposed model design is supposed to look like the following:



**Fig 2. Robotic arms lifting the child from Bore well**

## CONCLUSION

A lot of lives have been lost due to falling in the bore well because it involves digging a pit beside a bore well which is a time consuming process. The proposed system is to overcome all these difficulties. This project is used to reduce human efforts for rescuing operations from bore well. It performs rescue operations in very less time as compared to traditional methods. Thus, it has been designed keeping the entire obstacle in mind that may arise during the operation. We like to conclude with the help of my research project able to rescue without any damage.

## FUTURE SCOPE

In future we can use this project in several applications by adding additional components to this project. The structure is made strong enough to sustain all possible loads, though it can be flexible at the same time to adjust wider range of bore diameter and any change in the diameter of bore. We can send these robots to dangerous zones by connecting smoke sensor to the robot we can get the information related concentration of smoke or gases in respective fields and sensor will detect the poisonous gas and it gives information to the Microcontroller and microcontroller gives the information to the transceiver from that we can get the data on the PC side.

## REFERENCES

- 1) *“Pipeline Inspection And Bore well Rescue Robot “Palwinder kaur,Ravinder kaur,Gurpreet singh.IEEE, VOL3,NO.4,APRIL 2014.*
- 2) *B.Bharathi, B. Suchitha Samuel “Design and Construction of Rescue Robot and Pipeline Inspection Using ZigBee” International Journal of Scientific Engineering and Research (IJSER) Volume 1 Issue 1, September 2013.*
- 3) *Manish Raj, P.Chakraborty and G.C.Nandi “Rescue robotics in bore well Environment” Cornell university library [v1] Mon, 9 Jun 2014 10:51:44 GMT (244kb).*
- 4) *C. Kemp, A. Edsinger 2007, Challenges for Robot Manipulation in Human Environments. IEEE Robotics & Automation Magazine, 2007 pp. 20-29.*
- 5) *“Rescue System for Borewell Accidents”, Sanket Arun Talekar, Suraj Bhimrao Katkar, Pooja Kumari,Department of Electronics and Telecommunication, Dr. D Y Patil School Of Engineering, Lohegaon, Pune, Maharashtra, India.*