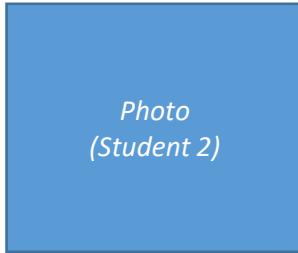




**Anantha Prajith K**



**Pradeep S**



**Vignesh C**

## Autonomous Tank cleaning Robot

**College Name : Kumaraguru College of Technology**

**Department: Mechatronics**



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**6** CLEAN WATER  
AND SANITATION



**ENSURE AVAILABILITY AND  
SUSTAINABLE MANAGEMENT  
OF WATER AND SANITATION  
FOR ALL**

**GLOBALLY**

**2.6**  
BILLION

PEOPLE HAVE GAINED ACCESS TO  
IMPROVED DRINKING WATER  
SOURCES SINCE 1990

**666**

MILLION  
PEOPLE ARE STILL WITHOUT

**IN INDIA**

NEARLY  
**18%**  
OF WORLD'S POPULATION  
BUT ONLY

**4%**  
OF AVERAGE GLOBAL  
RUNOFF IN RIVERS



NEARLY  
**500** MILLION  
PEOPLE ARE EFFECTED  
BY DROUGHT IN INDIA



OVER **20%**  
OF THE POPULATION LIVES  
IN STATES WHICH ARE NOT  
YET DECLARED OPEN  
DEFECATION FREE

**1/5**  
CHILD  
DEATHS



**DUE TO SEVERE  
DIARRHEA  
ARE IN INDIA**

EACH YEAR NEARLY  
**102,813**  
CHILDREN DIE

**DUE TO SEVERE  
DIARRHEA**

# Problem Statement

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- Dirt particles, rust, and inner coating particles all show signs of sedimentation causes **clogging of pipe.**
- **Maximum water usage** and irregularity in cleaning.
- **Chlorination** causes a variety of congenital effects like **diarrhoea, typhoid, cholera, and polio.**



**In India, each year, 485 000 diarrhoeal fatalities are expected as a result of contaminated drinking water**

# Concept of the solution

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# Novelty / Scope of Solution

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Our solution is suitable for corporation water tanks with a minimum capacity of 20,000 litres.

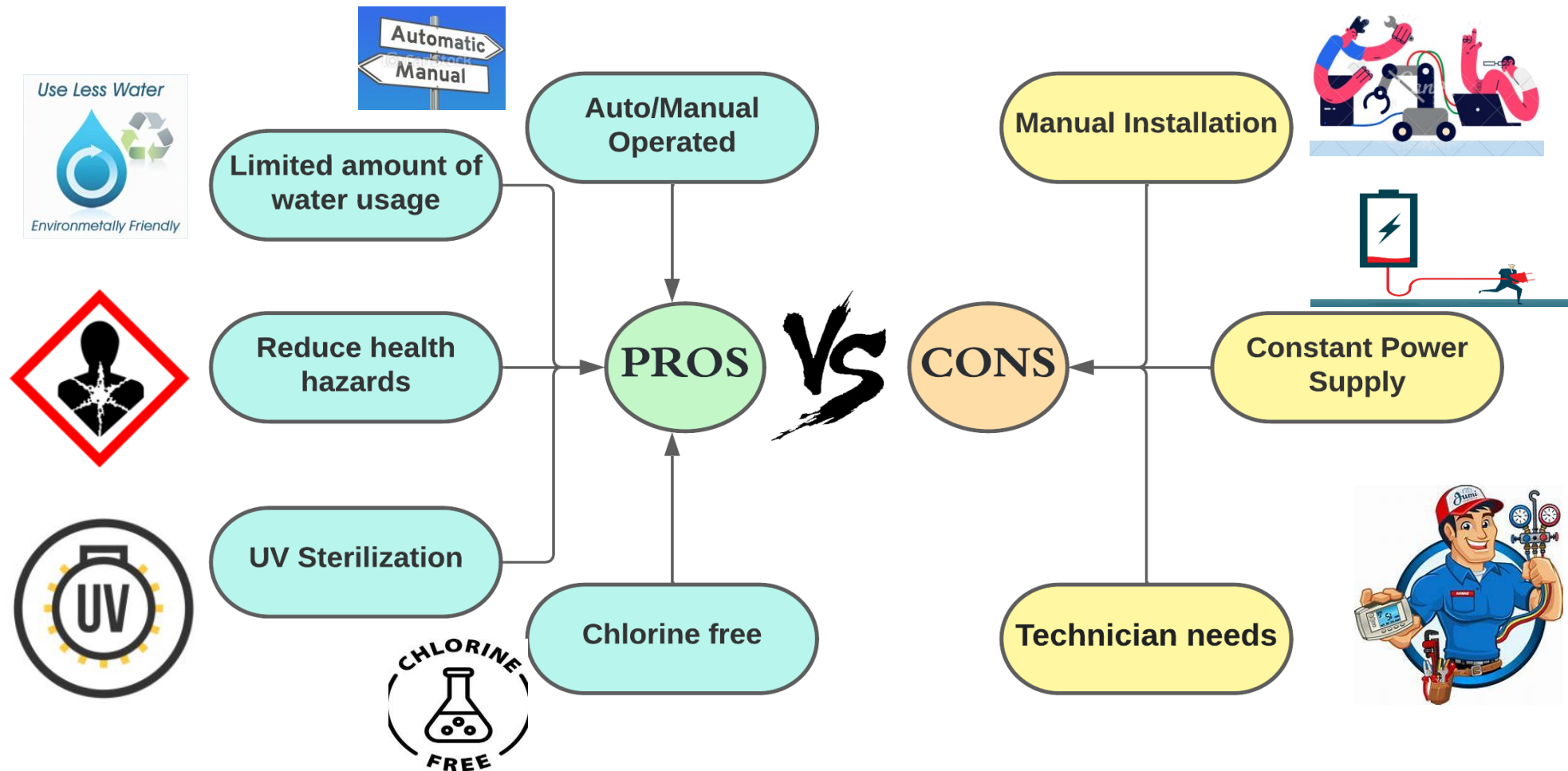
➤ Parameters that are cleaned by the robot:

1. Floor of the tank
2. Sidewalls of the tank
3. Stain and mud in the tank

➤ **Acetic acid** mixed with water –Easy removable of stains.



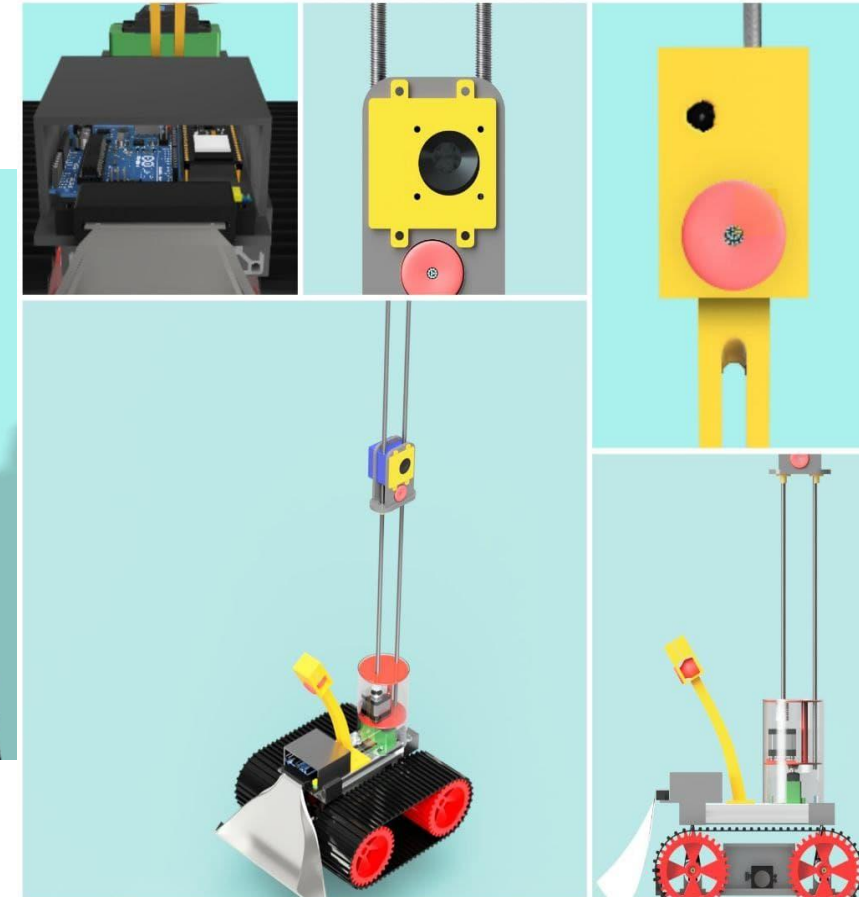
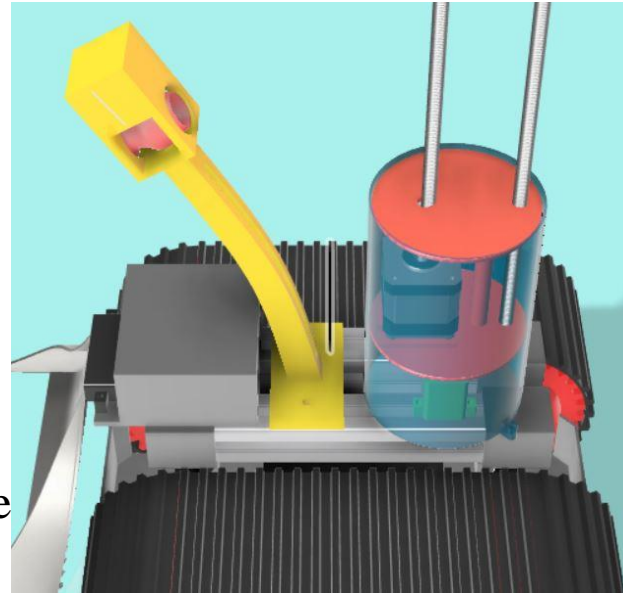
# Pros and Cons of the solution



# Technical Description

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- Dimensions: 30 x 30 cm
- 2 cameras for vision
- Arduino uno, ESP Wi-fi as controller
- 4 DC Motor with Belt for locomotion
- Stepper and servo motors are used to position the nozzle.
- Source of power — AC or DC
- Water-proof
- Joystick controller for manual operation
- Automatic operation — LIDAR mapping of the tank



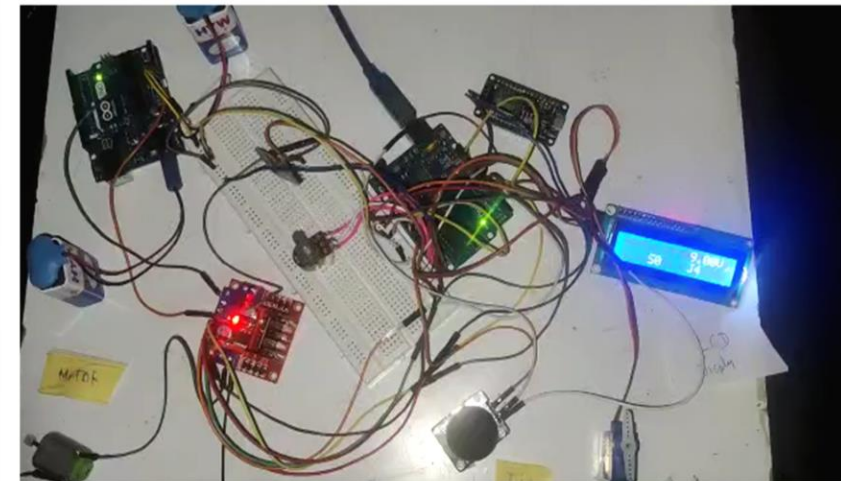

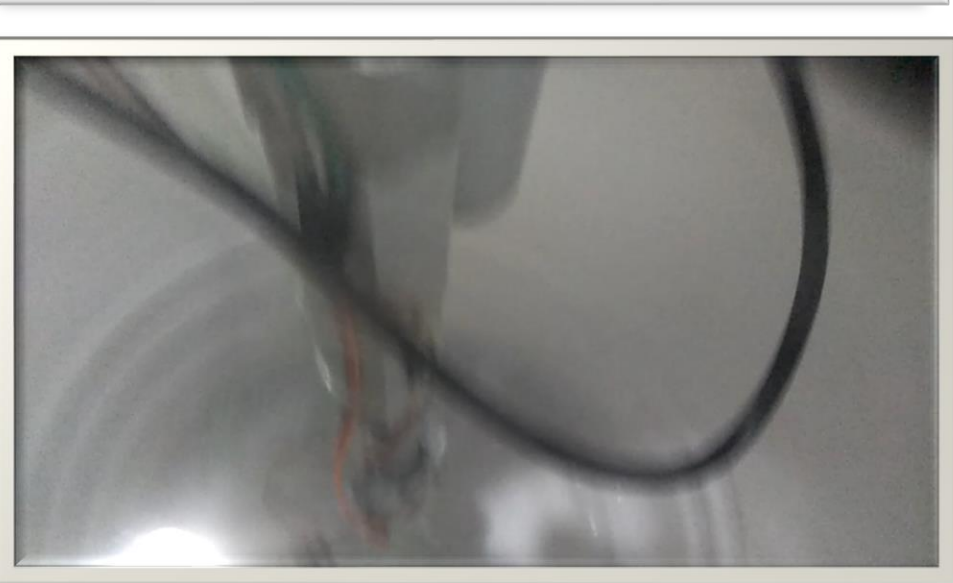
# Implementation Plan

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- The bot was placed in the tank by the operator.
- It begins mapping with lidar and then moves.
- Scrubbers and brushes are used to drive mud sediment down a drain hole on the floor.
- It cleans the side walls by using a stepper motor to raise the nozzle's height and a servo motor to rotate it 360 degrees.
- The controller controlled the movement and the joystick was used to control it.







# Cost Estimate

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Level wise Budget	Total Cost(in INR)
Iteration-1	16,000
Iteration-2	46,380

[CLICK HERE TO VIEW THE DETAILED BOM](#)

# THANK YOU

