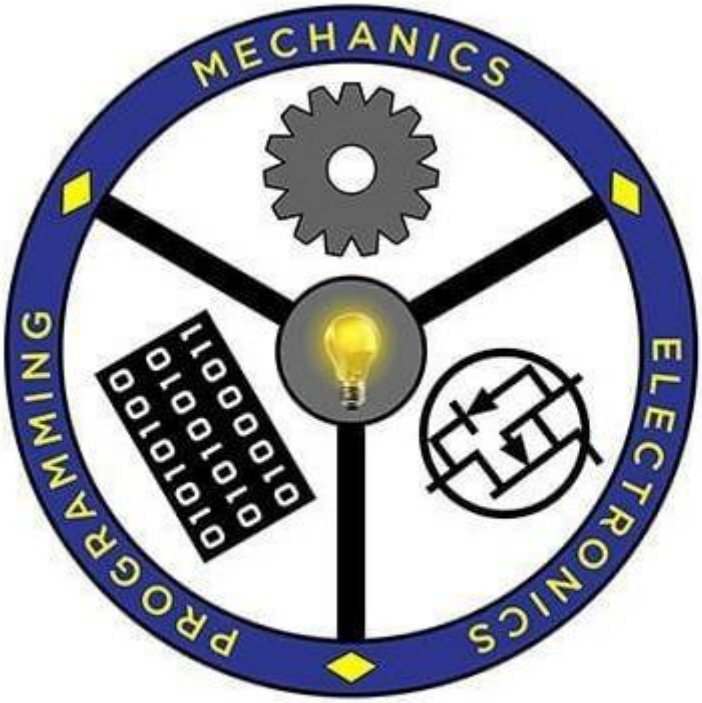
Project Report on
Sewage Cleaning Bot

Submission to The Robotics Club – SNIST as a part of Post Induction'23

Team No – 06



THE ROBOTICS CLUB – SNIST

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY

(AUTONOMOUS)

(Affiliated to JNTU University, Hyderabad)

Yamnampet, Ghatkesar, Hyderabad – 501301

2023

CERTIFICATE

This is the project work titled ‘Sewage cleaning bot’ by ‘ T. Hima Avinash, Manichand, R.N. Rohit Chand, Tanmay Sugandhi ’. This is a record of the project work carried out by them during the year 2023-24 as a part of POST INDUCTION under the guidance and supervision of Murgan Saravanan.

Mr. G. Kovidh Addhish
&
Mr. Aarushraj Puduchery
Technical Heads

Mr. N V V S Narayana
The President of
The Robotics Club

Dr. A. PURUSHOTHAM
Faculty Advisor
Mechanical Department

DECLARATION

The project work reported in the present thesis titled "**Sewage Cleaning Bot**" is a record of work done by Team 6 in **THE ROBOTICS CLUB** as a part of **POST INDUCTION – 2023.**

No part of the thesis is copied from books/journals/Internet and wherever the portion is taken, the same has been duly referred in the text. The report is based on the project work done entirely by Team team number and not copied from any other source.

ACKNOWLEDGEMENT

This project report is the outcome of the efforts of many people who have driven our passion to explore into the implementation of **Sewage Cleaning Bot**. We have received great guidance, encouragement and support from them and have learned a lot because of their willingness to share their knowledge and experience.

We thank our technical heads **Mr. G. Kovidh Addhish and Mr. Aarushraj Puduchery** for being with us till the end of the project completion.

We thank all members of the **Steering Body, Executive Body, Technical Advisory Board and Club's Incubation and Competence Committee** of **The Robotics Club** for helping us with crucial parts of the project. We are deeply indebted to **Mr. N V V S Narayana** – The President, **Ms. Mugala Shravani** – The Vice President, **Mr. N Abinav** – General Secretary and **Ms. Maliha** – SAB Chairman **THE ROBOTICS CLUB** respectively and also every other person who spared their valuable time without any hesitation whenever we wanted.

We also thank our faculty advisor **Dr. A. Purushotham**, Professor Mechanical Department, who encouraged us during this project by rendering his help when needed.

Contents Pg. No.

ABSTRACT

PROBLEM STATEMENT:

Cleaning sewage is a dangerous process that poses health risks. When human workers come into contact with sewage waste it can lead to damage to their physical health. Not only is this environment unsanitary. It also contains hazardous gases and materials that can be harmful for the human worker. Manual cleaning methods are often time consuming and not cost effective. In every city there is a network of sewage pipes that need cleaning and monitoring.However accomplishing this task can be quite challenging. Our project aims to simplify this process by introducing a bot. If the cleaning was done by a human the monitoring of the cleaning and giving direction would be a difficult task , To tackle this problem our bot is equipped with built in video streaming capabilities allowing real time monitoring of the cleaning procedure. This innovative solution eliminates the complexities. Ensures efficient and thorough sewage cleaning.

TEAM'S APPROACH TO THE PROBLEM:

The robot utilizes the ESP8266 micro-controller. For navigation within the challenging terrains of sewage systems, the robot is fitted with geared side shaft DC motors having a tank movement mechanism. To do the cleaning tasks, we implemented a high-torque motor combined with a rack and pinion system. Robot with the capability to extend an arm doesn't damage itself. It is equipped with cleaning tools to reach and clean areas effectively.One of the main features of our robot is its real-time video monitoring capability, facilitated through the ESP32-CAM's Wi-Fi function. This feature helps the operators the bot remotely and view the cleaning process in real-time.Further enhancing the user experience and control, we integrated the robot with the A mobile application. This integration offers a seamless platform for both monitoring the video feed and remotely controlling the robot's movements and functions. The bot is also equipped with and MQ-4 sensor for detection of harmful gases.

BLOCK DIAGRAM: