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Smart Sewage Cleaning System

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ABSTRACT: To avoid the impacts from the sewage waste and its harmful gasses, we proposed the smart cleaning system. Here, smart arm and E-Bucket plays an important role. Such as smart arm is used to lift the sewage. And the E-bucket (Electronic bucket) support evaporation of the water from waste & convert it into dry matters. This is also preventing the mosquito generation from the wastage. Smart cleaning system is also an automatic functioning system. There, the above processes are performed spontaneously with the help of ARM board (ARDUINO). After the evaporation process the waste is easily add with government wastage bank by the street cleaning sweepers without any kind of affection of the Bactria's and the sewage flues from the waste.

KEYWORDS: Smart Arm, E-Bucket, AURDIUNO

I. INTRODUCTION

Smart Sewage Cleaning System is the automatic functional network using smart arm extraction and E-Bucket heating. In reference paper [2], there drainage system cleaner has three major parts which are the Propeller, the Cleaner and the Pan all make up for its effective functioning. Like as our system have three kinds of parts shovel, Release and evaporation. The proposed system overcomes the criticism about automation for domestrial purpose such as street sewage cleaning process. Adequate cleaning process is carried over by smart arm, E-Bucket and ARDUINO & Driver circuit (LM293).

II. HARDWARE DISCRPTION

Smart Sewage cleaning System includes (fig2) Smart Arm, E-Bucket and Arduino board & Driver IC (LM293). The arm is made in the form of hydraulic stamp just like as JCP's front arm. The ARM length will be adjusted based on corresponding sewage length. Automatic operation of the ARM is performed by the ARDUINO program. Interfacing of the ARDUINO with the hydraulic stamp (smart arm) is achieved by the help of driver circuit. LM293 IC (L293D) is perform the role of driver circuit. Because we cannot control the motor directly by ARDUINO, with the help of the driver circuit we can do automation in ARDUINO. The L293D works on the concept of typical H-bridge, a circuit which allows the high voltage to be flown in either direction. In a single L293D IC there two H-bridge circuits which can rotate two DC motors independently.

As per Fig2 there two separate motors are applied to rotation and movement of the Smart Arm such as motor [A], motor [B]. One is support the shoveling process. Another one is support the rotation for deposit the waste inside the bucket. There motor [A] is connecting with hydraulic stamp when it run, the arm under goes to moving. By using of the hydraulic stamp, here the sewage is shoveled. The shoveled waste directly deposit on the E-bucket by taking the small rotation of the motor [B].

E-Bucket is nothing but the Electronic bucket. It includes the temperature sensor, relay and heating coil. When the waste deposited on the place of E-bucket there temperature sensor reading is varied (fig1). Normally, the room temperature reading is 30-32 degree.

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COM13 (Arduino Uno)
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TEMPERATURE = 31.74°C
TEMPERATURE = 31.25°C

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BLOCK DIAGRAM

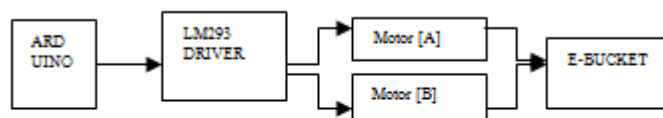


Fig2: Over all process layout

V. DEVICE LOCATION

Smart swage cleaning device placed in the corner of the street sewage path. It is the stable one because of it does the cleaning process for some periodic sequence. There sewage cleaning process is carried out two times of per week. Timing settings are provided in ARDUINO program. Our consideration, we set the timing like as, each, 3rd day such as Wednesday the above detailed cleaning process is carried out automatically. By, the way Wednesday and Sunday is choose for cleaning

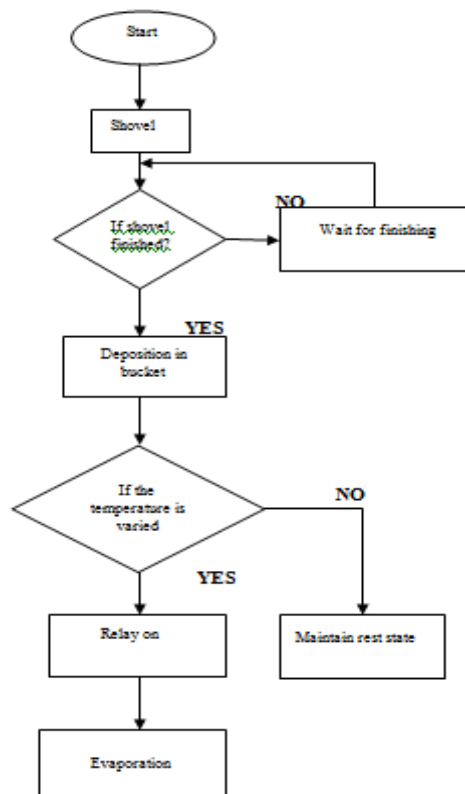


Fig3: Flow chart diagram



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Fig3: shows how the cleaning sequence is carried out.

STEPS	PROCESS
1.Start	The shoveling is initiated.
2.Shovel	Shovel is carried on.
3.conditional diagram	It checks the shovel is finished or not. If the process is over then it goes to next step otherwise it wait for finishing
4.Deposition	Deposition process is carried out
5.conditional diagram	It checks the temperature sensor reading is stable or not. If the reading was varied then it do next step. Otherwise keeps rest state.
6.Relay on	Relay is under goes to on position.
7.Evaporation	After on position of relay which make the evaporation process.

The further security of the cleaning device is accessed by folding. And, the bucket also in a secured box.

a. *Details and Buildup*

In the proposed system (Fig2) the most important elements are,

- ARDUINO board which provide the automation of the whole system.
- LM293 driver which provide the control of two motors &also make interface of Arduino.
- LM35D Temperature sensor which provide the information of waste deposition by the variance of its reading.
- Relay which provides the switching processes according to the reading of LM35.
- Heating coil which provide energy in the form of heat for evaporation.

1. **Salient feature**

Program alternation: In case of abnormal situation, Such as raining season, the cleaning process will be increased by two. Such as four times of per week. And the sewage stocking level also is varied. According to the environment and nature of the sewage size and amount of the stocked sewage the modified smart arm size will be attached.

Heating hours: The heating hours normally depends on the water content of the sewage. For example 1liter water could take 30 minutes for evaporation. Hear the heating hours are set by the temperature reading.

Fault Monitoring: In case of abnormal situation, the fault is determined by glowing of led. Which connect with relay if the heating process is does not carry out then it gives the minimum supply to led to glow. By the way the fault is found out.

Power supply: Supply is feed to the whole system by the solar panel. According the size and stock level the power will be vary.

VII. ADVANTAGES

- ✓ **Used for domestic sewage cleaning**
- ✓ **Reduces the sweepers work and also used to prevent the disease such as razes, malaria and other bacteria**
- ✓ **Avoid the mosquito generation from the waste.**
- ✓ **Simplest one**
- ✓ **Easy to use**



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IMPLEMENTED DIAGRAM



VIII. CONCLUSION

Today the modern era has so many technologies for make our life sophisticated. Like that cleaning process is also play an important role. Such as our Smart Cleaning System do the domestic purpose cleaning perfectly and prevent the mosquito generation from the sewage by the way malaria, flu etc diseases are avoided. In future the automation cleaning system will be lies on each separate house sewage cleaning system.

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