

Scavenger Cleaner

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Abstract: The aim of this project is to create a Semi-Automatic Scavenger Cleaner. This Machine we have a tendency to area unit designed for to create the improvement of biodegradable pollution & underground Gutter terribly simple for person. historically we have a tendency to see that to scrub this biodegradable pollution & underground Gutter employees area unit entered within the hole & the Pipeline throughout this pipeline & underground Gutter there are a unit various cacogenic gases area unit gift, this gases area unit terribly harmful for the person and due to this they die early, some of them got Cancer, some of them lost their sight and some employee got many diseases. Throughout this project we have a tendency to creating a Robotic Machine which will clean the biodegradable pollution & underground Gutter due to this there is no have to be compelled to enter in to the hole for the employee. This machine is totally operated by employee, and instead of employee this machine can go within the Chamber can take away the complete blockage. Because of this employee can get a healthier life and a revered Work. Typically {this can be} often an alternative energized machine it's going to do its all the operation through the Solar power, for automatic work we have aurduino uno and so the opposite components area unit reaching to be motor, mechanism etc.

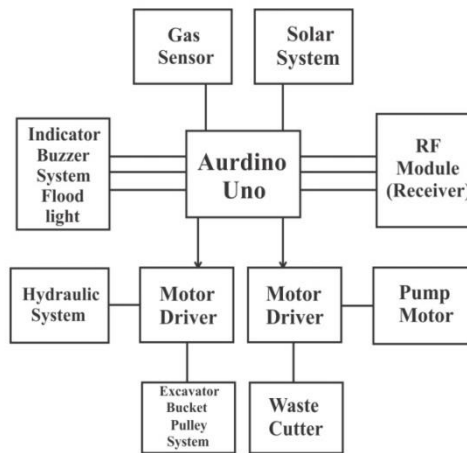
Keywords: star, Aurdino Uno, Motor, mechanism, Robotic Machine, Manhole, Sewage.

HISTORY: MANUAL SCAVENGING

The use of manual scavenging in our country goes back by some of centuries. Among a century, these latrines were equipped with the flush system, however by currently households had dry Latrines that needed manual scavengers. Dalit's, or the bottom among the caste hierarchy were and still be used as scavengers. Manual scavenging was introduced a very long time ago and it's deeply unfortunate that we have a tendency to still got to apply throughout this technology driven era, from its beginning solely from few solid individuals acting this task those thought-about to be the 'untouchables. And still throughout this twenty first Century their families acting this duty, in our Society individuals take into account that Scavenging work solely belongs to few styles of solid individuals. Everybody needs a clean society, clean town however no one wants these varieties of jobs. As a result of individuals feel uncomfortable throughout this, In India for a Scavenging employee there is no safety provided by the govt. contractor brings labor and he place them into the Chambers, underground sewer and much of a lot of places, even contractor is not providing the protection equipment's, because that every year quite 800+ Scavenging employee dying in India, and government did not offer any compensation to their family. For this drawback we have a tendency to accompany a solution which may not solely facilitate them in their work however it conjointly didn't feel guilty for his or her work, and it conjointly brings alternative solid individuals throughout this work, and it will save their precious life too, so as that they will fancy their day with their family and provides them a very happy and healthy life.

METHODOLOGY

To appreciate this we have a tendency to area unit creating a Semi-Automatic Scavenger Cleaner with the help of our engineering data, this machine can do all the work that a conventional Scavenger employee did, it will add in no time manner in an economical means, thanks to this machine there is no have to be compelled to enter an employee into the chamber, this machine area unit reaching to be enter any place and it will take away all the trash, dirt, biodegradable pollution from gutter, chamber, this machine can sense all the harmful gases typically often a robotic machine and it will operated by the Scavenger employee, from this there new job is to figure the machine not the moving into the closed chamber and improvement the dirt with vacant hands.



Block Dia For Manual Scavengers Cleaner

1. Arduino: Arduino is an open source microcontroller which can be simply programmed, erased and Reprogrammed at any instant of some time. Supported straightforward microcontroller boards, it's an open source computing platform that is used for constructing and programming electronic devices. It is also capable of acting as a mini pc a touch like alternative microcontrollers by taking inputs and dominant the outputs for an expansion of natural philosophy devices. It is also capable of receiving and causation data over the online with the help of various Arduino Shields, that mentioned throughout this paper. Arduino uses a hardware named because the Arduino development board and code for developing the Code named because the Arduino IDE (Integrated Development Environment). Designed up with the 8-bit Atmel AVR microcontroller's that area unit factory-made by Atmel or a 32-bit Atmel ARM, these microcontrollers area unit typically programmed simply the C or C++ language among the Arduino IDE.



Fig. Arduino board

2. Solar System: Over the last years, variable renewable energy sources (VRES) became a cost-competitive and environment-friendly different to produce power to isolated and central/national power grids around the globe. Nevertheless, thanks to their intermittent/variable/stochastic/ non-dispatch able characteristic, they cannot offer the grid with numerous extra and necessary services alternative that delivering a specific volume of energy. Thus on explore the thanks to effectively improve VRES integration into the ability systems, a lot of should be familiar regarding the underlying behavior patterns and dynamics of their power generation.



Fig. solar system

3. Excavator bucket: Excavator bucket has been designed and optimized for worst loading condition. At the start static Analysis is completed by applying the worst loading conditions generated due to static and dynamic conditions.

Most principle stresses area unit calculated from the analysis. Fatigue time period of the Excavator bucket is calculable by the Goodman diagram tool by giving the inputs like principle stresses obtained from the static analysis for each static and dynamic load conditions. Throughout this project we'll verify the life, issue of safety and injury of Excavator bucket by Goodman diagram tool. S-N curve for the material is given as input for the material used for Excavator bucket. NX-CAD code is utilized for 3D modeling of the Excavator bucket and ANSYS code is utilized to undertake to the fatigue analysis of the Excavator bucket.



Fig. excavator bucket

4. Hydraulic System: The most common strategy for dominant hydraulic systems remains primary throttle management. The Shaft speed or linear rate of the hydraulic motor/cylinder unit is controlled by the ensue a primary unit of measurement. In addition to the primary controlled systems, constant pressure systems can be applied. This concept can characterize secondary controlled systems, wherever the hydraulic output units (Single motors or transformers combined with cylinders) area unit connected to a seamless pressure rail. Displacement management of the secondary units, support direct management of the output force or force to the load.

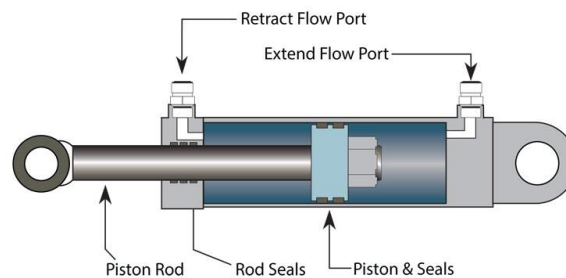


Fig. hydraulic system for primary pump and secondary management

5. Gas Sensor: Gas sensors area unit chemical sensors that area unit of preponderant importance. A chemical device contains of an electrical device and an energetic layer for changing the chemical data into another style of signal like frequency amendment, current amendment or voltage amendment. Basically, ancient detection ways that turn out systems that sounds audio alarm to advise individuals once there is a gas discharge that is harmful or toxic is not reliable as a result of it's needed to induce correct period measurements of the concentration of a target gas. However, for many centuries, totally different gas device technologies area unit used for numerous gases detection together with semiconductor gas sensors, chemical process gas sensors, chemistry gas sensors, optical gas sensors.

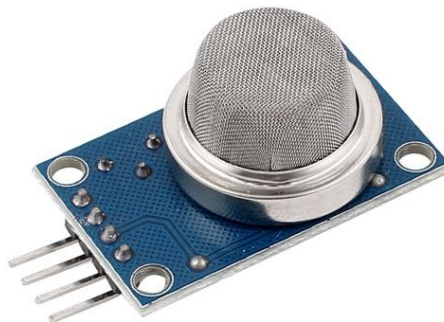


Fig. gas sensor

6. Transformer: Transformer is also a static device that transfers AC from one facet to a special facet by amendment in magnitude while not amendment in frequency. It works solely on AC Voltage. It changes in current or voltage magnitude. Chiefly it consists 2 windings, one is primary and another is secondary. Throughout this project we have a

tendency to use step down electrical device is use. We have a tendency to needed 240v for one operator and 130v for two operators. Electrical device is important part of electrical grid.



Fig. Transformer

7. Elevator: Elevator is also a tool used for lifting or lowering a load by suggests that of a drum or lift-wheel around that rope or chain wraps. It reaching to be operated by hand, electrically or pneumatically driven and will use chain, fiber or wire rope as its lifting medium. The load is connected to the hoist by suggests that of a lifting hook. The vary of lifting machines area unit typically applied across all business sectors; from tending to construction, most industries and enterprise can use some quite lifting instrumentality. In this project we are using the elevator for the excavator bucket to lifting the waste from Manhole.

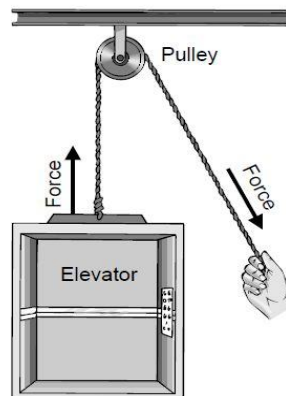


Fig. Elevator

8. Submersible pump: It is also a tool that options a hermetically sealed motor close-coupled to the pump body. The complete assembly is submerged among the fluid to be pumped up. Electrical submersible pumps area unit time period centrifugal pumps operative throughout a vertical position. Liquids, accelerated by the vane, lose their K.E. among the diffuser, wherever a conversion of kinetic to pressure energy takes place. Typically often the foremost operational mechanism of radial and mixed flow pumps. Among the HSP, the motor is also a hydraulic motor rather than electrical motor, and will be closed cycle (keeping the ability fluid become independent from the created fluid) or open cycle (mingling the ability fluid with the created fluid down hole, with surface separation).



Fig. Submersible pump

DESIGN OF SCAVENGER CLEANER

The Scavenger cleaner is style that means, The key options of the machine embrace, complete robotic answer for eliminating manual scavenging and improvement biodegradable pollution throughout a world category manner four

advanced sewer bucket that add day and light-weight. The scavenging cleaner can clean all the dirt of hole by pull it out of the hole with the help of robotic arm and may be used of hydraulic.

In this project we've used the Arduino. Single wave full wave Bridge rectifier is utilized to rectify the supply. The gas device can work as savior for manual scavenger as a result of it discover all venturesome gases that harmful and cause a death to the manual scavenger. Among the opposite this machine uses solar panels that makes it eco-friendly and transportable. By this machine we'll attain the goal of not only cleaning the manholes, emptying however conjointly to provide better life to those that do manual scavenging.

SYSTEM IMPLEMENTATION

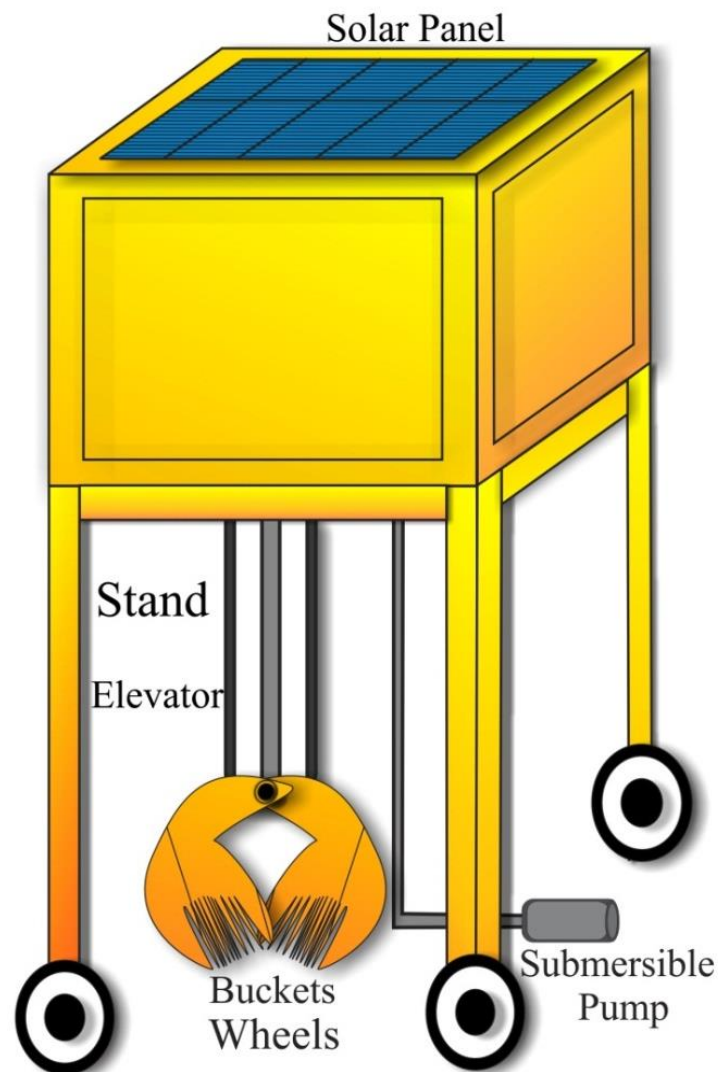


Fig. Semi-Automatic Scavenger Cleaner

CONCLUSION

We can conclude that a major drawback like manual scavenging currently have a full-fledged solution. The projected answer is feasible and should be honest implementation of robotic technology. It area unit typically used for mapping of sewer pipe system; the information non inheritable will then be merely used for improvement in future comes. Harmful and Toxic gases can be detected using numerous device add-ons. Development of the model under progress and once complete can place it on for world testing to analysis performance.

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