

Abstract (Max 500):

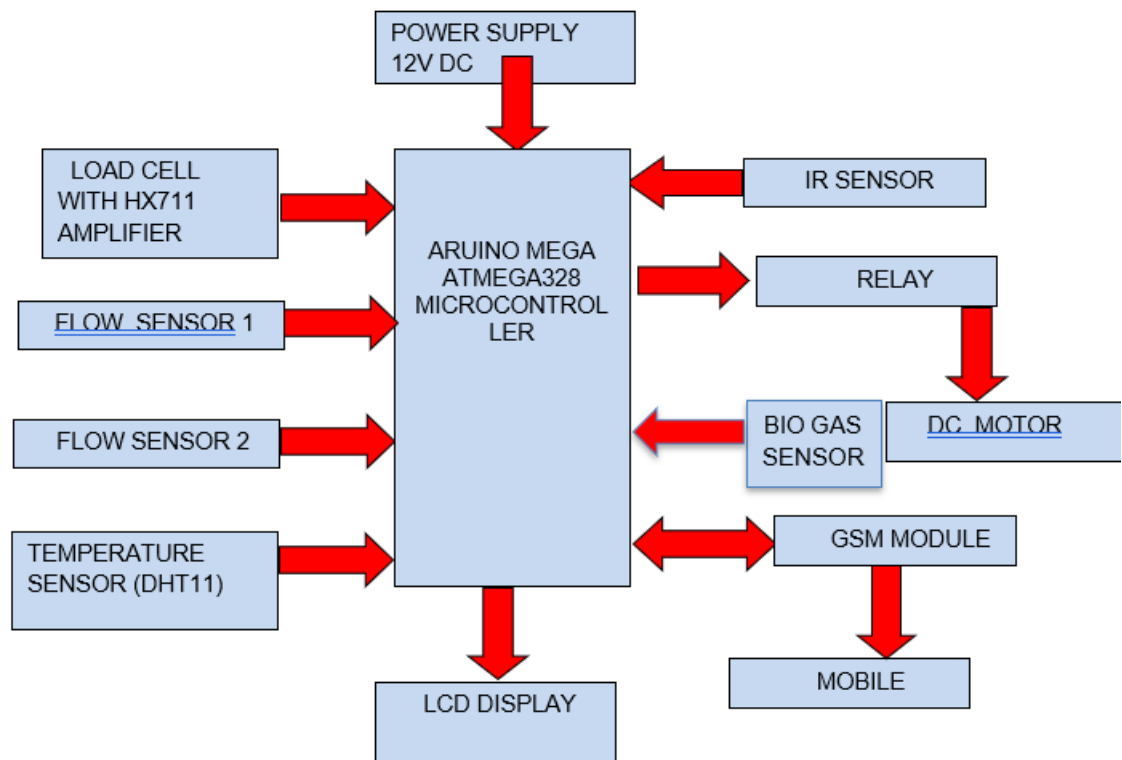
Problem statement:

- Affordable and scalable solution to reduce global warming
- Solution given

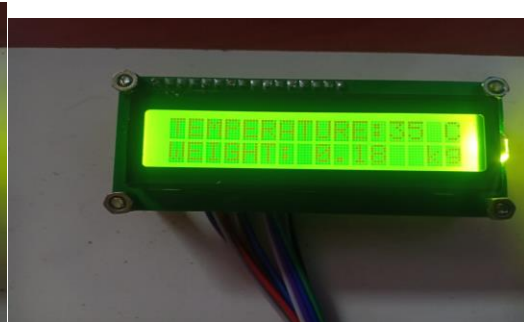
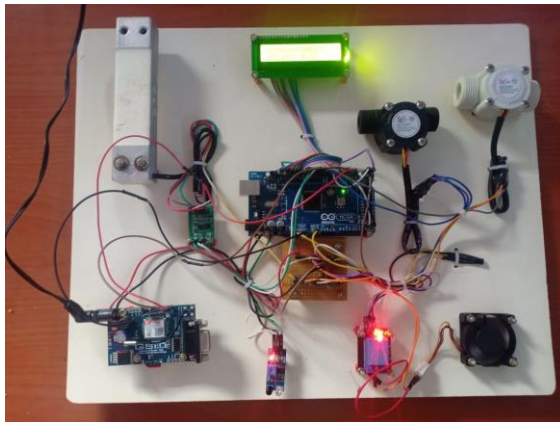
Biogas is a renewable natural fuel that is produced from food scraps, agricultural waste, and other natural waste which will be a great alternative to harmful gases (Greenhouse gases) such as CO₂, CARBON MONOXIDE, METHANE, HYDROFLUOROCARBON, AND NITROUS OXIDE which causes GLOBAL WARMING. It has a wide range of uses such as producing electricity for engines and micro-turbines. It can be upgraded into bio-methane, also called renewable natural gas or RNG. It reduces global warming by acting as a healthy alternative for existing harmful gases and it also prevents environmental pollution by using most of the bio-degradable wastes as its main element for production. So it should be considered a valuable energy form and its production and use should be properly monitored to create a sustainable environment. An IoT-based biogas monitoring system is designed with two flow sensors to measure the production and outlet use of the gas, dht11 to maintain the optimum temperature for anaerobic digestion to attain maximum production, a load sensor to measure the amount of input biowaste, Arduino mega as a microcontroller, photoelectric sensor to calculate the level of the balloon, dc motor to blow the gas when the level of balloon reaches a certain value, a bio-gas sensor to detect and alert if there is a leak, gsm module to notify the user the necessary information such as outlet amount, gas leak, fee, and an LCD to display the necessary data.

The total cost of the is made around 1500 so that is affordable by everyone.

BLOCK DIAGRAM



- We have a working model (prototype) currently



- Comparison of your solution with the market

Biomethanation has five main units. They are mixing unit, digestion unit, recirculation unit, scrubbing unit, finally storage unit. In these five units, different types of process take place. In mixing unit all types of feed like cow dung, food waste, human waste, etc. , which removes impurities. The flow of gas is regulated by hand valve [6]. Fig. 1 illustrates the process flow diagram for existing system. are mixed manually by using water and then mixed feed is sent to digester by using valve. The digester is continuously working reactor in which fermentation feed is mixed finely to create a fully homogeneous medium. The mixing process in digester is achieved by recirculation unit. After that gas is produced in the digester and then it is transferred to gas storage bag via scrubbing unit

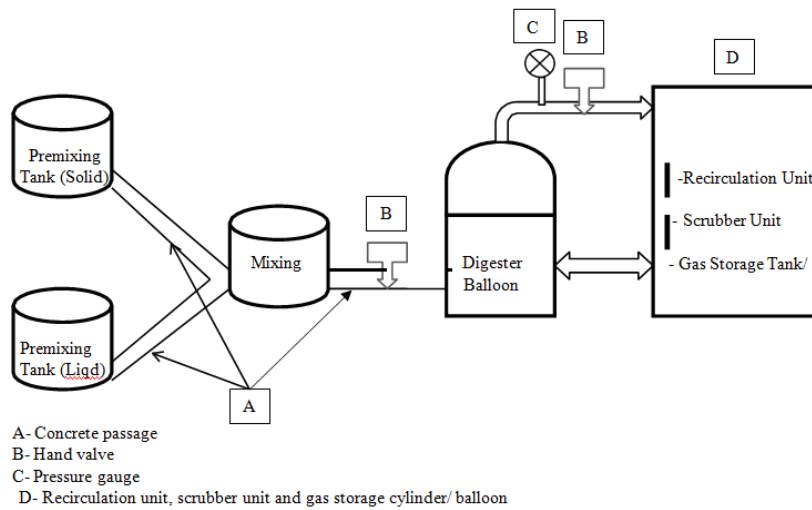


Figure 1: BIO GAS PLANT

The proposed algorithm will not allow gas pressure to exceed the design pressure of digester; hence will provide a safe and automated system. To avoid the digester failure, an automated system consisting of gauge, pressure switch, sensor, servo motor and actuator was proposed.

The new detection and billing feature added to our system will ensure safety and ease the work of monitoring and supervising the sale