Licensing and Technology Transfer Opportunity: Manipal University

Title of Technology Available:

APPARATUS FOR GENERATION OF BIOGAS

Brief Description of Invention:

We propose a new design of biogas plant/ anaerobic digester which consumes very above-ground space and is mostly underground. It consists of an underground floating dome design; which is easy to repair. The biodigesters and the gas holder are separated. Also, there is provision for inspecting both. The manhole is sealed using plaster of Paris (POP) or MSeal and can be removed for inspection. Our model has 3 tanks in one tank system, which is also a novelty. Due to the new design, our biogas plant is easily repairable. It is insulated, hence the biogas production is more stable and biogas volume is more. Also, it consumes no or very little land.

Brief Background of Invention:

Biogas plants that are conventionally using either Deebandhu model or KVIC model or a slightly modified form of these. KVIC model (recommended by IIT, Delhi) is more preferred as it is possible to inspect and repair it, unlike the Deebandhu model which is difficult to repair. But the KVIC model requires more land area as it is above ground. But due to increasing land costs now installation of KVIC model is becoming difficult.

Describe the final product:

A schematic diagram of the proposed biogas plant is shown above. It is fully underground, hence the space requirement is low. Nowadays small farmers are having small plots of land. Also, some people are rearing cows in their backyard in cities. The cost of land is about 3 lakhs per cents in a small metropolitan city. In this design, the land used is nearly zero. This is also a cleaner model since no slurry is exposed outside. Hence there is less scope for insects and smell.

The biodigesters is insulated for better thermal stability and to retain the heat. The main biogas reactor has a manhole for inspection in case of any malfunctions. The manhole can also be used to empty the biodigesters using a pump. The biogas holder of (floating dome) type is also underground. A provision is given for heating using an existing solar water heater by extending a plastic pipe into the biodigesters through the outlet channel. Solar heating can be carried out at night if the temperature is low. The optimum temperature is 37^0C to 40^0C.

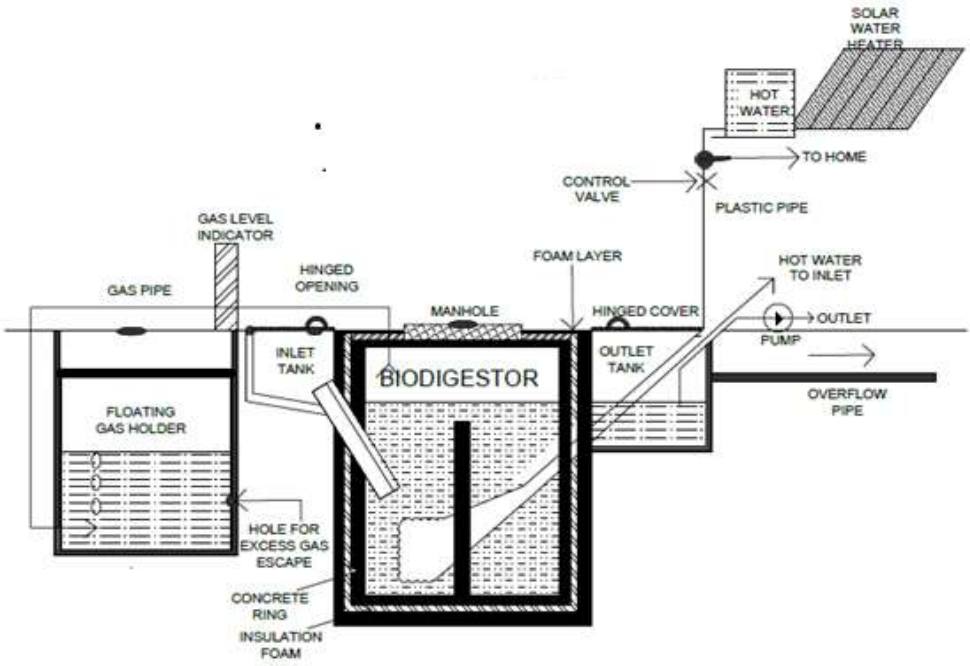

Figure 1. Improved floating dome biogas digester (named as Udupi Krishna-Manipal or UKM model)

Technological Domain (Keywords):
Anaerobic digestion, biogas, sustainable energy,

Proof of Concept:
A proof of concept digestors was designed and operated.

Stage of Development:
Prototype

What are the unique advantages your innovation has compared to the competition:?
Low space requirement, High biogas yield (20-30%), Easy to repair.

Intellectual Property Status: Indian Patent application with number filed in

Year: 2020
Application number: **202041044368**