

Deploying sewage for multiple use

Innovator: Master Moxad Thakkar

1. The context of use

Urban and rural areas produce large quantities of sewage water

The innovator felt that this sewage water could be effectively harnessed for many applications ranging from generating power to producing bio-gas and bio-fertilizer to being processed and used for drip irrigation.

2. Working principle

The principal used is that sewage water that comes in is filtered and used partly to run a turbine coupled with a generator to generate electrical energy and the water flowing out issued for drip irrigation and recharging tube wells.

At the sewage cache inlet point, a part from the sewage stream is diverted for solid waste to be channelized into a biogas plant and on to bio-gas distribution.

Valves and sensors are located at each junction node for control and calibration

3. Innovation highlights

The innovation lies in using the sewage water for many critical needs ranging from power generation to charging of tube wells and creating bio-fertilizer –all this in a integrated multi stage flow.

The innovator suggests that solar-based water purifying system may even generate potable drinking water as the final input alongside irrigation utilities.

4. Compare innovation to competing products by efficiency, cost and utility

Conventionally, sewage waste is used for direct charging the biogas plants, here due to filtration of the sewage, total solids concentration will be increased, which may increase the gas production as well as methane content.

The filtered water of the waste is being used for energy production and irrigation purposes, which otherwise is not generally done in the conventional systems.

Thus, total utility is higher than in conventional system

5. List the current and proposed applications of innovation

The system can be used for optimal utilization of sewage and industrial wastes

6 Brief description of construction mentioning major parts

The system in the mini scale working model consists of filtering system and screen at sewage flow inlet, arrangement for tipping off the screen frequently, valves controlled by sensors to monitor fluid flow and composition, turbine with dynamo, biogas plant and distribution line (pipes) to take water to fields and for tube wells.

7. Current design shortcomings and further work planned

Conceptual mini model has been developed which is working with tap water but detailed calculations for power calculations and a working real life model has to be done, built and tested.

8. List of accessories if any and their functions

9. What is the need/benefit of this product for local community?

If developed successfully, whole society may get advantage of getting electricity, biogas as well as natural fertilizer apart from irrigation and ground water discharge.

10. Any special highlights of the innovation or additional information