



Industrial Consultancy & Sponsored Research (IC&SR)

A METHOD AND SYSTEM FOR TREATMENT OF WASTEWATER POWERED BY SOLAR ENERGY

IITM Technology Available for Licensing

PROBLEM STATEMENT

- In the present era, effective treatment of wastewater and reuse is important in tackling the problems of water scarcity.
- Decentralized **wastewater treatment system** is **one of the methods** to treat the wastewater at the point of origin itself, and implementation of the system need special monitoring and standardization for effective use of the system implemented in small institutions. The conventional system is often contains **low** Chemical oxygen demand (**COD**) & **very high ammonia & etc.** which leads to costlier, inefficient system. Hence, there is a need to address said issues.

INTELLECTUAL PROPERTY

IITM IDF Ref. 1784; IN Patent No: 394888

TECHNOLOGY CATEGORY/ MARKET

Technology: Method and system for treatment of wastewater powered by solar energy;

Industry & Application: Environmental Engg., Waste-water treatment;

Market: The global wastewater treatment technologies market is projected to grow at a **CAGR of 10.78%** during **2024-2028**.

TRL (TECHNOLOGY READINESS LEVEL)

TRL-4, Proof of Concept ready, tested in lab and two pilot scale plants installed in the field.

TECHNOLOGY

- The present invention describes a **method and system for treatment of wastewater powered by Solar Energy**.
- Further said **solar powered system** provides opportunity to operate **decentralized wastewater treatment system** in a **sustainable manner**.

- The system comprises **mechanical filtration** in **screen chamber**, **solid-liquid separation** in a **modified septic tank (MST)** with **inclined plates** at the inlet, **removal of organic matter** in an aerobic attached growth system to obtain **biologically filtered clarified water filtration** by a rapid sand filter for **non-organic contaminant removal** and finally **ensuring of the quality of the treated water** by **monitoring system** before storing it for **non-potable use**.(Refer Fig. 1)

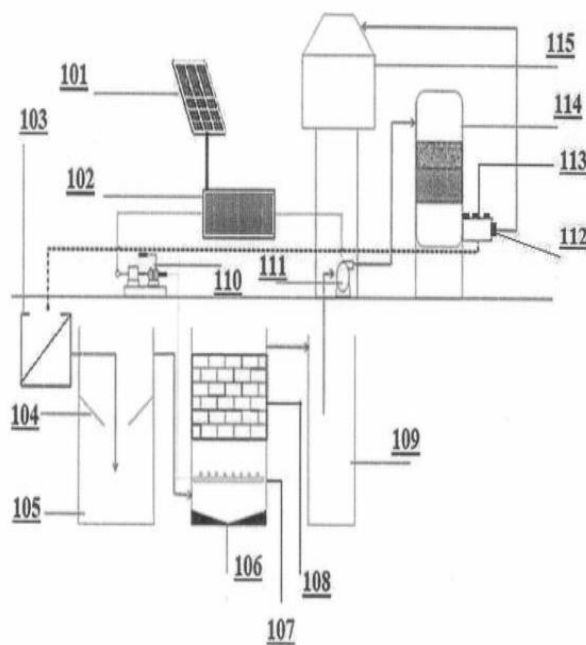


Fig.1: Illustrates the claimed system for treatment of wastewater;

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KEY FEATURES / VALUE PROPOSITION

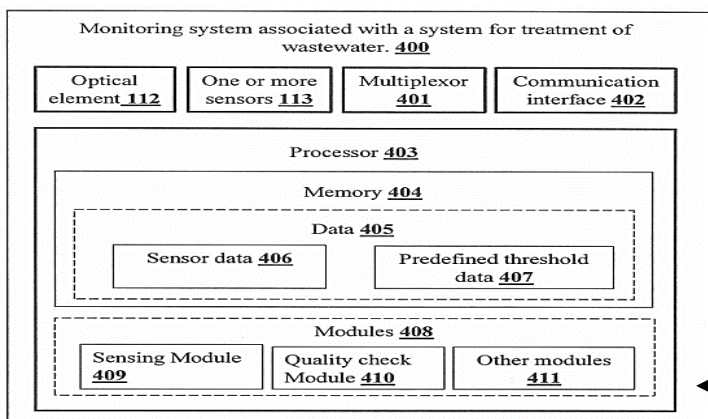
❖ *Technical Perspective:*

- Said System can be **standalone unit** or **add-on** unit that is integrated into an existing toilet system.
- The system yields **good quality** treated water with **80% of chemical oxygen demand (COD) removal** and **95% of TSS removal**.
- A system for the treatment of wastewater comprising the **modified septic tank** for **solid-liquid separation in efficient manner**.
- The **solar powered** air blower & air diffuser enables **nitrification** of the wastewater during **day time** and **denitrification** during **night**, ensuring **the efficient removal** of ammonia and nitrates from the wastewater **without use** of any **chemicals** in the system,
- It saves **freshwater consumption**, leads to **zero waste** to the **environment** and **improves** small institution like schools' hygiene and sanitation.

❖ *Industrial Perspective:*

- Facilitates **sustainable** standalone unit.
- Useful for **saving fresh water** and for **saving the energy** required to **transport the wastewater** and its treatment **cost reduced**.
- The **standalone unit** provides with an **online monitoring system** and **requires less land space**.

IMAGE



IMAGE

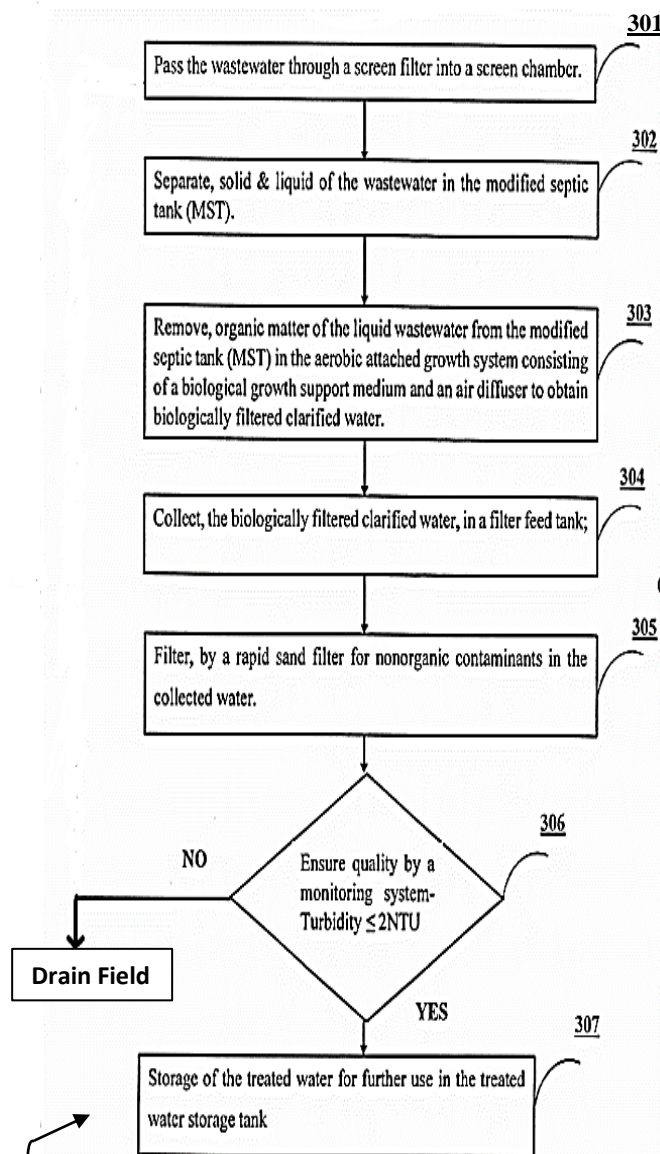


FIG.2(above) : Illustrating a flow chart of method for treatment of wastewater;

FIG.1 (Left) : Illustrating architecture of a monitoring system comprised in a system for treatment of wastewater;

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