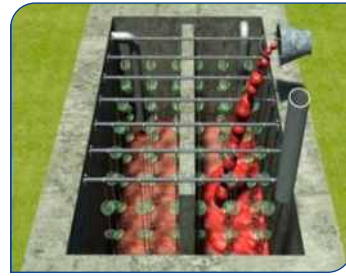


BIOTANK MODEL

- Low cost, simple design for onsite construction
- Material: Brick / RCC structure/ FRP
- REED BED SYSTEM (optional) improves effluent quality & can also be used to treat kitchen and bathroom wastewater
- Final effluent safe and can be used for recycling or irrigation
- Can be installed for single house/ apartment/society /community



Biotank Model



Biotank cum Reed Bed

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DRDO-FICCI Accelerated Technology Assessment and Commercialization (ATAC) Programme

Bio-Digester based Eco-friendly Sanitation Technology



Special Features

- Anaerobic microbial inoculum
- Cold tolerant microbial consortium
- Required one time inoculum charging
- Immobilization matrix for retaining higher microbial mass for survival in adverse conditions
- Specially designed tank for efficient biodegradation
- Suitable for mobile and stationary platforms
- Permits use of toilet cleansing agents
- Tailor made in respect to number of users, materials, situation and condition

Advantages

Wide applicability

Maintenance free

Effluent water recyclable

Pathogen reduction: > 99%

Minimizes water consumption

Customized & easily adoptable

Organic waste Reduction: > 99%

Environment-friendly & cost-effective

Suitable for any geo-climatic condition

Human waste disposal in innocuous form is an ever growing problem leading to aesthetic nuisance, threat of organic pollution & several infectious diseases in epidemic proportions due to contamination of ground water and drinking water resources in highly populated and developing countries, like India. Less than 30% of Indians have access to the toilets. In rural areas about 10% of houses have toilets and rest of the people go to open defecation. Population in the cities although have better access to the toilets but only to the tune of ~70%. Untreated waste is responsible for several diseases like, dysentery, diarrhoea, amoebiasis, viral hepatitis, cholera, typhoid etc. taking the life of lakhs of children annually.

DRDO has perfected an eco-friendly biodegradation technology for human waste disposal for armed forces deployed at high altitude locations and glaciers, where ambient temperature is as low as -50°C. The sub-zero temperature does not allow the natural biodegradation of organic matter leading to accumulation of the human waste over the years, contaminating the ice which is the only source of drinking water and poses a great health risk. Further, melted ice contaminates the rivers and other water sources and ultimately spreading the contamination downstream. DRDO developed Biodigester technology is environmental friendly, maintenance free and efficient without depending on conventional energy sources. The effluent is odorless and gets rid-off most of the pathogens. Hundreds of such biodigesters have been installed at various locations in J&K, Sikkim and Arunachal Pradesh. The biodigester technology has two components: anaerobic microbial consortium and specially designed fermentation tank. The microbial consortium has been made by acclimatization, enrichment and bioaugmentation with the cold-active bacteria collected from Antarctica and low temperature areas. It is composed of four clusters of bacteria belonging to hydrolytic, acidogenic, acetogenic and methanogenic groups with high efficiency of biodegradation. Fermentation tank is made of metal/ FRP and has the provision of immobilizing the bacteria in large numbers.

Subsequently, the technology has been extended to Indian Railways for on-board treatment of human waste. Hundreds of stainless steel made biodigesters are in operation in different trains of IR. Under a Memorandum of Understanding (MoU) with Railways, it is planned to install these biodigesters in all trains in the years to come. Lakshadweep administration has ordered 12000 biodigesters for all houses of its ten islands. Low cost single house biodigesters have been designed for rural sector of the country which is long-lasting, require little space, generate environment-friendly safe effluent and does not require any maintenance. Recently developed version of this technology has been named as 'BioTank' that is the excellent low cost alternative of the conventional septic tanks being currently used by individual houses and communities.

MICROBIAL INOCULUM

(Cold-active)

- Isolated, screened, selected & enriched through acclimatization and bio-augmentation
- Can withstand freezing and thawing
- Ability to inactivate the intestinal pathogens



HIGH ALTITUDE MODEL

- Material: Metal/FRP of cylindrical shape
- Works at low temperature upto -50°C



GLACIER MODEL

- Material: Metal/FRP of cylindrical shape
- Provided with insulation and heating arrangement with solar system



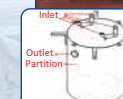
RAILWAY MODEL

- Material: Stainless Steel
- Sludge settling device and chlorination
- Work during long journeys in different temperature



PLAIN AREA MODEL

- Material: FRP/MS
- Suitable for existing/independent toilet
- Also available with top mounted toilets
- Can be installed for single house/ apartment/society/ community



ISLAND MODEL

- Material: FRP
- Design involves longer path for treatment
- Suitable for high water usages and areas with high water table

