

# Advanced Biodigester Mk-II Technology

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In news

DRDO signs MoU with MAHA-METRO for implementation of Advanced Biodigester Mk-II Technology in Metro Rail Network

What is a biodigester?

- A biodigester degrades and converts human waste into usable water and gases
- The generated gas can be utilized for energy/ cooking and water for irrigation purposes.
- The process involves the bacteria which feed upon the faecal matter inside the tank, through anaerobic process which finally degrades the matter and releases methane gas that can be used for cooking, along with the treated water.
- 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 coldactive bacteria collected from Antarctica and low temperature areas.
  - It is composed of four clusters of bacteria belonging to hydrolytic, acidogenic, acetogenic and methenogenic groups with high efficiency of biodegradation.
  - Fermentation tank is made of metal/ FRP and has the provision of immobilizing the bacteria in large numbers.
- In addition to human excreta, it can also be used for kitchen and animal waste disposal. The technology has no

dependence on the limited and costly conventional energy sources.

- Biodigesters are suitable for ambient as well as sub zero temperature of Himalayan region, glaciers, plains of north India and coastal regions of south India.

### About Advanced Biodigester Mk-II Technology

- Disposal of human waste at extremely cold terrains, railways and even in rural areas is a major concern.
- DRDO has developed different versions of bio-digester to take care of disposal of human waste.
- The bio-digesters have been extensively fitted indifferent types of rail coaches by Indian Railways with collaboration of DRDO.
- Indian Railways has already installed about 2.40 lakh biodigesters in its fleet of passenger coaches.
- A customized version of this MK-II Biodigester, suitable for treating human waste generated from houseboats in Dal Lake was successfully demonstrated by the DRDO to Jammu and Kashmir Administration.
- Lakes and Waterways Development Authority (LWDA) of the J-K Administration has initiated the process to procure 100 units of MK-II Biodigesters for civil habitats around the Dal Lake so as to minimize water pollution.
- The bio-digester tanks are maintenance-free for the lifetime, as the anaerobic microbial inoculum is fed only once. It feeds on the faecal matter and multiplies by itself