India Limited

Municipal Liquid-waste Management System (MLMS)

MLMS
(A Scientific Way to Handle Sewage Waste)

Attention: Municipal / Corporations Authorities
Save crores of Rupees every year in STP maintenance & sludge disposal and be 100% CPCB Compliance for sure.

Presented By
Mak India Limited

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India Limited

Municipal Liquid-waste Management System (MLMS)

MLMS

(A Scientific Way to Handle Sewage Waste)

Our Technology is tested, patented, matured, field tested which is Recognized and Approved by

- ✓ ***Defence Research and Development Organisation (DRDO)***
- ✓ ***Council of Scientific and Industrial Research (CSIR)***
- ✓ ***Centre for Indigenisation and Self Reliance (CISR)***
- ✓ ***Tamil Nadu Institute of Urban Studies (TNIUS)***
- ✓ ***CRPF, Colleges, Schools Etc.***

Attention: Municipal / Corporations Authorities

If this is exciting to you, proceed to the next page

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India Limited

Municipal Liquid-waste Management System (MLMS)

MLMS

(A Scientific Way to Handle Sewage Waste)

1. *Eliminate Sewage at its Source-Nip at the Bud Concept*
2. *Achieve drinking water from all water resource. (Ground, Lake and River water for drinking use).*
3. *Increase Ground water level.*
4. *Never allow sewage water to spoil environment to create major health issues.*
4. *Eradicate Global warming.*
5. *Good ambience and so Healthy living. Health care expenses cut to Zero due to Virus attack.*

50+

YEARS OF SUCCESS

Since 1973

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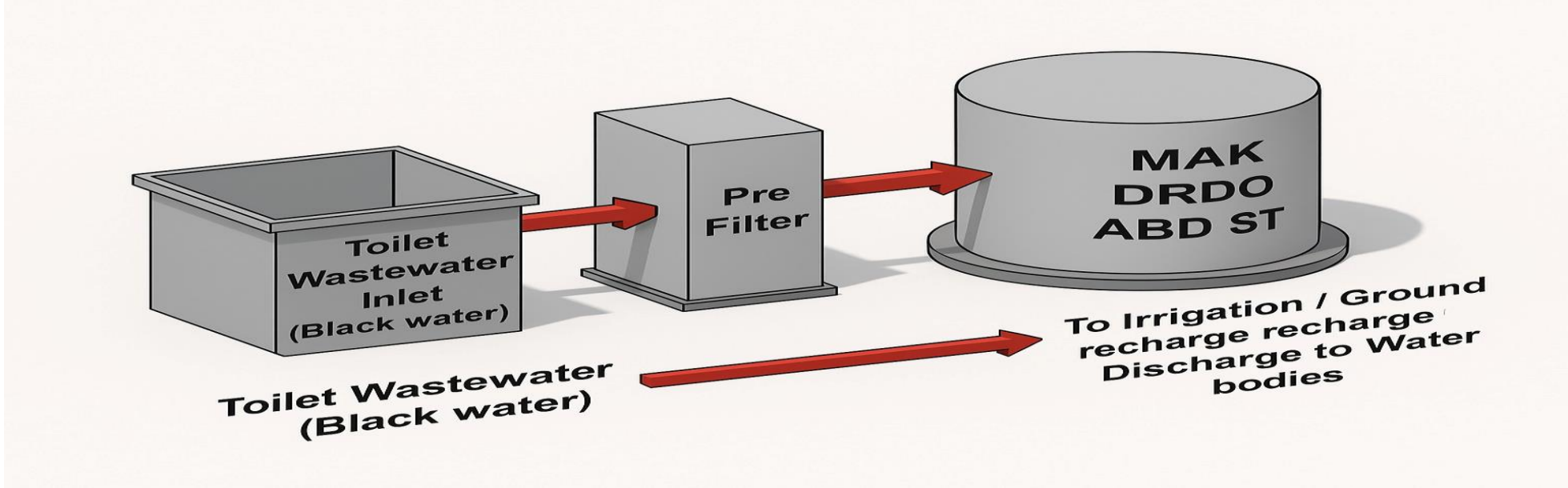
MAK DRDO ABD Septic Tanks
for homes and small establishment using our Standard Concrete Anaerobic Tanks (Patented system)

1. No maintenance required
2. No Sludge Produced
3. No Power Required for disintegration
4. Incorporates a Consortium of bacteria's developed by DRDO and one time filling of Inoculum for lifetime.
5. Sturdy RCC tank for lifetime
6. No evacuation required for lifetime
7. Requires Less Space
8. Treated water can be used for irrigation or for groundwater discharge
9. Fit and forget type
10. Plug and Play Systems – Quick to install and ready to use
11. Almost same or less CAPEX compared to conventional polluting type Septic Tanks now in use.

MAK
DRDO
ABD
Septic
Tanks

More than 10,000 + Units Installed all over India



INDIA NON JUDICIAL

Government of National Capital Territory of Delhi

e-Stamp

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Certificate No.	:	**IN-DL00518081838229L**
Certificate Issued Date	:	08-Apr-2013 05:42 PM
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Unique Doc. Reference	:	SUBIN-DLDL71680300534900091968L
Purchased by	:	FICCI
Description of Document	:	Article 5 General Agreement
Property Description	:	NA
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Licensing Agreement for Transfer of Technology (LAToT)
Between
Defence Research Laboratory (DRL), Tezpur
Defence Research & Development Organisation (DRDO)
Ministry of Defence, Government of India
&
MAK India Ltd., Coimbatore, India
For
Transfer of Technology (TOT) of "Bio-Digester"

S. [illegible]
Director ITM
DRDO HQrs.
New Delhi-110011

Statuatory Alert:
1. The authenticity of the Stamp Certificate can be verified at Authorised Collection Centers (ACCs), SHCIL Offices and Sub-registrar Offices (SROs).
2. The Contact Details of ACCs, SHCIL Offices and SROs are available on the Web site "www.shcilestamp.com"

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cftri
Giving Food a Future

CSIR - Central Food Technological Research Institute, Mysuru – 570 020, India

An ISO – 9001:2015, ISO-14001:2015 & ISO 17025-2017 (NABL) Organization

Telephone: 0821-2514534 **E-Mail:** ttbd@cftri.res.in

CERTIFICATE

This is to certify that the CSIR - Central Food Technological Research Institute, Mysuru, has licensed this Institute's Process Know-how on **"High Performance Advanced Oxidation process for STP's Grey water and industrial waste water (Food and Non Food)"** (Process Code: CMF 2710) to **M/s MAK India Limited**, 7/41B, Avinashi Road, Civil Aerodrome Post, Coimbatore - 641014 as per an agreement entered into between the parties, on 05th January, 2024.

The above process know-how has been demonstrated at CFTRI to **Mr. Manickam Athappa Gounder** and **Mr. Ramesh R** of **M/s MAK India Limited**, on 19th January 2024. They had also been provided adequate training in the unit-operations of the process for **"High Performance Advanced Oxidation process for STP's Grey water and industrial waste water (Food and Non Food)"** using the process know-how, enabling the licensee to undertake commercial production of the product.

CFTRI, MYSORE T.T.B.D. DEPT.

Head
Technology Transfer & Business Development

Jal Shakti Ministry after lot of studies, specified use of DRDO ABD ST wide their notification No.W.11044/1/2012-CRSP (Vol. II) dated 12-08- 2014

No W.11044/1/2012-CRSP (Vol. II)
Government of India
Ministry of Drinking Water and Sanitation
NBA Division

12th Floor, Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi – 110003
Date: 12.8.2014

To,
The Principal Secretary / Secretary,
In charge Rural Sanitation, All States/UTs
Subject: Regarding implementation of DRDO Bio-digester toilets

Sir/Madam,

I am directed to intimate that an MOU (Memorandum of Understanding) between Ministry of Drinking Water and Sanitation (MODW&S) and Defence Research & Development Organization (DRDO) for "Implementation of Bio-digesters/Bio-tank Toilets" was signed on 26.7.2012, for promoting the use of this technology in providing sanitation services in rural areas. Following decisions taken in this regarded are brought to the notice of all States/UTs:

i. States may be given the option for adopting the DRDO model of a complete toilet unit including the bio-digester tank and the super-structure, or only the bio-digester tank with a brick-mortar super-structure.

ii. Nirmal Bharat Abhiyan (NBA) guidelines shall form the basis for the projects including the financial incentive that would be the same for the bio-digester toilets as provided for in the NBA guidelines. Additional cost over and above that fixed under NBA guidelines plus that allowed under MNREGS would be met by the State Governments.

The following are enclosed:
(a) Note on Bio-digester Technology
(b) Note on comparison between Bio-digester and conventional septic tank
(c) List of TOT holders

Yours faithfully,

Encl; As above

(Christina Kujur)
Under Secretary (NBA)

Copy to :
i. State Coordinator, NBA, All States/UTs
ii. Shri Lokendra Singh, Director (Technical) DRDO, DRDO Bhavan, New Delhi Phone; 011-23017752
iii. Technical Director, NIC, MODW&S for placing in Ministry's web-site

Tamil Nadu G.O.(D)No 106 Stating the use of DRDO Bio Digestor

ABSTRACT

Septage Management – Provisions regarding removal of septage from unsewered areas, prevent illegal discharge of sewage, protection of water bodies in Local Bodies- Septage Management Regulation and Operative Guidelines – Approved – Orders issued.

MUNICIPAL ADMINISTRATION AND WATER SUPPLY (MW) DEPARTMENT

G.O.(Ms)No.1 **Dated: 02.01.2023**

சுபகிருது – மார்கழி – 18

திருவள்ளுவர் ஆண்டு, 2053

Read :

1 G.O.(D)No.106, Municipal Administration and Water Supply (MA-3) Department, dated: 01.09.2014.
2 Orders of NGT (SZ) in O.A.No.48/2020 (SZ) dated 18.02.2021.
3 Orders of the NGT (SZ) in O.A.No.168/2020 (SZ) with O.A.No.25/2021(SZ) with O.A.No.140/2021 (SZ), dated 23.11.2021 and 17.12.2021.
4 From the Managing Director, Chennai Metropolitan Water Supply and Sewerage Board Lr.No.CMWSSB/CE(O&M)-II/STP(S)/Decanting/2020-2021, dated 12.06.2021.
5 From the Managing Director, Chennai Metropolitan Water Supply and Sewerage Board Letter No.CMWSSB/CE(O&M)-II/STP(S)/Decanting/ 2021-2022, dated 12.01.2022.
6 The Tamil Nadu Municipal Laws and the Chennai Metropolitan Water Supply and Sewerage (Amendment) Act, 2022 (Tamil Nadu Act 34 of 2022)
7 G.O.(Ms).No.182, Municipal Administration and Water Supply (MA-3) Department, dated: 31.12.2022.
8 G.O.(Ms).No.183, Municipal Administration and Water Supply (MA-3) Department, dated: 31.12.2022.
9 Tamil Nadu Government Gazette Extraordinary, No.578 dated 31.12.2022.
10 Tamil Nadu Government Gazette Extraordinary, No.579 dated 31.12.2022.

.....

ORDER:

In the Government Order first read above, Operative Guidelines for Septage Management in Urban and Rural Local Bodies in Tamil Nadu have been issued.

2. In the letter fourth read above, the Managing Director, Chennai Metropolitan Water Supply and Sewerage Board has stated that frequent complaints regarding illegal discharge of sewerage in public places, which extend to areas beyond the limits of Greater Chennai Corporation are being received.

3. The National Green Tribunal (Southern Zone) had taken up a suomoto case [NGT (SZ) OA No.48/2020] based on newspaper report regarding illegal


Rules To Be Implemented
All over the World
To Stop Further Pollution
To Our Mother Earth
And Restore
To Her Original State

Rule Concept

1. **Your Waste, Your Responsibility**

2. **Polluter Pays**

(This will ensure that all entities—residential, commercial, or industrial—treat their sewage to regulatory standards using approved technologies, before discharge into public drains, water bodies, or municipal systems)

Classification of Liquid Waste

1. Domestic Sewage
   - Generated by Homes, Institutions, offices, apartments etc
2. Industrial Sewage
   - Generated by factories, processing plants, textile mills ,chemical industries etc
3. Commercial Sewage
   - Generated by restaurants, hotels ,shopping malls etc
4. Municipal Sewage
   - Combination of Domestic, industrial and commercial sewage collected by city sewage system

Sewage Management Rule

(To be issued by Govt to make its States free from sewage problems)

1. Applicability

These rules apply to:

- **All new constructions** (residential, commercial, institutional) with toilet facilities.
- **All existing establishments** with **100 or more users per day**, including day-only and day-night users.
- **All establishments connected to Underground Drainage (UGD) systems.**

2. **Installation of ABD ST/Hybrid ABD STP Systems**

- All new buildings must install either an Anaerobic Bio-Digester Septic Tank (ABD ST) or a Hybrid ABD STP as part of the building plan submission.
- Building Plan Approval shall be granted only upon certification that the sewage treatment system is installed and complies with CPCB (Central Pollution Control Board) norms.

3. **Retrofitting Requirement for Existing Establishments**

- All existing buildings with more than 100 daily users must retrofit their current sewage system to an ABD ST or Hybrid ABD STP within 5 years.
- Non-compliance after 5 years will attract a fine of ₹1,000 per user per month until compliance is achieved.

4. **System Design Standards**

- The sewage treatment system must not use electrical power for contaminants disintegration.
- The system must be completely sludge-free, with no sludge generation at any stage.
- Systems must be designed and backed up by Government Research institutes as Technology partners.

5. **Restrictions on Treated Sewage Water Disposal**

- Treated water shall not be discharged into any river, stream, or natural flowing water body.
- Treated water shall be:
  - ✓Piped and stored in a designated artificial lake or containment zone, and
  - ✓Reused for all purposes (except potable use) by drawing groundwater from a borewell located at least 500 meters away from the treated water storage site.
- This double-barrier safety ensures military-grade protection against any risk of river contamination.

6. **Compliance and Enforcement**

- Annual audits shall be conducted by local civic/environmental bodies to ensure compliance. Retired military personal to be given this task to ensure compliance.
- Non-compliant establishments will be listed publicly, and heavy penalties will be levied @ of Rs 1000/- per user / month.
- If complied mush before the deadline of 5 Years Incentives such as tax rebates or fast-track approvals may be provided to early adopters.

For Info: MAK DRDO ABD ST
DRDA PERAMBALUR PROJECT

Project Name: DRDA Srilankan Refugee Camp
Number of Tanks:36 Nos for 72 Houses
Number of Users: 10 Users Each Tank

Project Location: Perambalur
Project Completion: 2024

For Info: MAK DRDO ABD ST
Ulundurpet Tollgate, NHAI

Project Name: Tollgate Project
Number of Tanks: One 100 User Tank
Number of Users: 100 Users Each

Project Location: Ulundurpet
Project Completion: 2022

MAK HYBRID STP
FEATURES

- No External Power Required: The ABD process is entirely biological and does not need electricity for digestion. Even during power outages, up to 85% digestion is ensured without any power.
- Odor-Free Operation
- Chemical-Free Process
- Low Operating & Maintenance Costs
- One-Time Inoculation: DRDO's Anaerobic Microbial Inoculum (AMI)
- Zero Sludge Generation:
- Simple Operation requiring only semiskilled persons
- High-Quality Treated Water which meets CPCB/SPCB standards, suitable for reuse applications

MAK HYBRID STP Process

1.Collection & Pre-Screening:

- Raw sewage is collected via pipelines into a receiving tank.
- Pumped into a filtration tank with Up Flow Fine (UFF) filter to remove large debris & suspended solids.

2.Equalization & Buffering:

- Flows into Collection Tank 1 for flow equalization & buffering.

3.Hydrodynamic Cavitation (HC) Pre-Treatment:

- Sewage pumped through HC device for particle breakdown & enhanced biodegradability.
- Pre-treated sewage flows into ABD tank by gravity through Collection Tank 2.

MAK HYBRID STP Process

4.Anaerobic Bacteria Digestion (ABD Process):

- Sewage flows into a 3-chamber ABD tank with partition walls.
- ABD Tank is charged with Anaerobic Microbial Inoculum (AMI)
- Immobilization Matrix system supports bacterial sustenance and growth.
- Stepwise digestion reduces pollutant loads, producing clear, odourless water.
- Each chamber has sealed manholes for inspection & air vents for methane release.

5.Tertiary Treatment & Disinfection:

- After ABD Process, the treated sewage passes through MAK Fine Filter (MFF) for reduction of suspended solids with self cleaning and subsequently it flows into Advanced Oxidation Process (AOP) Tank for final oxidation and disinfection.

For Info: MAK HYBRID STP Project – 400 KLD at CRPF

Project Name: CTC-CRPF Training College
Plant Capacity:400 KLD
Number of Users:2500 Inmates

Project Location: Coimbatore, Tamil Nadu
Project Completion: 2023

For Info: MAK HYBRID STP Project – 220 KLD at Dr GRD College, Coimbatore

Project Name: Dr. GRD College of Arts and Science
Plant Capacity:220 KLD
Number of Users: 2000 Day users + 1000 Hostelites
Project Location: Coimbatore, Tamil Nadu
Project Completion: 2022

MAK HYBRID STP Project – 400 KLD Online Continuous Effluent Monitoring System (OCEMS)

MAK DRDO ABD STP – Performance Certificate

CERTIFICATE OF APPRECIATION

PERFORMANCE OF MAK DRDO ABD STP-400 KLD

(Rejuvenating old non performing STP using MAK DRDO Anaerobic / Bacteria Digestion (ABD) Tank which needs no aeration to disintegrate fecal matter saving huge electricity cost)

We would like to state that the ABD STP alongwith DRDO Inoculum supplied and installed by Mak India Limited is performing as per DRDO norms and outlet water is odourless. The treated water quality is as per CPCB norms. The system is very effective and eco-friendly. The outlet water is used for irrigation purpose. The online monitoring system is installed in this project and it is continuously exhibiting the results which meets all parameters like COD, BOD, TSS and PH specified by CPCB.

We strongly recommend that other Institutions may also use MAK DRDO ABD Tank and reap the benefits. Their product performance certainly exceeded our expectations and we thank **M/S Mak India Limited** and DRDO for their services and providing us with the exact solution we had looked for as well as the product we had ordered for.

Their after sales support is excellent. Apart from Mak India Limited support, DRDO's backup for the performance is the essential part of the system.

	Details	Old System	MAK DRDO ABD STP
01	Power Cost	High	Very Less
02	Operating Cost	High	Negligible
03	Smell	Present	Absent
04	Sludge	Present	Absent
05	Maintenance	Required.	Negligible

(Ajay Bharatan) 07/10/23
Inspector General of Police
Central Training College, CRPF
Coimbatore – 641 017

TAMILNADU INSTITUTE OF URBAN STUDIES
Alagesan Road, Saibaba Colony, Coimbatore – 641 011
Tel : 0422-2441086
Email: information@tnius.org, www.tnius.org

G. KANNAN
DIRECTOR

Dt:21.12.23

LETTER OF APPRECIATION

In continuation of our visit to Anaerobic Bacteria Digester (ABD) system installed at Central Training College, CRPF, Coimbatore which was installed by M/s MAK India Limited, Coimbatore, we would like to state that the Grey and Black water of Hostels, Messes, Canteens and Quatres for around 2000 personnels are collected through closed conduit and processed at the MAK DRDO Bio Sewerage Treatment System.

After bar screening, sewerage is processed with unique system ie Anerobic Bio Digester, which is developed by the MAK DRDO. Because of the anerobic process, there is no odor present in and around the treatment system. Through the biological process, there is nil sludge formation in the plant.

Also, they have established reed bed system. At the tail end of the reed bed system the visibility of the water is color less, compared to the inlet sewerage. And the quality of the inlet and outlet sewerage parameters prescribed by the CPCB are measured automatically and displayed and stored in the control room. And as we are told, the observed parameters are within the CPCB norms. Also, for tertiary treatment, Sand and Carbon filter are used and the outlet water are used for their gardening purpose. For the entire system, there are less mechanization, Energy Consumption and less maintenance cost involved.

Hence, we appreciate the efforts taken by Central Training College, CRPF and M/s MAK India Limited, Coimbatore for developing such system. And we consider that, the similar system may be suitable for the similar other institutions or Townships or communities or largescale Apartments in processing their Black and Grey water effectivity and efficiently in a cost effective and eco-friendly manner. We thank Central Training College, CRPF, Coimbatore and M/s MAK India Limited, Coimbatore for the opportunity to visit and to see the system developed by them.

DIRECTOR 21/12/23

OUR ESTEEMED CUSTOMERS






India Limited

We have Solution for Every Pollution

Thank You!

For the patience in going through this presentation.

"Jointly Let Us Restore Our Mother Earth To Its Original State"

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