TRANSCHEM AGRITECH Pvt. Ltd.

" Why TransBiofilter- a Vermifiltration based innovative wastewater treatment technology is the best solution under most conditions"

trans BIO-FILTER WASTE WATER TREATMENT TECHNOLOGY ™

transBio-Filter

A Decentralized Waste Water Treatment Technology

About us : https://www.yutube.com/watch?v=pKla6PgDhds&t=21s

Company Profile

- **A venture of the Shroff group of companies.**
  Excel Industries Ltd., Transpek Industry Ltd, Excel Crop Care Ltd., and others.

- **Our group also runs an NGO with special focus on farmer's & rural community.**

- **Focused on providing Innovative and Efficient products and services to improve agriculture & environment.**

- **Our products are *transBio-filter- A Waste Water Treatment Technology,* Soil Testing Kit, Water Testing Kit, Bio-pesticides, Nutrient Foliar Sprays, Mobile & Stationary Labs.**

Background

India Faces Two Severe Problems:
a) Water Scarcity
b) Sewage / Industrial Waste Water Disposal

A) Water Scarcity Challenge:

- **70% of India** would be water stressed **by 2020.**
- **By 2020** the **demand** of water in India **will exceed** the **available sources** of fresh water;
- The **industrial use** of water is predicted to increase from **30 to 120bn** cum by **2025**.
- The urban need of water is increasing , need to transfer from long distance, availability will also be limited / costly.

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B) Sewage/Waste Water Disposal Challenge:

- In India **less than 20%** of domestic and **60%** of industrial wastewater is treated.
- **Metros and large cities** treat **only 29.2%** of their wastewater;
- **Smaller cities and villages** treat **only 3.7%** of their wastewater.
- Waste water treatment is important not only for controlling pollution but recycle & reuse will be important.

Decentralized Treatment Systems

Decentralized wastewater Treatment can be smart alternative for considering new systems or modifying, replacing, or expanding existing waste water systems.
(70-85% of government spending in water goes in transportation of water)

Advantages of Decentralized STP:

1. Can be stand alone arrangements for many parts/wards of the city
2. Easy to handle, operate and maintain
3. Better public participation and acceptance
4. Cost saving in sewage collection piping and in transportation as well as treated water transportations. ***(Treated water can be reused locally for landscapes / trees / washing and for flushing)***
5. Better adoption to local contexts and needs
6. Cost- effective and efficient
7. Need smaller areas for treatment

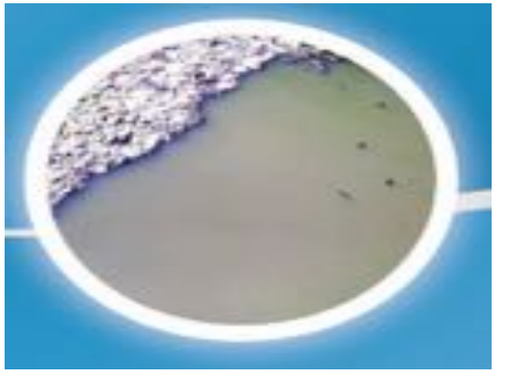
About transBio-Filter

1. The concept is *"Design with Nature"* how to work cooperatively with nature, while at the same time learning the tools of modern science.

2. ***Bio-filter Technology*** is a synthesis process, which harnesses the energy, carbon and other elements of the waste and converts them to precious ***"Bio-nutritional"*** products like energy rich humus & bio-fertilizer and nutrient rich water.

3. The process utilizes the ability of the earthworms and beneficial microbes ***(transzyme)*** to break down organic waste present in the wastewater and transform it into worm-cast.

4. It involves removal of organic matter by adsorption and filtration followed by biological degradation and oxygen supply by natural aeration to the treatment system.



***Patent Applied

Accreditation of transBio-Filter Technology

- Patent Application No. **201621036616.**
- Validation by ATIRA (Ahmedabad Textile Industry's Research Association).
- Technology Performance Report certified by Griffith University, Australia
- Awards:
  - **SKOTCH order of Merit award** received in 2018 for 1.2 MLD Bhavnagar STP as "top Environmental Projects of India"
  - **Environment Excellence award** in 2018 ,
  - **Best Water Treatment Technology in India** through ASSOCHAM 2017.
  - **Environment Abatement and Pollution control** in the year 2015

Segments

transBio-Filter technology is successful in following segments:

1. **Domestic Sewage & Municipal waste water**
   - Residential Complexes & Housing schemes
   - Commercial establishments
   - Institutes (Schools, college & Universities)
   - Resorts & Hotels
   - Religious places etc.
2. Chemical & Pharmaceutical Industries
3. Block / Dye Printing
4. Sugar Industries
5. Dairy Industry
6. Food Processing Units
7. Fisheries Industries

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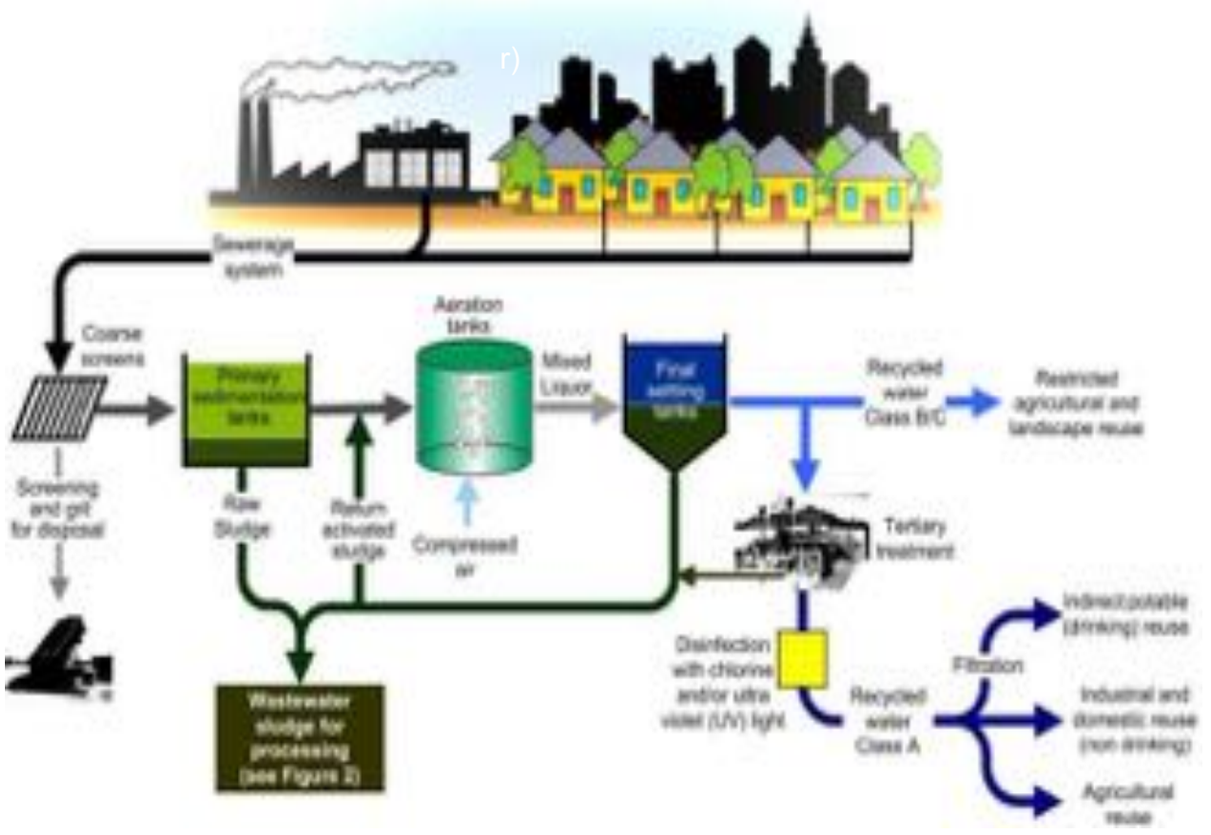
Comparative

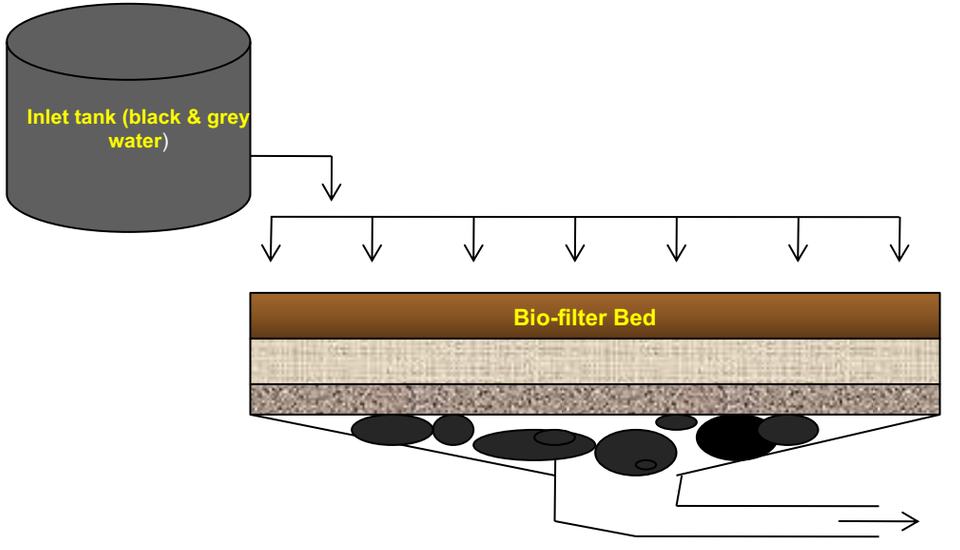
Conventional STP/ETP

(Activated Sludge Process)



Bio-filtration Technology

- **Low energy & maintenance required (no mechanical equipments.)**
- **No sludge generation, as all solids gets converted into compost**
- **Aerobic & no odour**



Treated Water (for gardens, etc)

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Advantages

- Simple and easy operation
- Low operating and maintenance costs
- Low energy input
- No sludge Formation as solids converted into vermi-compost
- Aerobic & Hygienic process, hence no odor
- No pretreatment required for solids separation
- Able to handle to high COD/BOD Load & high TDS (upto 20000 ppm)
- Treated water is nutrient rich and natural way of fertigation for better agricultural production and cost saving on artificial fertilizers.
- Enabling the reuse of treated water for industrial, agriculture & other non- potable purposes.

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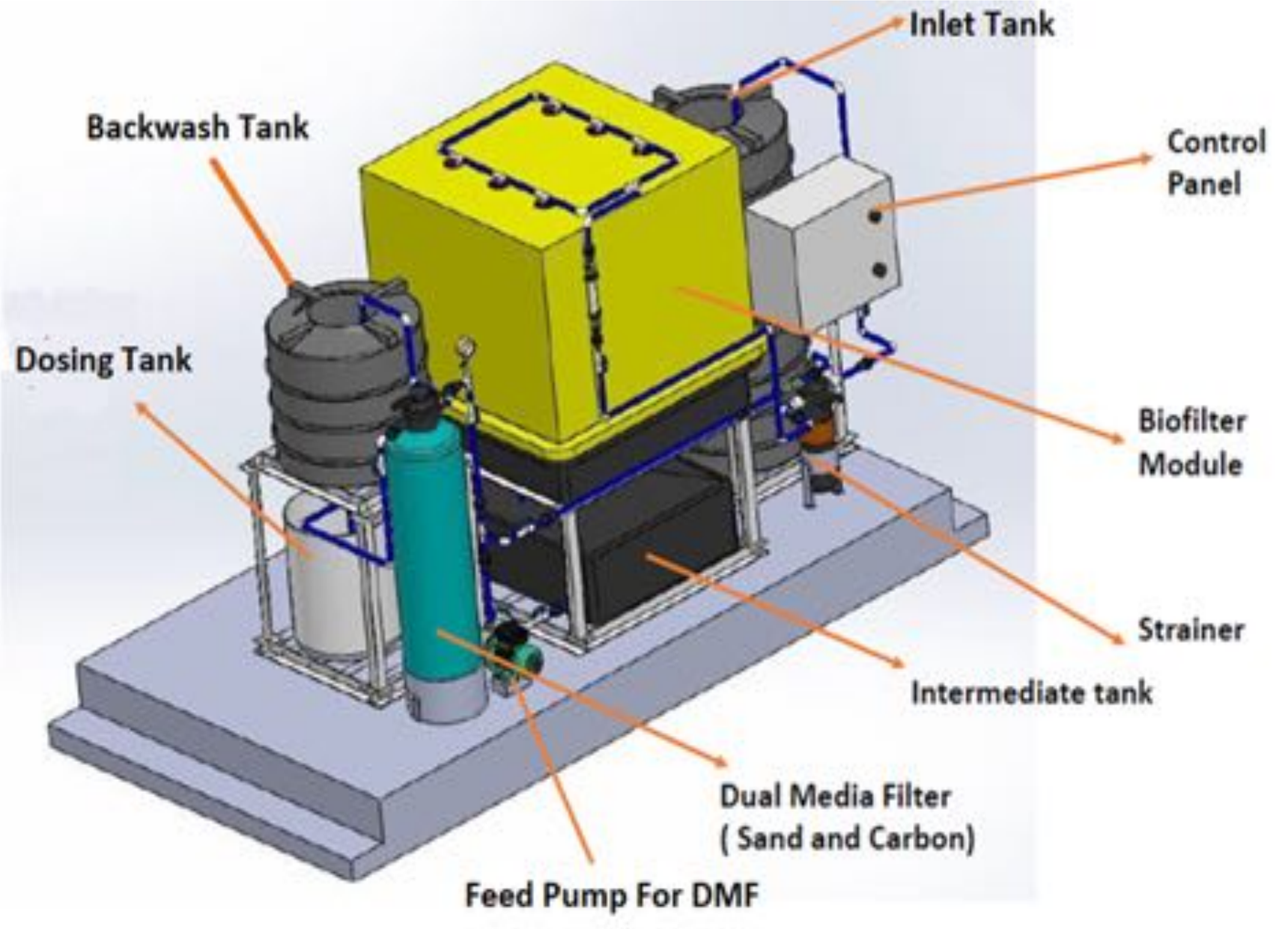
Equipment's of Modular Plants



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Foot print of transBiofilter Modular STP Plants

Plant Capacity in KLD	Biofilter plant area
10	4.5
40	12
100	28
250	55
500	103

Flow rate is 6000 Ltrs per Sqmtrs per day

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New Compact Modular Plant

10 KLD

40 KLD

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transBio-Filter Plants Modular & Civil Constructed Capacity range 3m3/Day to 3 Million Liters per day

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30 KLD modular plant installed replacing conventional plant using existing Infrastructure

Retrofitting of plant done in 2 days

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transBio-Filter plant layers

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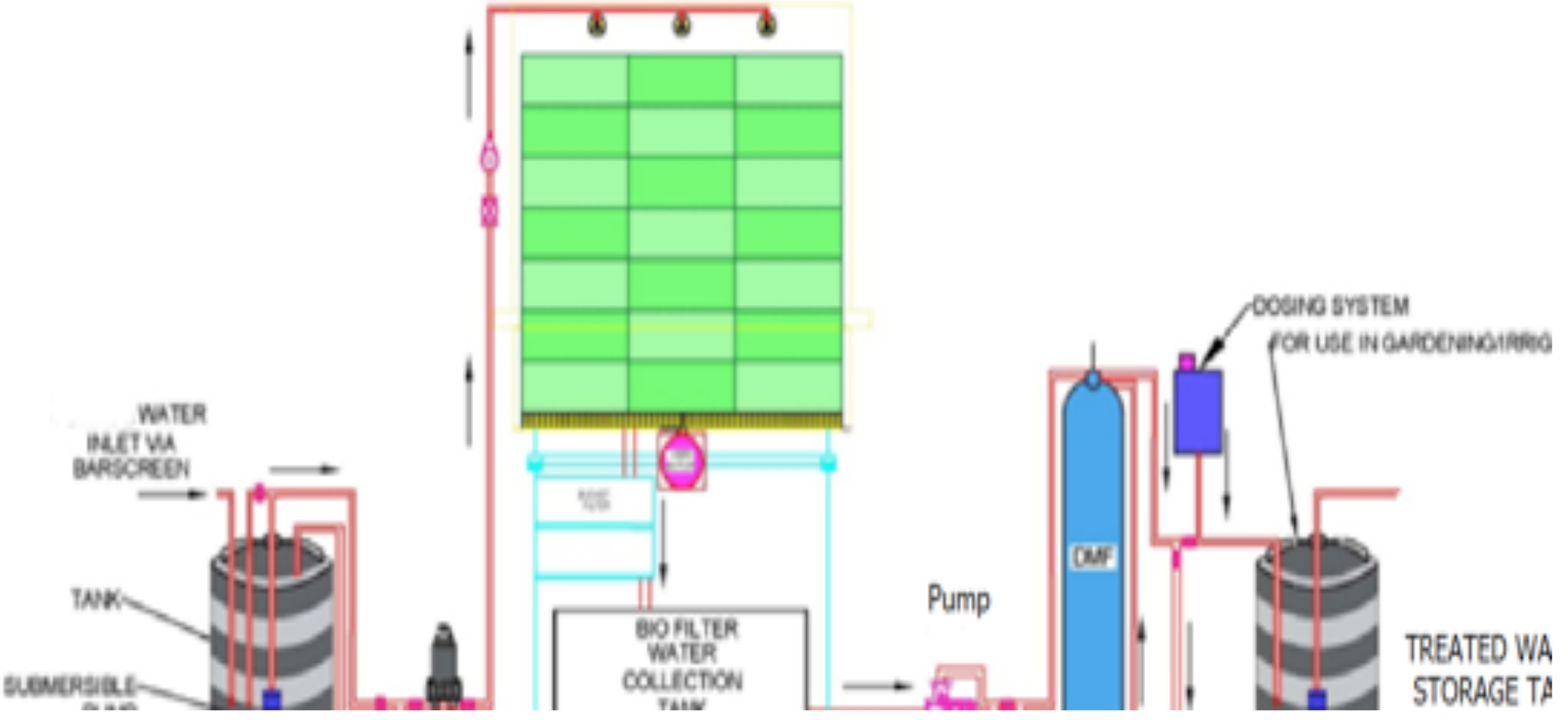
Flow diagram for Biofilter Modular Plant 5/10 KL



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3 KLD to 1000 KLD modular STP

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Key Features

Lowest Capital and Operations cost

No skilled labour required

Lowest Power consumption

Surety of getting consistent, sustainable and reliable results

Meets pollution control Board norms

Lowest area requirement

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Success Stories
SEWAGE WASTE WATER TREATMENT

transBio-Filter- 1.0 MLD at Bhavnagar
(City sewage treated and recycled for Industrial & Gardening use)

1. Sewage nala Pumping station

2.transBio-Filter Inner view

3. Reuse of treated water

4.Raw & Treated water Quality

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WHY THE NEED

1. DIALY WATER REQ. = 800 CUM PER DAY
2. WATER COST OF TANKER (SOURCE BORE WELL) @ Rs. 75 /KL
   i.e. Rs. 200 lakhs / year
3. **Cost of processing water for industrial use**
   : INR 210/KL
1. HIGH TDS CONC. > 600 ppm & HEAVY SHORTAGE DURING SUMMERS

INNOVATIVE & SUSTAINABLE APPROACH

SEWAGE TREATMENT THROUGH transBio-Filter

1. **Treatment with trans Biofilter @ Rs. 4 /KL**
2. REUSE FOR INDUSTRIAL APPLICATION WITH TERTIARY TREATMENT @ **Rs. 50 /KL** with TDS Conc. Of < 200 ppm

BENEFITS

TOTAL SAVINGS OF Rs.600 Lakhs per year

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Results : 1 MLD STP Bhavnagar

Parameters	Inlet	Outlet Trans Bio Filter with Tertiary system	Standard norms for Land irrigation
pH	7.0-8.0	7.0-7.5	5.5-9.00
TDS	1500-2000	1200-1800	2100
Turbidity	40-100	<2	
COD	**200-400**	**<20**	**100**
BOD	**100-200**	**<5**	**30**
Dissolved Oxygen	**Nil**	**2-3**	
Colour	Dark Grey	Pale Yellow	
Odour	Strong	Odourless	
Fecal Coliform	$>10^6$	<100	$>10^3$

transBio-Filter - 100 M3/Day at Krishi Vigyan Kendra, Jalna
(City sewage treated and recycled for Agriculture)

Intake from city Sewage

transBio-Filter Plant

Treated water used for Fodder fields

Growth in summer

Plant Running on Solar Panels

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Benefits derived:

1. Total 30 acres of land is cultivated using Biofilter treated water.

2. 7 types of fruits like Mango, Tamarind, Sweet orange, custard apple, Guava, Kazi Lime and Grapes are cultivated with Biofilter water .

3. Vegetables like Tomato, Chilli, Brinjal, Lady finger, Bitter Guard and Bottle Guard are cultivated in an year.

4. Fodder crops with substantial growth is grown in 1 acres of area . Getting 5-6 yields of fodder in a year.

1. Vigorous growth is observed in all plants, No scorteling of leavesand he crop yield has increased from 1.8 to 3.6 i.e double by usage of Biofilter treated water .

2. 10 quintal of compost is harvested and used in KVK farm.

Agriculture done on transBio-Filter outlet water

Nutrient Conversion In Treated Water from transBio-Filter

Parameters	Before Treatment per KL	After Treatment per KL
NH4 -N(ppm)	25-40	<1.0
NO3 (ppm)	10-20	>50
Total P (ppm)	4-8	1-2
Available P (ppm)	1-2	5-7
Potassium (ppm)	10-15	20-25

Nutrient Conversion In Treated Water

Considering the nutrient content in treated water as:

- Available **Nitrogen – 50 mg/l**
- Available **Phosphorous -- 7 mg/l**
- Available **Potassium – 25 mg / l**

In a **800m3/day** plant nutrient availability:

- Nitrogen – 40 Kgs/day

i.e. 14000 Kgs/annum equivalent to **28 Tons of Urea**

- Phosphorous – 5.6 Kgs/day

i.e. 2000 Kgs/annum equivalent to **4.0 Tons of DAP**

- Potassium – 20 Kgs/day

i.e. 7000 Kgs/annum equivalent to **12.0 Tons of Potash**

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Khanderaopura - on way to Zero Waste Village

Khanderaopura – Clean Village

Situated in Padra Taluka, Dist Vadodara

Population : 1500

Households : 185 Families

“Zero Waste Village” 20KLD STP at Khanderaopura, Gujarat

20 KLD Lagoon Based Biofilter Plant

Biofilter treated water used for Agriculture

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Resource Generation from 20 KLD Bio-filter Plant

Sr. No	Particular	Basis	Quantity In Kgs / KL	Rate/Kg in Rs.	Amount in Rs. Per Annum
1.	Water for Irrigation	Cost of device & use of energy to lift water.	20	15	105000.00
2	Nutritive Water for Agri/horticulture	Available Nutrient contents -			
		a. Av. Nitrogen(NO3)-Urea	760	5.5	4180.00
		b.Av. Phosphorus- DAP	106	22	2332.00
		c. Av.Potassium- MOP	290	11	3190.00
3	Vermi-Compost generation	a. organic Media consumed - 5 MT/year b. out of which 1/4th is converted into Vermi compost	1250	3	3750.00
4	Earthworm Biomass	a. Fully matured Biofilter bed harbors 4-5 kgs earth per cum	50 Kgs	200	10000.00
5	Total Revenue/ Year				128452.00
6	Revenue/day				367.00
7	**Revenue/ KL**				**18.35**

Zero waste Village – Khanderaopura
Segregation of Dry-Wet waste

DRY/PLASTICS/RECYCLABLES ARE SOLD FOR RECYCLING AND WET WASTE IS TREATED TO MAKE VERMI COMPOST AND VERMI WASH

Vermi Wash – Vermi Compost

Sr.No.	Parameters	Results
1.	pH	7.0 – 7.2
2.	EC (mS/cm)	4.5 – 5.0
3.	TKN (ppm)	50 - 100
4.	Phosphates (ppm)	20 - 40
5.	Sulfates (ppm)	80 - 100
6.	Calcium (ppm)	350 - 400
7.	Magnesium (ppm)	400 - 500
8.	Sodium (ppm)	500 - 600
9.	Potassium(ppm)	700 - 1000
10.	Organic Carbon (%)	0.025 – 0.04

Photographs Of Vermicompost & Vermiwash

Chikhodara – Demography

Situated in Sankheda , Taluka, Dist Vadodara

Population : 1083

Households : 267 Families

100KLD Chikhodara plant inaugrated by honorable CM of Gujarat Mr. Vijay Rupani

100KLD Chikhodara plant inaugrated by honorable CM of Gujarat Mr. Vijay Rupani

Plant internal view of 100 KLD STP

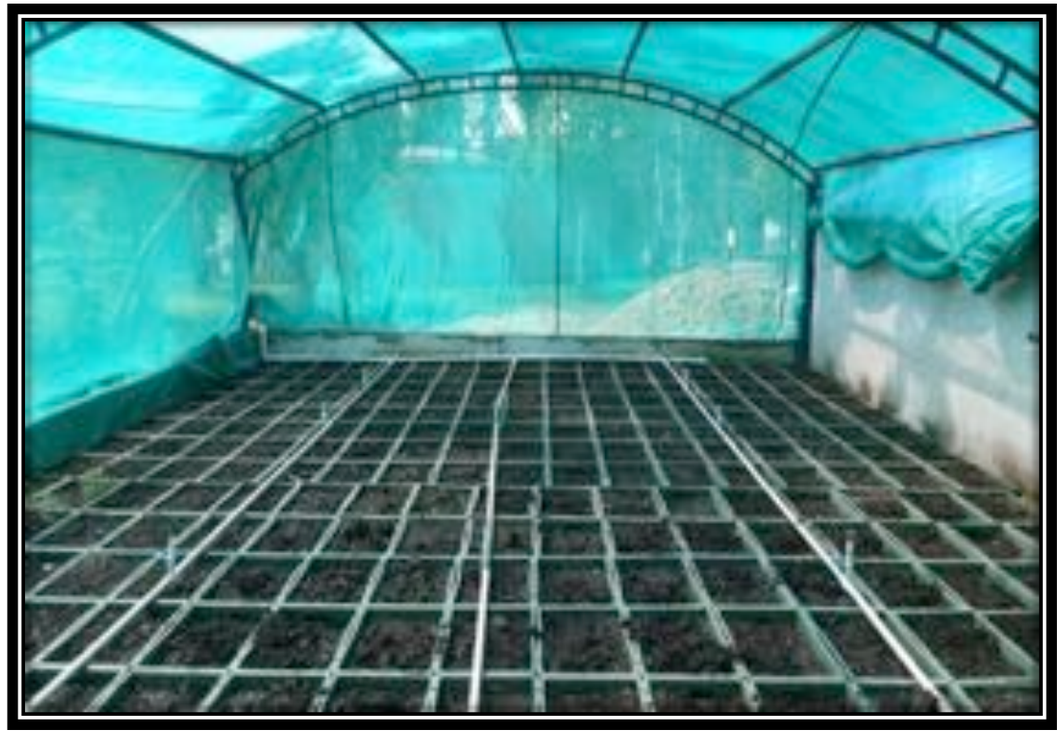
transBio-Filter at Keshopur,Delhi Jal Board

“Toilet to Tap”

Delhi's first 'toilet-to-tap' plant finds takers among AAP MLAs

- HT Correspondent, Hindustan Times, New Delhi
- Updated: Jul 10, 2015 02:01 IST

Delhi chief minister Arvind Kejriwal drinking water from the first 'toilet to tap' sewage treatment plant in Delhi. (Photo by Sushil Kumar/ HT Photo)



Type of Waste Water	Domestic City Sewage
Capacity of transBio-Filter Plant	80 M3/Day

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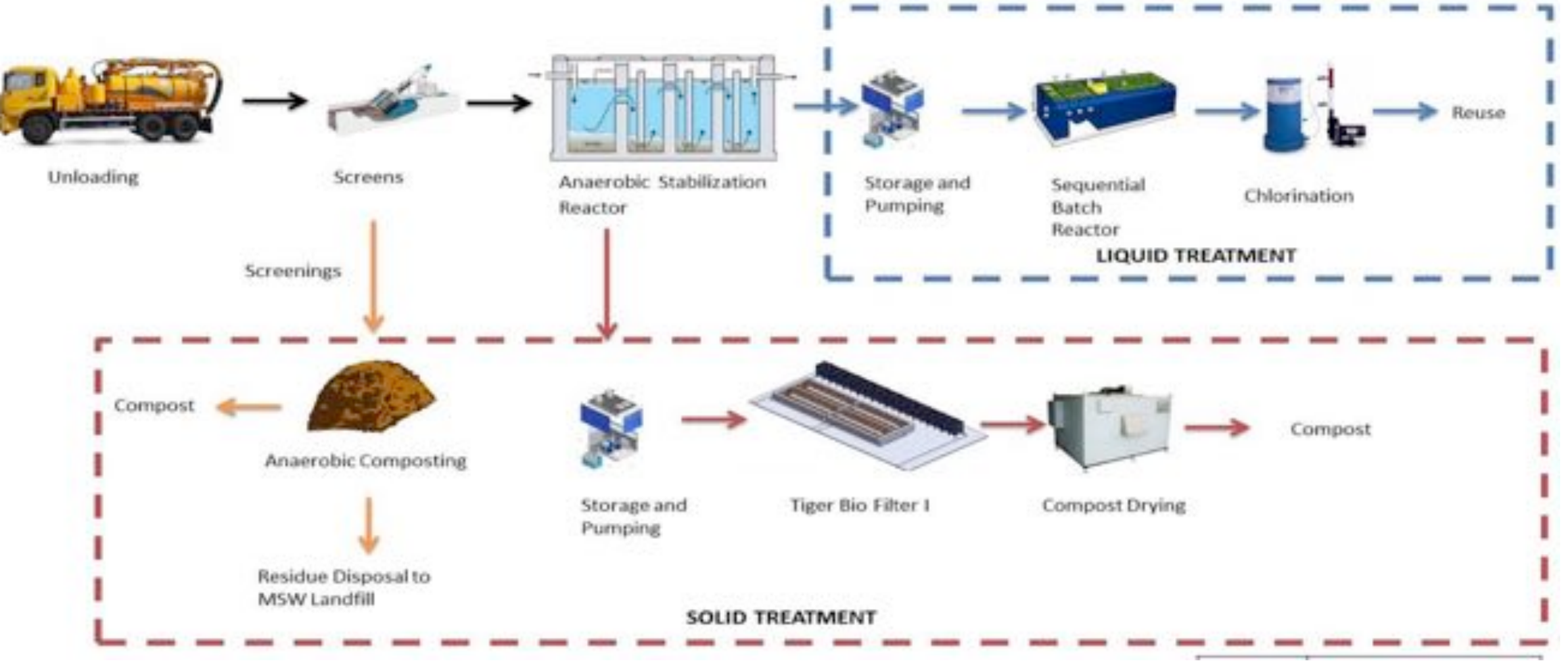
FECAL SLUDGE TREATMENT

Treatment scheme



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Industrial waste water treatment
ETP

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Till now more than 100 installations has been done in various parts of India, some of the success stories are as follows:

Sr.No.	Biofilter Plant Installed	Capacity (KLD)	Year
1.	Excel CropCare Ltd., Bhavnagar - STP	1000	2011
2.	Jubilant Life Sciences, Nira, Maharashtra - STP	600	2019
3.	Delhi Jal Board, Keshvopur - STP	80	2015
4.	Transpek Industry Ltd. Vadodara - ETP	180	2014
5.	Srinivas Dairy, Hyderabad -ETP	35	2018
6.	TML Inudstries, Vadodara - ETP	100	2018
7.	Sumitomo, Gajod - STP	150	2019
8.	Dye Industry, Kutch - ETP	50	2016

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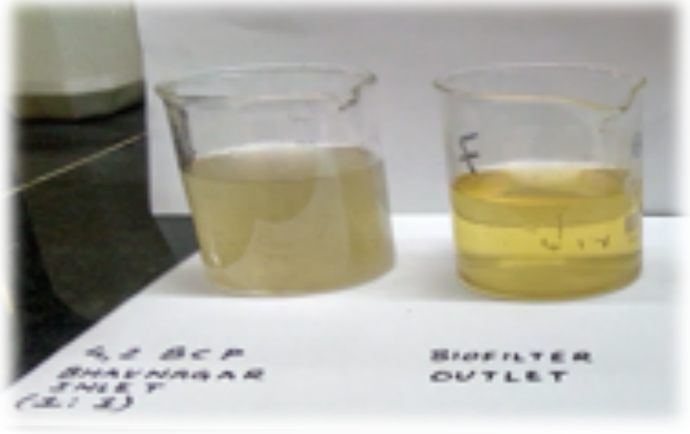
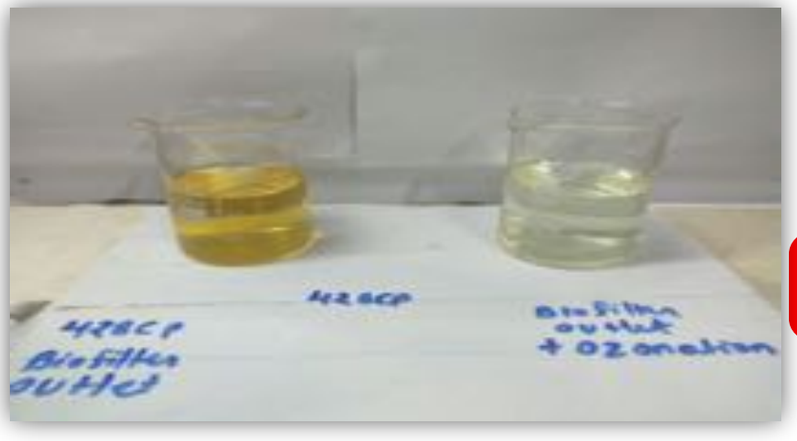
Also Capable of treating Chemical Contaminants like:

1. **Phenolic Compounds**
2. **Sulfide & Sulphites**
3. **Solvent based effluents**
4. **Resin manufacturing Industries**
5. **Ammonical Nitrogen based streams**
6. **Dye Industries**
7. **MEE Condensates**
8. **Organic contaminants etc.**

Phenolic wastewater

Type of Waste Water	4,2 Bromo Chloro Phenol





Sr. no.	Parameters	Inlet	Outlet after transBio-Filter™
1	pH	3.8	6.9
2	TDS (ppm)	8880	8200
3	Turbidity (NTU)	3.3	5.0
4	Colour	Colourless	Pale Yellow
5	Odour	Phenolic	Odourless
6	COD (ppm)	4605	600-700
7	BOD (ppm)	1650	150
8	Sulfide (ppm)	933	Nil
9	Sulfates (ppm)	769	25
10	Phenol (ppm)	1325	< 1.0
11	Chlorides (ppm)	4870	1700

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Type of Waste Water	Polymer Based

Sr. no.	Parameters	Inlet	Outlet after transBio-Filter™
1	pH	8.8	6.9 -7.2
2	TDS (ppm)	5500	2200 - 2500
3	Turbidity (NTU)	> 1000	10 - 20
4	Colour	White Turbid	Pale Yellow
5	Odour	Solvent	Odourless
6	COD (ppm)	12000	< 200
7	BOD (ppm)	3000	< 50

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Type of Waste Water	Sodium formate based effluent

Inlet

Outlet

Parameters	Before Treatment	After Treatment
pH	6.5	6.8
TDS (ppm)	17400	< 500
Turbidity (NTU)	300	< 5
Sulfide (ppm)	155	Nil
COD (ppm)	**24800**	**< 250**
So3 (ppm)	388	Nil
Colour	Reddish Brown	Colourless
Odour	Formate	mild

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Type of Waste Water	MEE SLOP CONDENSATE EFFLUENT

Inlet Outlet

Parameters	Before Treatment	After Treatment
pH	8.5 – 8.9	7.7 to 8.0
TDS (ppm)	2800 - 3000	2600 - 2800
Turbidity (NTU)	35 - 250	20 – 50
Sulfide (ppm)	100 - 180	Nil
COD (ppm)	**5900 - 9000**	**200 -250**
BOD (ppm)	**3400**	**80 - 100**
Ammonia (ppm)	**600 - 1250**	**15 - 20**
Colour	Brown	Pale yellow
Odour	Alcoholic	Odourless

95% reduction in COD

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Type of Waste Water	**Cheese Whey effluent**
Capacity of transBio-filter Plant	**80 m3/day**

Parameters	Input water	Output water
pH	4.0-4.5	8.0 - 8.5
TDS (ppm)	7500-8000	3000-3200
Turbidity (NTU)	> 1000	15-20
COD (ppm)	**52000-62000**	**220-250**
BOD (ppm)	**48000-55000**	**100- 120**
Colour	WHITE TURBID	Pale Yellow
Odour	Strong	Odourless
Oil & Grease (ppm)	1250	<250
Ammonia (ppm)	74	< 10

99 % reduction in COD

Replacing Conventional ETP with Biofilter

- Conventional ETP
  (Activated Sludge Process)

Area: 3,000 square meters

- transBio-Filter Plant

Area: 400 square meters

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Comparison between Conventional ETP v/s Biofilter

Sr. No:	Details	Existing ETP plant	Bio-Filter Plant	% Reduction
1.	Total Effluent Treated (M3/Day)	180	**180**	**N.A.**
2.	Area Covered	3000 Sq. Mtr	**400 Sq. Mtr**	**86 %**
3.	Number Of Aerators	12	**Nil**	**100%**

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Comparison between Conventional ETP v/s Biofilter

Sr. No:	Details	Existing ETP plant	transBio-Filter Plant	% Reduction
4.	Power Load	110 HP	**20 HP**	**82%**
5.	Retention Time	10 Days	**45 mins**	**99%**
6.	CAPEX	INR 200 Lac	**INR 50 Lac**	**75%**
7.	OPEX	181 INR/KL	**63 INR/KL**	**65%**

Savings of INR 77.52 Lakhs per year

Air Bio-filter

- Air Biofilter is a technique to treat the gaseous emissions & reduce the odourous compounds like VOC's , Hydrogen Sulfide, Ammonia compounds, and other contaminants like SOX, NOX etc

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CONCLUSION

1. **transBio-Filter** IS A PROFIT CENTER AND NOT A COST CENTER.
2. LOW OPERATIONS COST
3. LOW CAPITAL COST
4. LOW FOOTPRINT. NO RESTRICTION ON SPACE.
5. COMPLETELY GREEN. NO USE OF CHEMICALS. WORKS WITH NATURE
6. WORKS AT EVEN HIGH LEVEL OF TDS, COD & BOD LOAD.
7. REVENUE GENERATION IN FORM OF EARTHWORMS AND NUTRIENT RICH ORGANIC FERTILIZER.
8. SLUDGE FREE SYSTEM AND NO ODOUR
9. WORKS ON LOW HYDRAULIC LOADS. UPTO 5% OF DESIGN CAPACITY
10. SUCCESSFUL IN TREATMENT OF COMPLEX EFFLUENTS.

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THANK YOU !

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