

6.3. 第 1 回会議体会合における発表資料

6.3.1. ジャル・シャクティ省の紹介



First Management Council Meeting

Ministry of Jal Shakti,  
Government of India and Ministry  
of The Environment, Government  
of Japan

Cooperation for Decentralized Domestic Wastewater Management

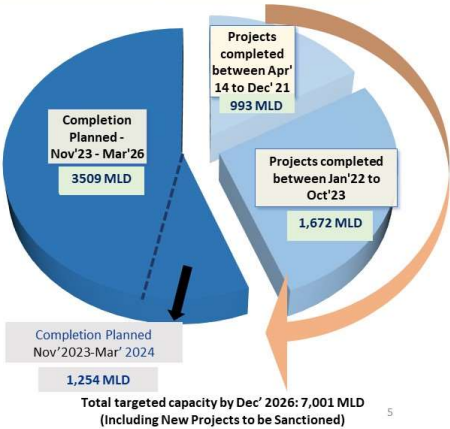
Under Namami Gange Programme three project with a total capacity of 1.92 MLD on Jhokhasou Technology has been sanctioned in Udham Singh Nagar, Rudraprayag and Rishikesh district of Uttarakhand

S. No.	State	Town	No. of STPs	Capacity (MLD)	AA&ES Cost Rs. In (Cr)
1	Uttarakhand	Udham Singh Nagar	3	1.3	199.36
2		Gaurikund & Tilwada	5	0.32	23.37
3		Muni Ki Reti, Rishikesh	1	0.3	94.06
	Total		09	1.92	316.79

Namami Gange Projects

Total capacity of 6,174 MLD (195 projects) is sanctioned under Namami Ganga up to October 2023

Time Period	Sewage Capacity Created/ to be Created (MLD)
Completed April 2014 – December 2021	993
Completed January 2022 – October 2023	1,672
Completion Planned November 2023 – March 2026	3,509
Total	6,174

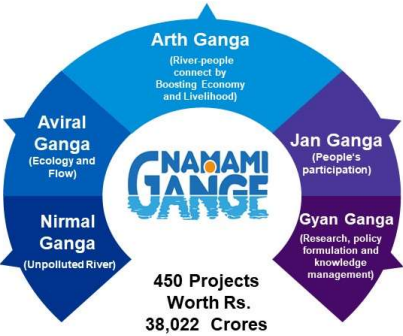


Namami Gange at a Glance

An integrated river rejuvenation mission for the Ganga River Basin

VISION: The Vision for Ganga Rejuvenation constitutes restoring the wholesomeness of the river defined in terms of ensuring "Aviral Dhara" (Continuous Flow), "Nirmal Dhara" ("Unpolluted Flow"), Geologic and ecological integrity

Five pillars of Namami Gange



Components of the programme

Component	No of projects	Sanctioned Cost (Rs Cr)
Sewerage Infrastructure	195	31,344
Ghats and River front development	104	1,734
Solid waste management	12	295
Institutional Development	29	1,764
Research and public outreach	37	260
Biodiversity and Afforestation	51	764
Bioremediation	15	239
Rural sanitation	1	1,421
Others	6	200
Total	450	38,021

## Key Government Schemes in Indian Water Sector

Historical moment for water management in India  
**Formation of Ministry of Jal Shakti in 2019,**  
 bringing all Major departments of the government dealing with water under the aegis of one Ministry



Implementation period	2014 - ongoing	2015 - 2020	2019 - 2024	2020 - 2026	2021-2026	2021 - 2026
Estimated budget (USD in Million)	4,000	3,000	50,000	790	17,000	8,000

Union Budget FY 2023-24, approx. **USD 12 Billion** allocated to Ministry of Jal Shakti

CATCH THE RAIN campaign in 2021 saw **4.8 million RWHS** created/ maintained at **USD 9 Bn**

Key schemes in sewage treatment – Namami Gange, SBM(G), AMRUT



### Key Funding Sources

#### Central government

- Ministry of Jal Shakti
- Ministry of Housing and Urban Affairs
- Ministry of Environment, Forest and Climate Change; others

#### State governments

- State Urban development
- Rural water and sanitation departments
- PHED/ Municipal Corporations/ ULBs

#### International Financial Institutions

- JICA
- The World Bank Group
- Asian Development Bank
- DFID; others

## 1st Management Council Meeting

<b>Date</b>	November 29, 2023
<b>Time</b>	12:30-14:30 IST in Indian time (16:00 ~ 18:00 in Japan time)
<b>Agenda Items</b>	<ol style="list-style-type: none"> <li>1. Introduction on Both sides of Management Council members cum Approval of Associate members</li> <li>2. Keynote Speeches (from both sides)</li> <li>3. Approve the Joint Working Program and the 1<sup>st</sup> Seminar program</li> <li>4. Presentation from the Associate members of both the sides</li> </ol>



### 6.3.2. インド側協賛メンバー Arvind Envisol Ltd.による発表



#### ABOUT US

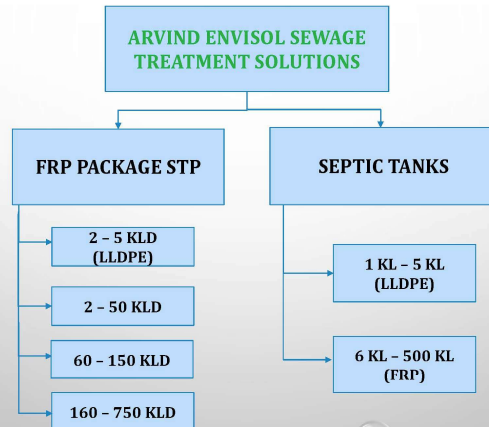
ENVISOL - A PART OF **ARVIND LIMITED**  
(LALBHAI GROUP)



Arvind Limited, a part of The \$1.8 billion Lalbhai Group was incorporated in 1931 and is in the businesses of Textiles - fabric & garment manufacturing , Branded apparel & Retail , Environment Solutions, Agriculture, Engineering and Real Estate.

Established in 2011, Arvind Envisol is a world class water management company providing end to end solutions for water treatment, industrial waste water treatment, sewage treatment, zero liquid discharge solutions at minimal costs.

#### SOLUTIONS OFFERED BY ARVIND ENVISOL LTD.



#### WHY 'FRP'?



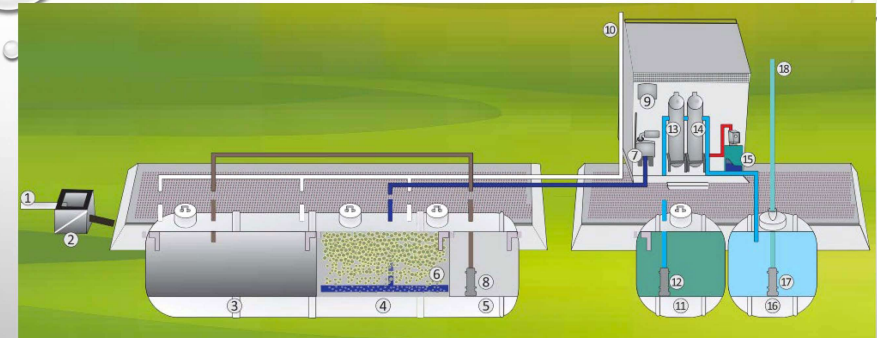
- Arvind STP & Septic Tanks are housed in specially designed highly durable FRP(Fiber Reinforced Plastic) Tanks, which are best suited for Sewage Applications.
- Arvind FRP Tanks are made by using suitable polyester resin (Isophthalic Unsaturated Resin) and glass fiber.
- The tanks are specially designed for Under Ground applications have hollow ribbing of polymeric material encased on the outside of the tank with suitable polyester resin and fiberglass, to give lateral strength and extra protection. The tanks have shell thickness of  $9.0 \pm 0.5$  mm to make them capable to sustain an overburden of 2.30 meter of soil on top.
- Each Tank is Leak Proof & Corrosion Proof which makes it highly durable & best suited for making Septic Tank/STP/Collection Tank esp. for Underground Applications, with no chance for ground water contamination.
- Each Tank is Air-Tight making it suitable for maintaining Anaerobic conditions in Septic Tank & Package STP even if the above temperature is in sub- zero.
- Each tank is factory made and necessary tests are conducted before dispatch, so quality is ensured.

## CII/IGBC GREEN PRODUCT CERTIFICATION



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## SCHEMATIC DIAGRAM OF PACKAGE STP



1 - INFLUENT

2 - BAR SCREEN CHAMBER

3 - ANAEROBIC & ANOXIC ZONE

4 - AEROBIC MBBR ZONE

5 - SEDIMENTATION ZONE

6 - MBBR MEDIA

7 - AIR BLOWERS

8 - SLUDGE RECYCLE PUMP

9 - CONTROL PANEL

10 - AIR VENT

11 - FILTER FEED TANK

12 - FILTER FEED PUMP

13 - MULTI GRADE FILTER

14 - ACTIVATED CARBON FILTER

15 - DISINFECTION

16 - TREATED WATER TANK

17 - TREATED WATER PUMP

18 - REUSE

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## Process Principle of PSTP

### Primary treatment:

Pre-treatment removes materials that can be easily collected from the raw sewage before they damage or clog the pumps and sewage lines of primary treatment clarifiers (trash, tree limbs, leaves, branches etc.).

The influent sewage water passes through a bar screen to remove all large objects like cans, rags, sticks, plastic packets etc. carried in the sewage stream.

First stage transforms the solids in raw sewage to settled solids while allowing scum to float on the surface. It is a zone in which settled sludge is stabilized by anaerobic digestion wherein the F/M Ratio is maintained by returning activated sludge from the final sedimentation zone to the anaerobic zone. Due to anaerobic digestion the BOD reduction is around 30-40%.

Water then enters anoxic zone and denitrification of the wastewater stream is accomplished. In the denitrification process, anoxic microbes break down existing nitrates, which results in the release of inert nitrogen gas into the atmosphere. Due to anoxic treatment free ammonia is achieved as per CPCB norms.

### Secondary Treatment:

The sewage from the solid separation zone flows to the aeration zone. Air is diffused with help of air blowers which will encourage the growth of bacteria cultures in and around the Floating plastic media inside the aeration zone. The MBBR media provides extended surface area for growth of microorganisms. Due to aerobic digestion the BOD reduction is around 60-65%.

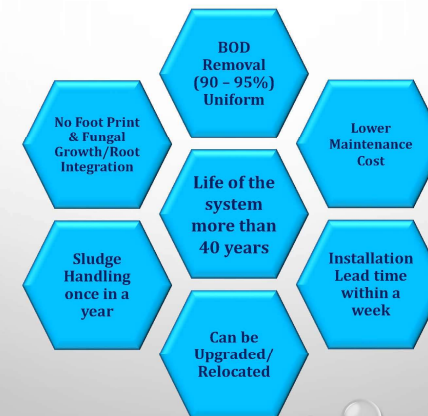
The next step of treatment involves the sedimentation where organic wastes are settled in the zone. The settled waste in the bottom of the tank is pumped back to the anaerobic zone as a return sludge, to ensure that quality of effluent would pass the stipulated sewage parameters.

### Tertiary treatment:

The secondary treated sewage is then passed through Pressure Sand Filter where in suspended solid is removed around 90-95% & Activated Carbon Filter helps in further removal of color & Odor. The treated water is then disinfected using Sodium Hypochlorite dosing system which is an oxidation process, which in turn supports in further reduction of BOD levels before reuse.

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## MAIN FEATURES OF ARVIND PACKAGE STP SYSTEM



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### COMPARISON OF ARVIND PACKAGE STP VS. CONVENTIONAL STP

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Sr. No.	Properties	Prefabricated Arvind FRP-STP	Conventional STP in MSFRP/RCC
1	Technology	3rd Generation MBBR/Johkasou Technology	1 <sup>st</sup> Generation MBBR Technology
2	MOC	Fiber Reinforced Plastic Tanks (FRP)	Conventional method of construction in RCC/MSFRP.
3	Shell Thickness of Tank (Body)	9.5-10.5 mm (Tank can sustain more Overburden Capacity of Soil & indirectly can work at comparatively more Invert Level)	No standardization followed, Varies from contractor to contractor. Manipulation possible.
4	Application	Can be installed both above-ground & underground. No leakages as factory made and the MOC characteristics.	Can be installed on ground or below ground, however, leakages are very common in these tanks due to various reasons.
5	Partitions	Strong dish end curved partitions with stiffener	No standardization followed, Varies from contractor to contractor. Manipulation possible.
6	Minimum Load/Sewage flow	Works from no load to peak load. It is designed to take shock load for 4 hours in the morning & evening respectively	30 -40% minimum load required. Can take shock load of maximum 2 hours only

### COMPARISON OF ARVIND PACKAGE STP VS. CONVENTIONAL STP

Envisol  
POWERED BY ARVIND

Sr. No.	Properties	Prefabricated Arvind FRP-STP	Conventional STP in MSFRP/RCC
7	Anoxic Zone	Additional Anoxic Zone facilitates Nitrogen & Phosphorous removal achieved in treated sewage parameters is as per PCB/NGT Norms	Denitrification process is very slow and not as effective required as per the requirement Govt. guidelines
8	Sludge Recycling	Activated sludge is pumped back in anaerobic zone every 2 hours for 2 minutes from final sedimentation zone. This helps in increasing the effectiveness of the system by reducing sludge & O&M	Sludge removal varies from 15 days to 12 months. Sludge treatment, chemicals and units are must.
9	Hydraulic Retention Time	Tank capacity is more. HRT is 18-22 Hr, (BOD, COD & TSS removal efficiency increases)	Tank capacity is less. HRT is 8-16 Hours (BOD, COD & TSS Removal efficiency comparatively low)
10	Air Blower Type	Ring Blower (O2 stage) (Low maintenance cost consumes less electricity, no oiling & greasing required for these blowers, decibel is 40-50 dB)	Twin Lobe Blower (High Maintenance Cost along with regular oiling & greasing, consumes more electricity. So comparatively higher O&M costs)

### COMPARISON OF ARVIND PACKAGE STP VS. CONVENTIONAL STP

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POWERED BY ARVIND

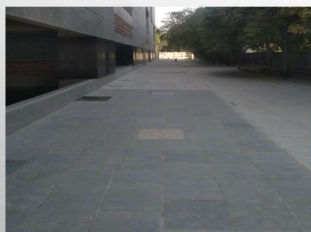
Sr. No.	Properties	Prefabricated Arvind FRP-STP	Conventional STP in MSFRP/RCC
11	Yearly Treatment Efficiency	Consistent efficiency throughout the year.	Seasonal variation is observed
12	Monitoring	No monitoring of MLSS & F/M ratio	Constant monitoring of MLSS is required.
13	Sludge Handling	Sludge handling required once in year.	Sludge handling once in 15 - 30 days
14	Supervision	Skilled supervision not required.	Continuous skilled monitoring required.
15	Electrical Consumption	50%-70% electrical saving compared to conventional STP	It consumes higher electricity than Arvind STP
16	MOC Depreciation	Leak proof, no root integration and no fungal growth	The Material of Construction causes fungal growth and leaks after 1 year
17	Project timeline	Installation lead time within a week to 15 days.	Construction work takes around four -six months
18	Upgradation	It can be upgraded and relocated.	No such scope available
19	Life	FRP tank life is more than 40 years.	Life of the system around 10 years

### IMAGES

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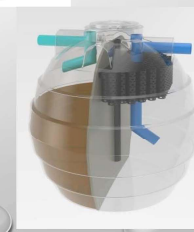
## IMAGES



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## ADVANCE SEPTIC TANKS

- Made of specially designed & durable LLDPE Tanks.
- Available in capacity range between 1200 Lit (1.2 KL) to 5000 Lit (5 KL).
- A special design which helps the solids in sewage to properly settle down by providing optimum retention time and in decomposition of organic matter due to optimum anaerobic conditions.
- The tank is divided in to 2 Zones:
  - First Zone: Accepts the wastewater from all domestic activities (bath area, toilets, kitchens etc.). Major role is separation of scum, solids & water by sedimentation and anaerobic decomposition.
  - Second Zone: Contains specially designed floating pall ring media which provide extended surface area for micro-organisms to grow, which enhances BOD removal
- Life Span of more than 25 years.
- Rust Proof and Leak Proof Completely
- water tight & air-tight
- Excellent performance through enhanced reduction of BOD
- Light Weight
- Easy to install
- Can be easily Relocated



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## OUR CLIENTS

Infosys®  
Navigate your next

Reliance  
Industries Limited

ITC Limited

Alembic  
Touching Lives over 100 years

Envisol  
POWERED BY ARVIND  
AUDA  
ANANDRAJAN AMBANI DEVELOPMENT AUTHORITY

Ambuja Neotia

DECATHLON  
SPORT FOR ALL - ALL FOR SPORT

DRDO  
DEFENCE RESEARCH ORGANISATION  
MINISTRY OF DEFENCE

Indian Oil tanking

Godrej agrovet  
Smarter Farming

emami\*

DEVELOPMENT AUTHORITY  
BANGALORE  
BANGALORE

Radisson BLU

INDIA  
MINISTRY OF TOURISM

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UPL  
OpenAg™

GATE  
गति का गुरुद्वारं गुरुद्वारं

MILACRON®  
We Build Productivity

AND MANY MORE...

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Thank  
you

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### 6.3.3. インド側協賛メンバー Sintex BAPL Ltd.による発表

## SINTEX ENVIRONMENTAL SOLUTIONS

**Sintex**  
by Welspun®

### PROFILE

Sintex is Pioneer in Plastics Technology Solutions  
Provider Serving Multi Industries and Markets

- Trusted Brand by billions for 04 decades
- Providing innovative products and solutions
- 07 state-of-the-art manufacturing facilities in India
- In-house Research & Development facility  
delivering critical applications in diversified Industry segments
- Largest distribution network having global footprints
- After sales service support

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

### SINTEX PRODUCT RANGE



PE Overhead water storage tank  
(capacity 0.1KL to 25 KL)



Loft tanks for indoor applications



SMC /GRP/FRP Tank for Water storage  
(capacity Range 1KL to 1200 KL)



FRP Underground Water Storage Tank  
(capacity 10 KL to 50 KL)



Packaged STP Systems & Septic Tanks  
(capacity - 1.2KLD to 1000KLD)



Unitized Bio-Gas Systems  
(capacity - 1 KL to 20KL)



UPVC Doors & Interiors products



Chemical Storage Tanks  
made of PE

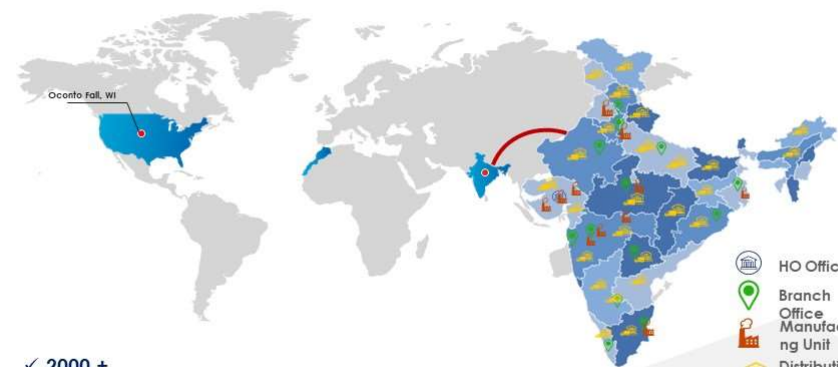


FRP Fuel Storage Tanks  
(capacity -10 KL to 50KL)

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

### PLASTIC PRODUCTS - DISTRIBUTION NETWORK AND OFFICES

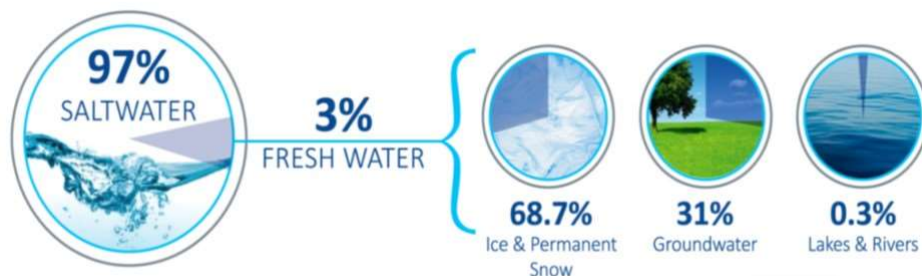


- ✓ 2000 + Distributors
- ✓ 25000 + retailers

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

## Usable water Availability



**WELSPUN GROUP**  
Leading Tomorrow Together

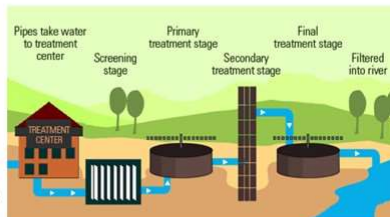
**Sintex**

## WHY STP NEEDED ??

The main goal of a sewage treatment plant is to treat the Wastewater and make it safe for human and environmental contact. Physical processes can either treat the Wastewater like solid-liquid separation or biological functions like aerobic digestion.

A sewage treatment plant needs to meet several requirements, including withstanding environmental factors like weather and earthquake zones. It also needs to have the capacity to treat Wastewater, be energy efficient, and produce a minimal amount of waste.

It is a system that is used to clean and purify Wastewater that is discharged into the environment. The main goal of a sewage treatment plant is to protect the environment from water pollution by removing contaminants such as bacteria, nutrients, chemicals and particulates. Whether it is from a commercial building or industrial site, wastewater needs to be cleaned before it is discharged. A sewage treatment plant can help with this process.



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Leading Tomorrow Together

**Sintex**

## Water Crisis

India is the second most populous country in the world, with more than 1 billion citizens. The scale of safe water need in India is immense. Many locations in India face water scarcity, thus it becomes necessary to store the water.

About 26% of India's population practices open defecation, a critical factor contributing to water-borne illness, stunting, and death.

These factors have created unprecedented urgency to implement effective solutions, to increase access to safe water.

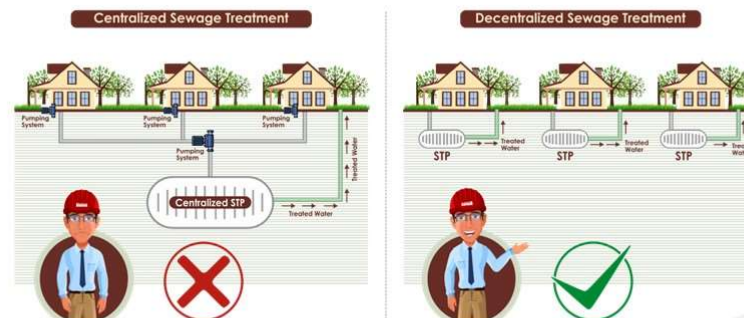


**WE HAVE PLAYED A SIGNIFICANT ROLE IN INDIA'S PROGRESS TOWARD IMPROVED WATER AND SANITATION, EMPOWERING MILLIONS OF PEOPLE WITH ACCESS TO SAFE WATER.**

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

## Merits of Decentralized STP



A decentralised Sewage Treatment approach ensures treatment of wastewater close to the point of generation thus saving **Power & Cost** as there is no need to Pump the Sewage to a distant centralised location.

A Centralised STP needs skilled manpower for operations unlike a **Sintex STP** which functions **without the need of any operator**.

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

### VARIOUS PACKAGED STP SOLUTIONS AVAILABLE WITH SINTEX

With Material	With Technology
ROTOMOULDING POLYETHYLENE TANKS -CAPACITY RANGES (1.2 KLD to 6 KLD)	Moving Bed Bio Reactor (MBBR)
FIBRE – REINFORCED PLASTIC- FRP (CHOP HOOP WINDING PROCESS) CAPACITY RANGES (10 KLD to >150 KLD)	



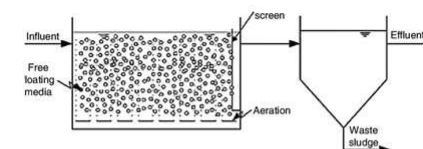
### FEATURES OF SINTEX PACKAGED STP :

- **Process:** Dual filtration using aerobic and anaerobic water treatment process helps in achieving required level of output in terms of BOD, COD, STT etc.
- **Decentralized:** It is a better investment in terms of energy consumption and efficiency when compared to a centralized wastewater treatment.
- **Durability / Lifespan:** FRP based material that is durable (Rustproof, leak-proof, RIB design etc) and lightweight, combined with technology requiring little intervention in terms of maintenance provides the system with a long life span of 50 years.
- **Leadtime:** The system is composed of pre-fabricated components optimizing packaging, transportation and installation. The complete system can be installed within few days in compared to other alternate which might take months.
- **Relocation:** The option of relocation is available with Sintex PSTPs unlike other alternates.
- **Easy Operation at less cost:** The system works on gravity requiring less pumping, auto mode working of pumps and the sludge removal intervals are as high as 2 years making it less prone to maintenance. Also no special skills are required to operate the system.
- **Odorless:** Sub ground structure makes it less prone to odor, occupant friendly.
- **Zero foot print:** Our STPs are sub-round structures occupying almost no space on the ground other than small pump room at convenient location. Ground STP structures are mostly eyesore to the occupants.



### Sintex PWTs is based on MBBR TECHNOLOGY similar to ZOHKASU TECHNOLOGY

This technology is essentially the same as activated sludge except that the media suspended in the reactor offers additional surfaces for the microbes to grow and this in turn maximizes the growth of microbes in a given volume of aeration tank compared to the conventional aeration without the media and to that extent, it does appear preferable. Diffused aeration is of course needed.



MBBR-MEDIA, SPECIAL MADE IN SINTEX HOUSE

With Bio Film



### NBF Series-Packaged Sewage Treatment Plant

Compacts System designed in a Single FRP/LLDPE shell divided in compartment which converts Sewage to re-usable water

Based on Advanced MBBR Technology

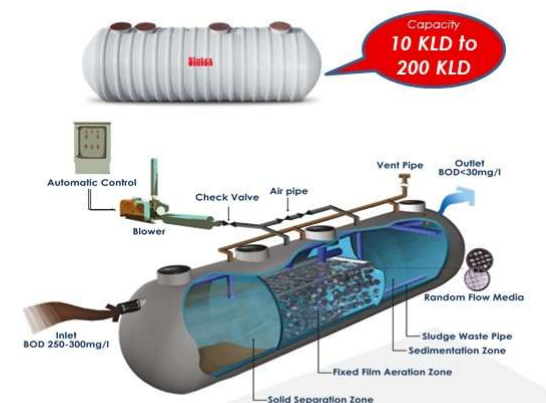
Reduces BOD (Biological Oxygen Demands) up to **95%**

**No-Leakage** in the tank: hence no soil pollution

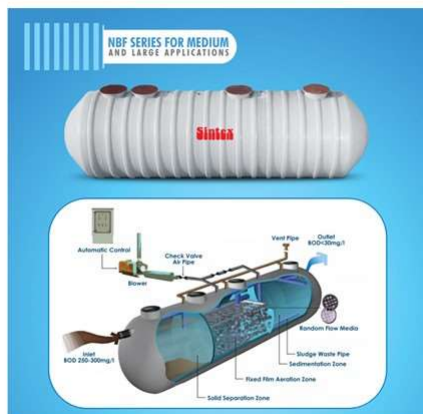
Completely **concealed system**, No-odor released directly to the environment

**Easy** to Install, operate and Easy to Relocate

Since it is installed underground hence **maximum utilization of ground Surface**



## PSTP's- Operational Principle



### OPERATION PRINCIPLE

#### 1 Solid Separation Zone (Anarobic Zone)

First stage transforms the influent solids to settled solids while allowing scum to float on the surface. It is a primary sedimentation zone in which settled sludge is stabilized by anaerobic digestion. The treatment efficiency of the chamber is in the range of 30% BOD removal.

#### 2 Aeration Zone (Aerobia Zone)

Second stage is the aerobic zone along with plastic media inside the tank which in turn increases the surface area and retains micro-organism long enough to digest the organic substance. Clear water overflows to the next treatment chamber. Air is provided through blowers and higher contact time with the Bio-film on the plastic media facilitates efficient digestion. BOD removal is around 60%.

#### 3 Final Sedimentation Zone

Final stage involves sedimentation where organic waste are settles in the sedimentation zone. The settled waste in the bottom is pumped back to the solid separation zone as a return sludge having active biomass (MLSS) to increase the efficiency of the system. The output from this zone is effluent that meets the stipulated PCB's Standards.

#### 4 Optional

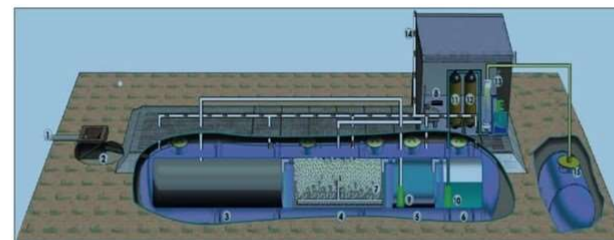
For more stringent effluent parameter, we also offer Tertiary Treatment Plant (TTP) addition to the system which does the job of filtration that further improves effluent.

## Advantages

### Sintex PSTP vs other STP

Sr. No.	Prefabricated Sintex FRP-PSTP	R.C.C./ MSFRP - Conventional STP
1	Aesthetic appearance.	Cleanliness is compromised due to foul smell and flies.
2	leak proof, no root integration and no fungal growth.	Possible in Conventional STP.
3	Installation lead time within a week.	Construction work takes around six months.
4	It can be upgraded and relocated.	No such scope available.
5	FRP tank life more than 30 years.	Life span is lesser than 20 year.
6	It can be an excellent solution, since it is a standalone process.	We may get some dead mass in clear supernatant which increases the filter load.
7	Uses High Porosity moving media for bacteria to grow.	Appropriate aeration and decanting is essential for the correct operations of these plants.
8	Useful for modification / capacity extension of existing STP.	Not applicable for any modification.
9	Increased SRT and hence well nitrified effluent and low sludge volumes.	No such scope available.

## Working Flow Diagram of PSTP's (NBF SERIES)



- |                            |                       |                             |
|----------------------------|-----------------------|-----------------------------|
| 1. INFLUENT                | 6. FILTER FEED TANK   | 11. PRESSURE SAND FILTER    |
| 2. BAR SCREEN CHAMBER      | 7. MBBR MEDIA         | 12. ACTIVATED CARBON FILTER |
| 3. ANAEROBIC & ANOXIC ZONE | 8. AIR BLOWERS        | 13. DISINFECTION            |
| 4. AEROBIC MBBR ZONE       | 9. RECIRCULATION PUMP | 14. AIR VENT                |
| 5. FINAL SEDIMENTATION     | 10. FILTER FEED PUMP  | 15. TREATED WATER TANK      |

## Best Fit For

- Industrial
- PSU's
- Residential and Commercial Complexes
- Public buildings and Government offices
- Hospitals and Hotels and Motels
- Colleges and educational institutes
- Farm Houses Bungalows
- Holiday resorts & clubs
- Ware houses
- - Automobile sector

## Results Delivered By Our System

### 1. W/O Tertiary Treatment Plant:

Sr. No.	Parameters	If Inlet	Then Outlet
1	pH	6.5 – 8.5	6.5 – 8.5
2	BOD	250-300 mg/l	< 30 mg/l
3	COD	400-600 mg/l	< 150 mg/l
4	TSS	200 mg/l	< 50 mg/l
5	FOG	40-50 ppm	< 5 mg/l

Treated Water Use - Irrigation & Gardening  
Landscaping Purpose

### 2. W/O Tertiary Treatment Plant:

Sr. No.	Parameters	If Inlet	Then Outlet
1	pH	6.5 – 8.5	6.5 – 8.5
2	BOD	250-300 mg/l	< 10 mg/l
3	COD	400-600 mg/l	< 50 mg/l
4	TSS	200 mg/l	< 10 mg/l
5	FOG	40-50 ppm	< 5 mg/l

Raw Sewage After STP After TTP



## Salient Features of PSTP-NBF System

### RANGE & SPECIFICATIONS

No. of Users	Specification	Model															
		NBF-10	NBF-15	NBF-20	NBF-25	NBF-30	NBF-35	NBF-40	NBF-45	NBF-50	NBF-60	NBF-70	NBF-80	NBF-90	NBF-100	NBF-120	NBF-15
	Residential (150 lpcd)	67	100	133	167	200	223	267	300	333	400	467	533	600	667	800	1000
	Office (80 lpcd)	125	187	250	312	375	437	500	562	625	750	875	1000	1125	1250	1500	1875
	Toilet (50 lpcd)	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2400	3000
	Educational Institutions (80 lpcd)	125	187	250	312	375	437	500	562	625	750	875	1000	1125	1250	1500	1875

• LPCD: Litres per capita per day.

## Salient Features of PWTS STBF System

SR. NO.	MODEL	NUMBER OF USERS					DIMENSIONS			
		RESIDENTIAL (150 IPCD)	OFFICE (80 IPCD)	EDUCATIONAL INSTITUTIONS (80 IPCD)	TOILET (50 IPCD)	CANTEEN (20 IPCD)	DIAMETER (MM)	HEIGHT (MM)	INLET/OUTLET PIPE (MM)	VENT (MM)
1	PWTS-STBF-0120-01	6	8	8	16	30	1300	1400	100	50
2	PWTS-STBF-0160-01	10	13	13	22	50	1440	1560	100	50
3	PWTS-STBF-0180-01	12	15	15	24	60	1490	1615	100	50
4	PWTS-STBF-0200-01	14	18	18	28	70	1540	1640	100	50
5	PWTS-STBF-0300-01	16	23	23	46	80	1830	1880	100	50
6	PWTS-STBF-0400-01	20	26	26	52	100	1900	2020	100	50
7	PWTS-STBF-0500-01	24	33	33	66	120	1970	2280	100	50
8	PWTS-STBF-0600-01	32	40	40	80	160	2070	2330	100	50

### Working Flow Diagram PSTP's (STBF-Series)



## MATERIAL OF PACKAGED SEWAGE TREATMENT PLANT

Material of Sintex PSTP's		
Sr.	Description	Material
1	Sintex FRP base Tank/STBF	Fibre Reinforced Plastic/LDPE
2	Inlet Outlet Socket	U-PVC
3	Air vent , Aeration Socket , Pump Socket	U-PVC
4	Fastener of Manhole cover	S.S.
5	Manhole Cover (Dia.-550 & 750 mm)	M.S. with Epoxy Coating
6	Manhole with Hole	FRP
7	Deadman	RCC
8	Strap	FRP
9	Turn Buckle	G.I.
10	Clamp	G.I.
11	Ribbing	U-PVC
12	Fastener for Strapping	G.I.
13	Sludge Re-circulation Pump	-
14	Blower for Aeration	Low power Consumption/imported Quality
15	Header for Blower	M.S. with Epoxy Coating

### Production Facility & Process

- ❖ We have skilled team capable of producing both LLDPE and FRP tanks
- ❖ One of the Best Chop Hoop Winding Process for FRP Material which is limited in India.
- ❖ One of the largest rotomoulding process house



( A ) THE FRP TANK PROCESS ( CHOP HOOP WINDING PROCESS ).

❖ The chop hoop process is a variation on the filament winding technology. Chop hoop is in fact a combination of a winding process and spray up.

❖ The Technique is used for the production of cylindrical storage tank.

( B ) Rotomoulding process for producing vertical and horizontal LLDPE tanks for PSTP and water storage solutions



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Leading Tomorrow Together

**Sintex**

### Service Network

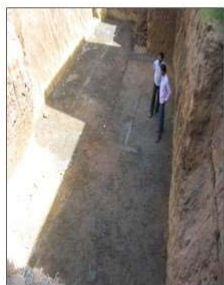
ASC Name	LOCATION
B.S ENTERPRISES	PATNA
HOME SERVICE CO	RANCHI
MAA SANTOSH SERVICE CENTRE	BALASORE
KAMAKSHI ENTERPRISES	BERHAMPUR
EUMOTICH	KOLKATA
SAI TRADERS	BHUBANESHWAR
PRANALI SERVICES	JAIPUR
SHV INFOCOM	GANDHIDHAM
SMS COOL POINT	INMEDABAD
YASH ENTERPRISES	KODINUR
Ruch Solutions	Vadodra
JAY ENTERPRISE	MEDHANA
SM ENTERPRISE	PALANPUR
SAI CONSTRUCTION	VALSAD
NIDHI ENTERPRISES	JAPUR
VAISHALI ENTERPRISES	THANE
TECHNO VISION SERVICES	NAVY MUMBAI
E.B SERVICE	DWARKA
VEERA ENTERPRISES	PUNE
HIRA ENTERPRISES	KOLHAPUR
SEVA PLUMBING	CHALISSAGON
NAV DURG ASSOCIATES	GORAKHPUR
RUDHIRA HDPE WORK	DELHI
SHREE RUDRA ENGINEERING INDIA	DELHI
DOON RO SERVICES	DEHRADUN
M.M.BROTHERS	PULWAMA
BADWAN BROTHERS HDPE WORK	MOHALI
DREAMS KITCHEN	CHENNAI
MODERN ENTERPRISES	COMBATORE
SVLOG ENTERPRISES PRIVATE LIMITED	COCHIN
VINAYAKA FACILITY SERVICES	HUBLI
ESHWAR SERVICE CENTRE	BENGALURU



**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

### Installation of PSTP - NBF System



150 mm PCC



Lowering of deadmen



Filling with gravel size 4.5 to 12.5 mm



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Leading Tomorrow Together

**Sintex**

### Contd.



Unloading of the System



Refilling of trench



Piping Work



Blowers in room

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

### Triple Benefits to clients



**Land Saving:** As the system goes underground above space can be used for gardening purpose or as parking lot.

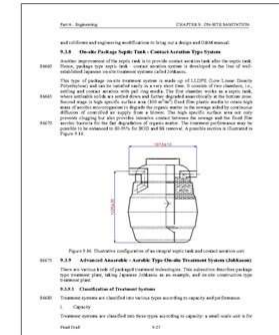
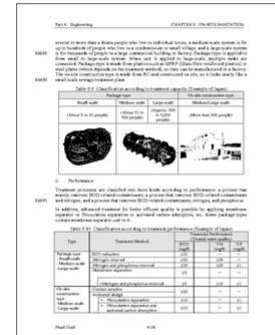
**Beautification:** As the system is odor free a children park can be there on top of the system.

**Responsibility:** Individual responsibilities can be easily given to the owners of the scheme.

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Leading Tomorrow Together

**Sintex**

### Central Pollution Enrollment Copy

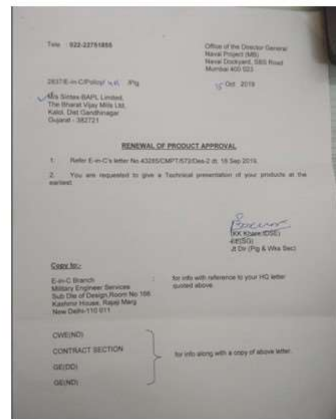


Sintex PSTP MBBR Technology in  
CPHEEO Sewage Manual  
Prepared By Central Ministry Of  
Urban Development Since 2012

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

### Approval from Military Engineering Services



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Leading Tomorrow Together

**Sintex**

### List of Customers



**LODHA**

**Zydus  
Cadila**



**Shree  
Cement**



**TVS**

**torrent  
POWER**

**VOLTAS**

**Godrej** | PROPERTIES

**BHEL**

**Cognizant**

**DLF**

**TATA  
TATA PROJECTS**

**Mahindra  
Rise.**

**JK TYRE  
TOTAL CONTROL**

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**Sintex**

Video Link for more Info....

Please click on below youtube link

**UNDER GROUND WATER STORAGE SOLUTIONS: PRODUCT RANGE**

S. No.	Type of Water Storage Solutions	Tank	Model	Capacity Range
1	Underground Water Storage	Roto Moulded Tank	UGWT	1.00 KL to 6.00 KL
		Fibreglass Reinforced Plastic Tank	CWUG	10.00 KL to 50 KL

Roto Moulded Tank      FRP Tank

**WELSPUN GROUP**  
Leading Tomorrow Together

**Sintex**

# THANK YOU!

Sintex BAPL Limited, Plastics Division, Kalol (N. Gujarat) 382 721 India

**Sintex**<sup>®</sup>



**WELSPUN GROUP**  
Leading Tomorrow Together

## 6.3.4. インド側協賛メンバー Daiki Axis India Pvt. Ltd.による発表

# Daiki-Axis -Johkasou

Onsite Used water management concept and Technology from Japan  
and how it can contribute to Swachh Bharat

Treat Used water at site & Reuse at site

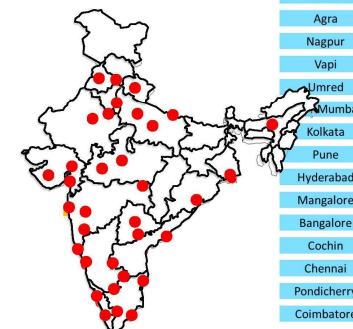


29th Nov 2023

STRICTLY PRIVATE AND CONFIDENTIAL

## Progress made by Daiki Axis In India on Decentralized Wastewater Management..

- Daiki Axis India focuses purely on Johkasou business with Two 100% Local subsidiary companies working under MAKE IN INDIA
- Daiki Axis India is at the forefront in promoting of Decentralized Wastewater Management concept – Treat at Site , Reuse at Site  
- Extensive Offline, online and personal promotion to key stakeholders
- Close working with IIT, BIS, FICCI, CII, IPA , SVSU and industries for development of market
- Over 700 projects in India covering
  - Residential- individual houses, villas, farm houses, communities, slum area
  - Schools& colleges, Hospitals
  - Offices, IT Parks
  - Hotels, restaurants, resorts
  - Public Parks, Drains dropping to river
- Customer coverage
  - Government, Industries, Commercial, Builders
- Geographical Coverage
  - J&K, Himanchal, UK, UP, Punjab, Haryana, Delhi, Rajasthan, MP, Gujarat, Maharashtra, Goa, Karnataka, Andhra, Telangana, Tamil Nadu, Kerala, West Bengal, Odisha, Jharkhand
- 26 Local partner companies supporting sales, construction and maintenance
- 2 Factories, 100+ employees and growing..



2

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## Daiki Axis Contributing to Swachh Bharat



## Daiki Axis India has established business model for Decentralized Wastewater solution

- De-centralized used water management in India is still under nascent stage hence DAI is working on multiple fronts to support the customers and improve the industry skill and quality level in India

1. FIELD SURVEY, REQUIREMENT STUDY, DPR SUPPORT
2. TWO STAGE ENGINEERING SUPPORT FOR THE PROJECT
3. MANUFACTURING - MAKE IN INDIA AS PER JOHKASOU STANDARD & INDIAN REQUIREMENTS
4. CONSTRUCTION QUALITY AND SUPERVISION AS PER DAIKI STANDARD
5. O&M , USER TRAINING AND ASSET MANAGEMENT SUPPORT AS PER DAIKI STD.

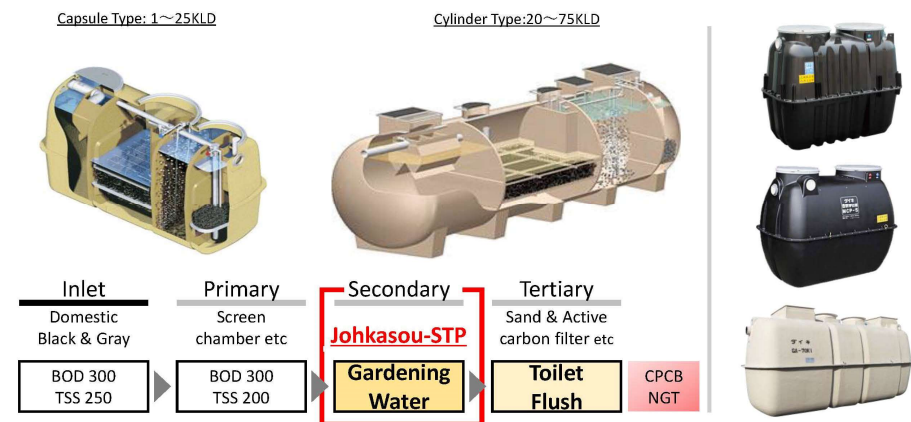
Simultaneously work on Development of Indian Market for Awareness creation, product enhancement, cost reduction, standard formation, skill development



4

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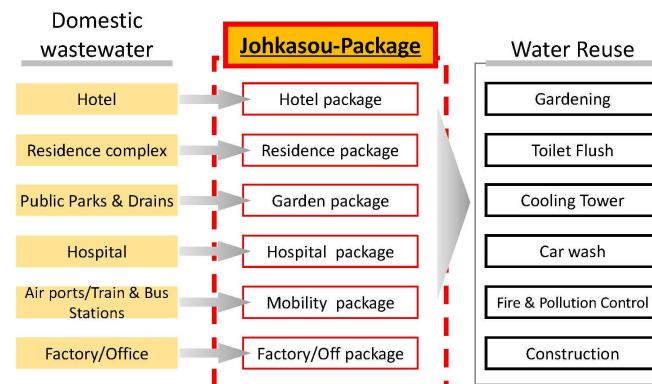
## JOHKASOU-STP from Japan –MADE IN INDIA for INDIA



5

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## Scheme designs for different type of users based on Johkasou technology



6

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## Few Case Studies from India

### NMCG UDHAM SINGH NAGAR 1300(500,300,500) KLD VILLAGE SANITATION RIVER CLEANING PROJECTS, UTTARAKHAND



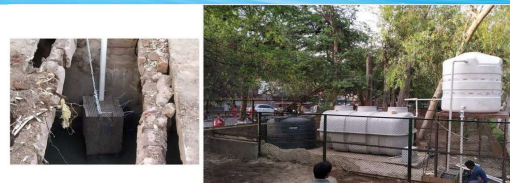
8

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STRICTLY PRIVATE AND CONFIDENTIAL

[illegible]

STRICTLY PRIVATE AND CONFIDENTIAL



- ✓ BOD : 200 >> 8
- ✓ COD : 350 >> 35
- ✓ TSS : 280 >> 12

- DDA have 50 plants installed working since 2021
- Impact:
  - Saving of 900 Million Litres of ground water every year.
  - 1000 Acres of Green Area covered in Delhi.
  - Revival of many water bodies
  - Reducing load of 900 million waste water flowing into river Yamuna
- Execution Period Less than one year

Narendra Nagar Garden

R.O.D, 250 > 10  
500, 510 > 40  
150, 100 > 10

RECYCLED

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## Decentralized wastewater management in a campus – NTPC, Mouda



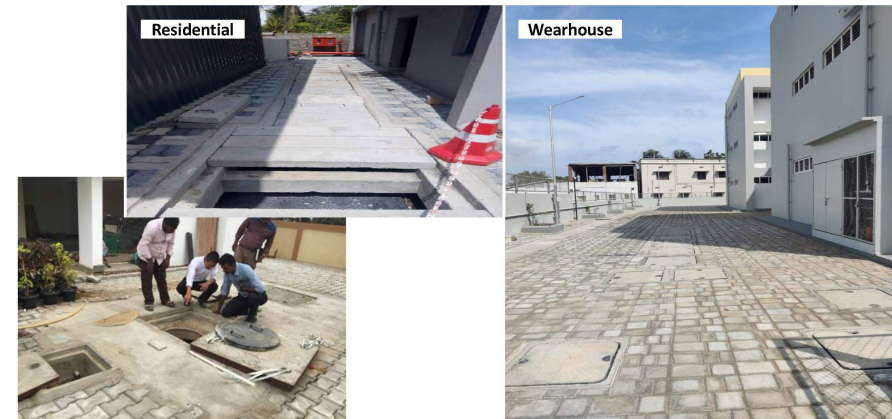
### Centralized STP

Total CAPEX : 12crore  
 • STP (1 Location)  
 • Piping 2.5km  
 OPEX :  
 • 2 operators  
 • Total 12.50kW

### De-centralized STP

Total CAPEX : 3crore  
 • STP (6 Location)  
 • Piping 0.2km  
 OPEX :  
 • No operator  
 • Total 1.75kW (Less transfer)

## Site references \_ under car parking



## Site references \_ under the Green area



## Certification and Awards

■ Daiiki Axis India brought Johkasou concept in India and spread and educate it to India. Installed more than 700 Johkasou in India



## JOHKASOU-STP factory in Vapi, Gujarat

- Johkasou-STP factory in Japan & India (Gujarat)



Daiki  
AXIS

17

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## Daiki Axis India started Johkasou Skill Development Program

- Daiki Axis follow Indian Government program in this important and growing area under Swachh Bharat, Skill development Program for STP Operators based on Japanese Johkasou skill development templated is already started ..



Daiki  
AXIS

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## Daiki Axis Johkasou Factory, Palwal, Haryana



Daiki  
AXIS

18

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## Key Challenges & Opportunities


- ❖ Error Products. – Johkasou need to compete in the market against poorly designed and made products available at very low prices.. - We are working with BIS to finalize Standard in next few months.
- ❖ Misuse of Johkasou Name- Me too.. – Several local companies selling copy or unauthorized Johkasou products.. - Need to consider how to stop misuse of Johkasou name in India..
- ❖ Lack of systematic eco-system development, low user awareness, standard and too many alternatives . – Johkasou type Act and integrated plan is needed in India to organize the area..
- ❖ Low market volume, and High Freight and Tax structure , 30-40% cost gets added by Freight and Taxes..
- ❖ Low enforcement of compliance - MC can suggest some policy incentive or methods to improve compliance as it will help in faster development and cost reduction.
- ❖ Quality and Skill level of construction and O&M. – MC can support to accelerate the training and skill development program already started by DAI & SVSU..

Daiki  
AXIS

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### 6.3.5. 日本側協賛メンバー クボタ浄化槽システム株式会社による発表

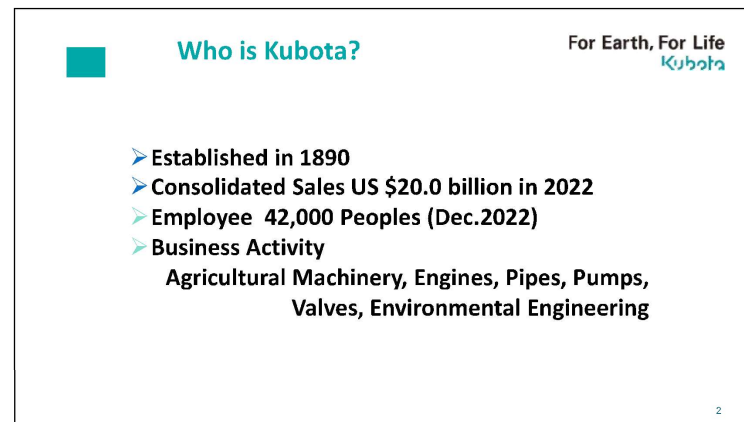


For Earth, For Life  
Kubota

**ON YOUR SIDE**

**Who is KUBOTA?**

Advanced on-site sewage treatment system  
KUBOTA JOHKASOU SYSTEM

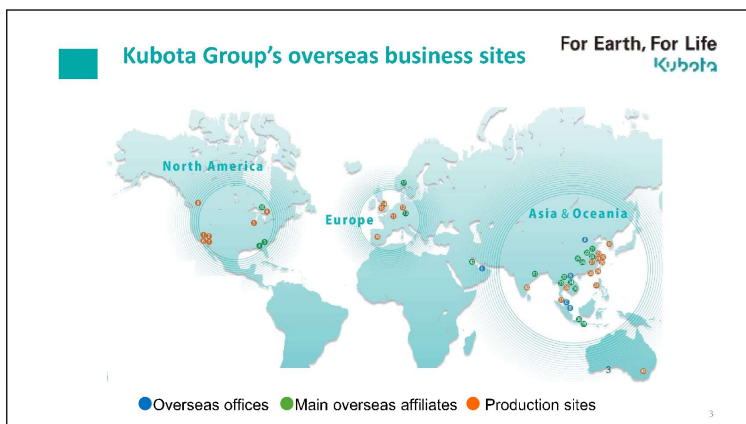


For Earth, For Life  
Kubota

**Who is Kubota?**

- Established in 1890
- Consolidated Sales US \$20.0 billion in 2022
- Employee 42,000 Peoples (Dec.2022)
- Business Activity
  - Agricultural Machinery, Engines, Pipes, Pumps, Valves, Environmental Engineering

2



Kubota Group's overseas business sites

For Earth, For Life  
Kubota

North America Europe Asia & Oceania

● Overseas offices ● Main overseas affiliates ● Production sites

3



Farm & Industrial Machinery

For Earth, For Life  
Kubota

Tractor Combine

Residential/Commercial Mower Diesel Engines Construction Equipment

Residential Commercial Mower Diesel Engines Construction Equipment

4

## Infrastructure, Pipes

For Earth, For Life  
Kubota



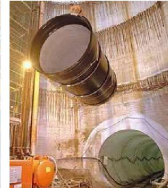
Cast Steel Columns



Butterfly Valves



Steel Pipe



Ductile Iron Pipe

5

## Water, Wastewater, Environmental Engineering

For Earth, For Life  
Kubota



Water & Wastewater  
Engineering



Submerged Membrane Unit  
(MBR)



Anaerobic MBR



Sludge Treatment  
Plant



Johkaso

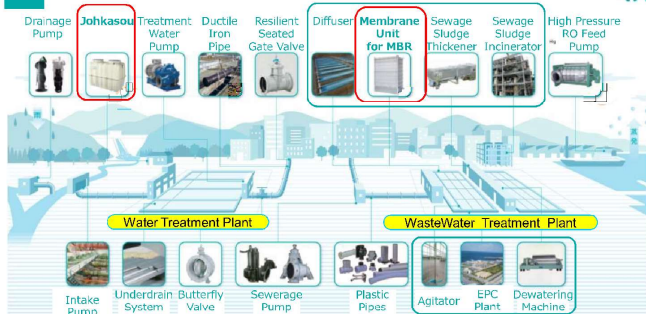


Pumps

6

## Kubota's Water/Wastewater Related Products

For Earth, For Life  
Kubota



- Wide range of Water and Wastewater related products. Equipment/system+Pump, Pipe and Valve.
- Serving for Water Environment from water resource to water resource.

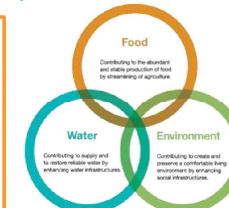
7

## Kubota products and the SDGs

For Earth, For Life  
Kubota



Tractor



Construction machinery



Sewage Treatment Plant



Membrane



Johkaso

8

## Advantages of Kubota Johkasou

For Earth, For Life  
Kubota

1. Kubota has a history of more than 50 years since it started manufacturing and selling Johkasou.
2. Quality of treated water by "Johkasou" is same as that of sewerage systems.  
(BOD removal ratio  $\geq 90\%$ , Effluent BOD  $\leq 20\text{mg/L}$ )



9

## Advantages of Kubota Johkasou

For Earth, For Life  
Kubota

3. We Kubota exports the same models of Johkasou certified in Japan.

### Structure and function Approval of Johkasou type in Japan

- Performance tests  $\times$  and approvals of the type (Minister of Land, infrastructure and Transport and Johkasou Law) are required for Johkasou.
- $\times$  Tested by the authorized third party



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## Large-scale wastewater treatment tank

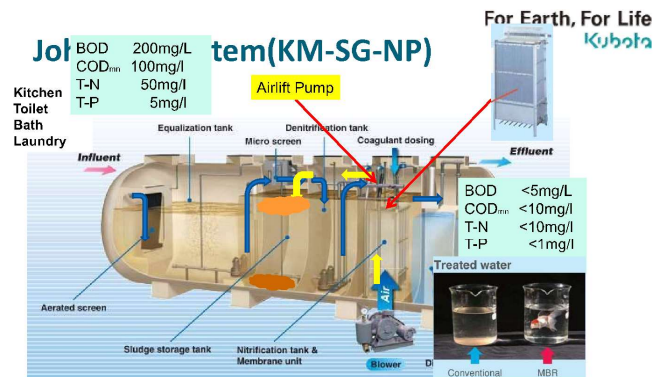
For Earth, For Life  
Kubota



- Type : KM-SG-NP
- Flow rate: about Max 500m³/day
- Treatment process :  
Membrane bioreactor(MBR)  
process
- Size  
2,500 $\Phi$  X H2,800 mm

11

11



12

12

## Manufacturing process

For Earth, For Life  
Kubota

Small size

Press molding



Middle or Large size

Spray molding



Rotary Molding



13

13

## Necessity of Maintenance and Desludging

For Earth, For Life  
Kubota

- 1)Johkasou will continuously produce high quality of treated water during long time by performing regular maintenance.
- 2)Maintenance of Johkasou includes 2 main works (checking and desludging).
  - Checking: checking operation of Johkasou to acknowledge when it is necessary to do cleaning in early stage.
  - desludging: removing sludge and scum stored inside Johkasou to restore treatment ability.
- 3)Not performing maintenance regularly will lead to reduce treatment ability and fail to produce expected quality of treated water.

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## Solution with Johkasou in Asia

For Earth, For Life  
Kubota

Hospital, school, plant, hotel, etc., sewage in Vietnam



15

## Solution with Johkasou in Asia

For Earth, For Life  
Kubota

Factory, Building, etc., sewage in Myanmar



16

## 6.3.6. 日本側協賛メンバー フジクリーン工業株式会社による発表

# Introduction of FujiClean Overseas Business

Yosuke Tabata  
FujiClean Co., Ltd.

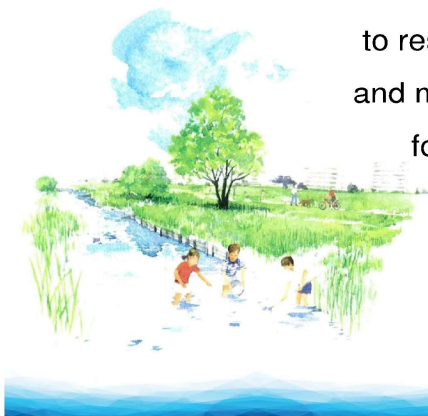
1<sup>st</sup> Management Council Meeting  
November 29, 2023



## Our Mission



Our mission is  
to restore natural waterways  
and make them clean enough  
for children to play in.



3

## About us



Founded: 1961

Employees: 570 people

Annual Sales: 22 billion JPY

Main Business: Manufacture and Sales of  
Onsite wastewater treatment systems



## Awards



- 1 14th Environmental Awards in 1987
- 2 Wastec Award 2003
- 3 31th Environmental Awards in 2004
- 4 31th Environmental Awards in 2004
- 5 31th Excellent environmental equipment recognition in 2005
- 6 19th Chunichi Industrial Technology Award in 2006
- 7 Japan Water Award
- 8 JEC Innovation Awards
- 9 Aichi Environmental Award
- 10 38th Environmental Awards in 2011
- 11 Global Niche Top 100 Company 2020

- ...Excellent prize
- ...Committee Special Award
- ...Outstanding performance award
- ...Award of the minister of Environment
- ...Small and Medium Enterprise Agency Award
- ...Chunichi Industrial Technology Award
- ...Minister of Economy, Trade and Industry Award
- ...Environment & Recycling Division
- ...Silver prize
- ...Excellent prize
- ...Selected as one of Top 100 companies

4

## FujiClean on world media



Our stories were featured in  
**Newsweek, Forbes and Bloomberg.**



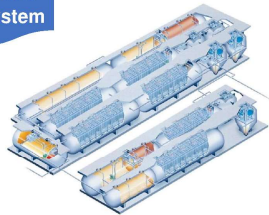
Newsweek Magazine  
May 14, 2021 Issue



5

## Compact Sewage Treatment Plant FujiClean

**FGU System**



### Easy Installation & Less restrictions

FGU can be installed in areas sewerage is not installable due to geographic conditions.

Case 1.  
Areas separated by the river



Case 2.  
Areas separated by the mountain



### Case Studies in Japan

Place : Tomamae town in Hokkaido  
Hydraulic Load : 165 m<sup>3</sup>/Day  
Usage start : From 2008



Place : Abira town in Hokkaido  
Hydraulic Load : 209 m<sup>3</sup>/Day  
Usage start : From 2011



Place : Hirosaki town in Aomori  
Hydraulic Load : 80 m<sup>3</sup>/Day  
Usage start : From 2020



7

## Products for Overseas Market



**CE/CEN model**



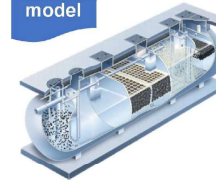
**ACE model**



**CV model**



**PCN model**



**CRX II model**



**FujiMAC Blower**



6

## Overseas Business FujiClean Wastewater Treatment Systems



8

## USA



### FujiClean USA, LLC

41-2 Greenwood Road Brunswick, Maine 04011 U.S.A  
Phone: +1 207 406 2927 Fax: +1 207 406 2929  
www.fujicleanusa.com

- ◆ Founded in July 2013
- ◆ CE models; certified to NSF40  
CEN models; certified to NSF40/245
- ◆ 1<sup>st</sup> Manufacturing location; Brunswick, Maine  
2<sup>nd</sup> Manufacturing location; Augusta, Georgia



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## Europe



### Ammermann Umwelttechnik GmbH

Am Dobben 4, 26639 Wiesmoor, Germany  
Phone: +49 4944 6060 http://ammermann-gmbh.de

- ◆ Started business as FujiClean EU in 2017  
CEN models; Certified to the EN 12566-3
- ◆ Manufacturing location; Wiesmoor, Niedersachsen



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## Australia



### FujiClean Australia Pty. Ltd.

2/176 Siganto Drive, Helensvale Queensland 4212  
Phone: +61 7 5580 0927  
www.fujiclean.com.au

- ◆ Founded in January 2008
- ◆ ACE1200, ACE3000; Advanced Secondary system  
✓ Certified to the latest Australian Standard 1546.3
- ◆ FujiClean system is available in all states.
- ◆ 1<sup>st</sup> Manufacturing location; Near Gold Coast, QLD  
2<sup>nd</sup> Manufacturing location; Near Melbourne, VIC



10

## The Other Countries



12

# Air Pumps



13

## FujiClean's business Policy

FujiClean will keep striving to pursue clean water environment with the three core factors we set.



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## Air Pumps



- ◆ For wastewater treatment systems, Koi market, and aqua culture
- ◆ Product Line-up : 40L/min ~ 300L/min



Quiet

Energy Saving

Long-lasting

After-sales Services

14



**FujiClean Co.,Ltd.**  
 Address: 4-1-4 Imaike, Chikusa, Nagoya, Aichi 464-0850 JAPAN  
 Tel: +81-52-733-0863 (Overseas Business Division)  
 Website: <https://fujicleanglobal.com>

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## Introduction to Daiki Axis Johkasou

Japanese Domestic Wastewater Treatment System



### • Company Profile

- Daiki Axis Johkasou
- Summary

### Company Profile

3

#### **Daiki Axis Co., Ltd.**

Date Founded: 12<sup>th</sup> July, 1958  
 Employees: 1,052 (December 31, 2022)  
 Main business: Environmental equipment  
 Household equipment  
 Renewable energy

#### Environmental equipment

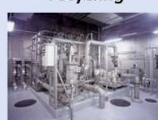
Johkasou



Industrial wastewater



Wastewater recycling



Groundwater drinkable system



### Company Profile - Johkasou factories in Japan

4

Matsuyama Factory



Fukushima Factory



Tsushima Factory



Shinshu Factory



## Company Profile – Overseas factories

5

2015 INDONESIA FACTORY

2022 Sri Lanka FACTORY

2018 CHINA FACTORY

2022 INDIA NCR FACTORY

2019 INDIA Vapi FACTORY



- Company Profile

- Daiki Axis Johkasou

- Summary

## Daiki Axis Johkasou

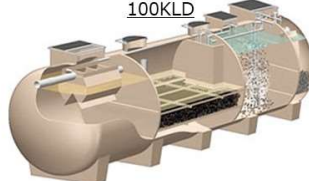
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■ Johkasou is a de-centralized STP for domestic wastewater treatment, Daiki-Axis Manufacture, Sale, Install & Maintain it in Japan & All over the world

Capsule Type: 1KLD

Capsule Type: 1~25KLD

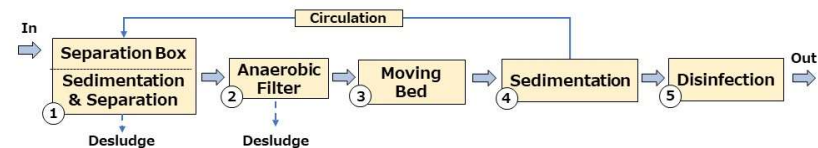
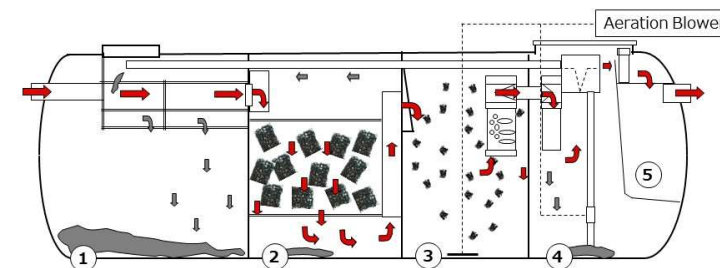
Cylinder Type: 20~100KLD



Inlet Parameter		A I Outflow	A I J Outflow	A I M Outflow
6-8	pH	6-8	6-8	6-8
300	BOD	20	10	5
450	COD	100	50	10
240	SS	50	20	5
50	O & G	10	10	5
50	T-N	45	20	10

## Daiki Axis Johkasou – Inside image and flow

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## Daiki Axis Johkasou – Project references

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### Under ground installation



### Above ground installation



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AXIS

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## Summary

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### What Daiki Axis can provide...

- Technological capability based on 65 years experience
- Lower cost product compare than the product manufactured in Japan
- Total domestic wastewater treatment services

### What Daiki Axis required...

- Reconsideration of effluent water standard for Johkasou
- Strengthen the monitoring system (application → approval → monitoring)

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