



# Johkasou-STP

Johkasou is Packaged Sewage Treatment Plant from Japan

-Contribute for 'Environment'-

PROTECT×CHANGE



STRICTLY PRIVATE AND CONFIDENTIAL

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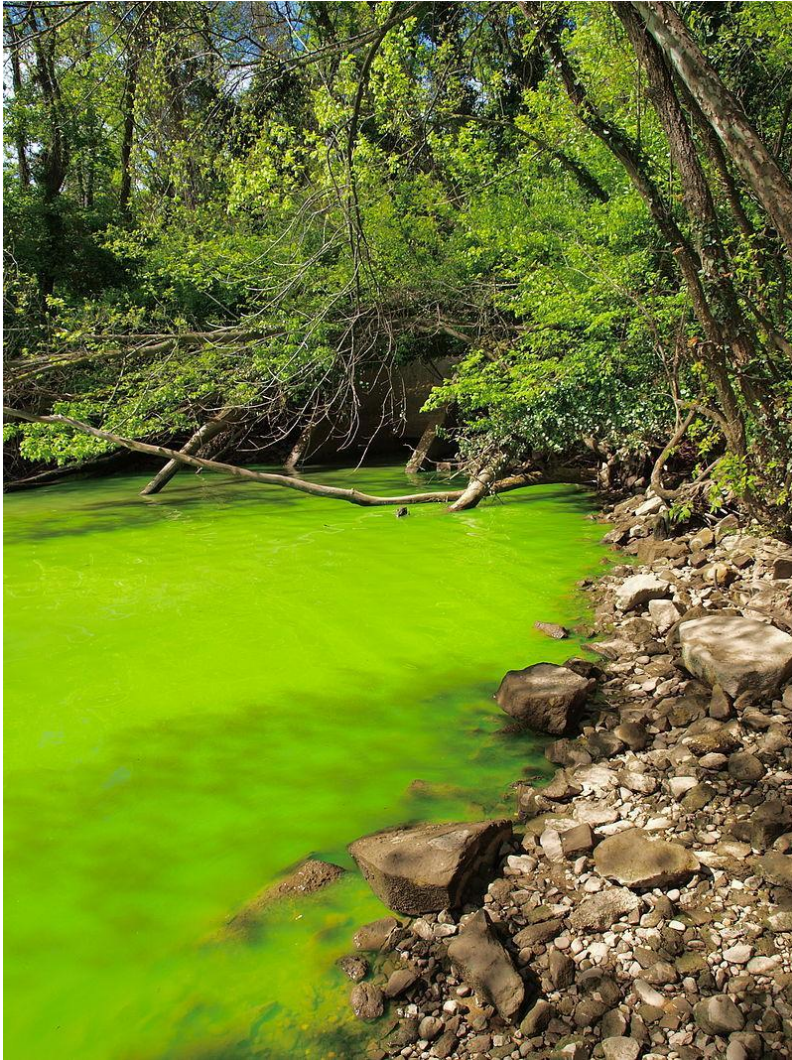
**Installation Examples**

1

**What is the “Johakasou”**

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# Pollution in Natural Water Body





# Example of Water Pollution in Japan

- Water pollution in Japan during rapid economic growth



Sumida River (Tokyo) in '70s



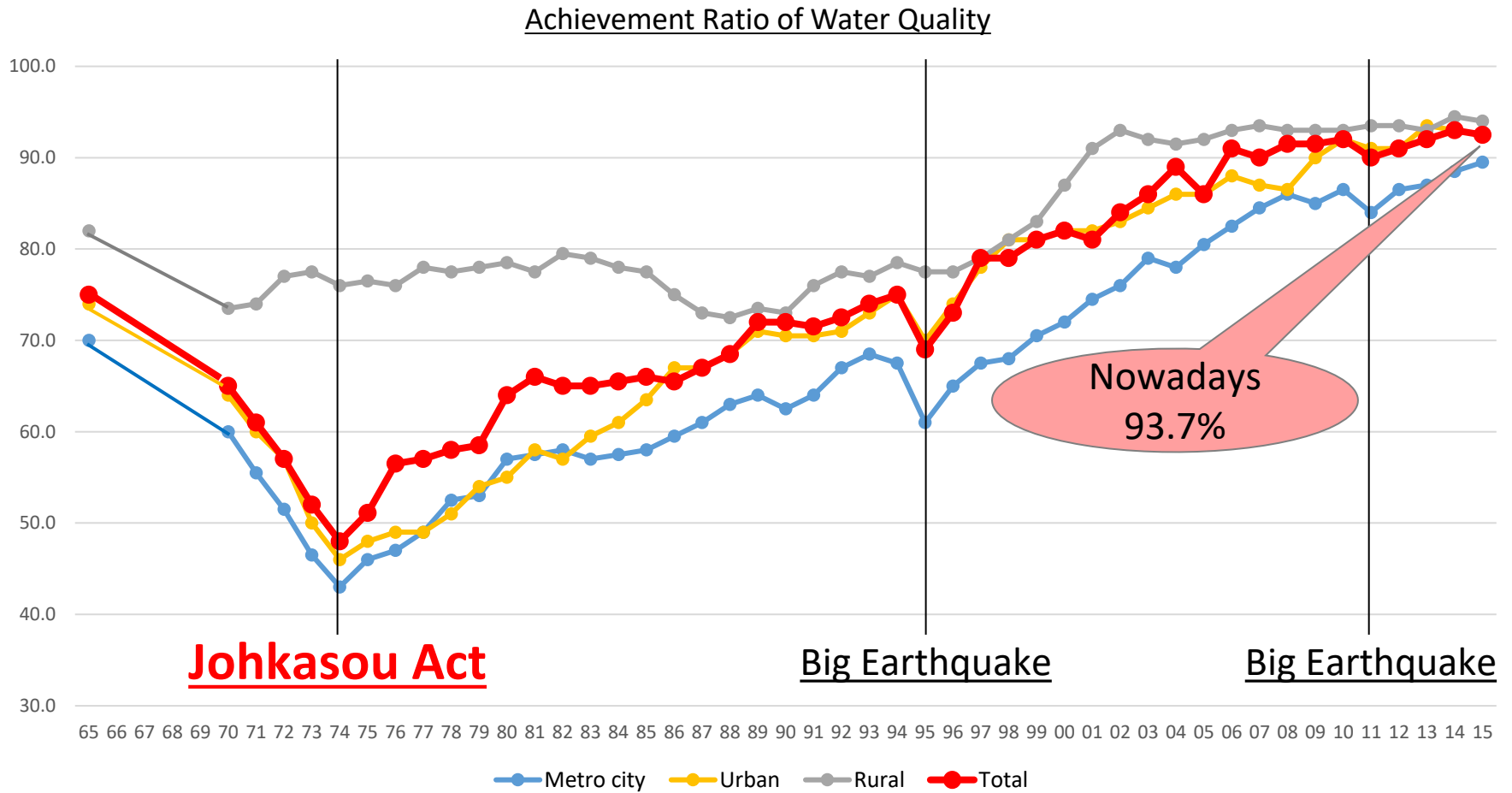
Biwa Lake (Shiga) in '70



Dohkai Bay (Kitakyushu) in '60s and Current

# Water Quality in Japan

- In 1974, Johkasou-STP became Act under water act. And environment of Japanese natural water recover year by year



# Steps for Proper STP installation by Regulation

## ◆ Article in the Johkasou Act

- ① Johkasou installation (✕related to “Building Standard Law”)
- ② Approval of johkasou models
- ③ Operation/maintenance of johkasou
- ④ Johkasou business for Installation and Operation/Maintenance
- ⑤ Nationally qualified “Johkasou technicians”

# ①Johkasou installation

the head of the special ward or the mayor where the building official is staffed to review buildings related to johkasou, or the governor

## (Night soil treatment by Johkasou)

**Article 3** In addition to treated by sewage treatment system with final sewage treatment facility, or the night soil treatment facility pursuant to Article 8 of the Waste Management and Public Cleansing Act, no person shall discharge night soil to the public water area unless it is treated by johkasou.

(2) If it is not treated by johkasou, no person shall discharge domestic wastewater, which is generated by persons who use johkasou for treating night soil, into public water area.

(3) Persons who use a johkasou shall observe to the rule of using johkasou, the Ordinance of the Environment Ministry, to keep the johkasou in normal function.

**Article 3-2** Except using a johkasou, no person shall install sanitary equipment that is connected to

<https://www.env.go.jp/recycle/jokaso/en/index.html>

**All buidling have to install “Johkasou” by the Johkasu Act**



## ② Approval of Johkasou Models

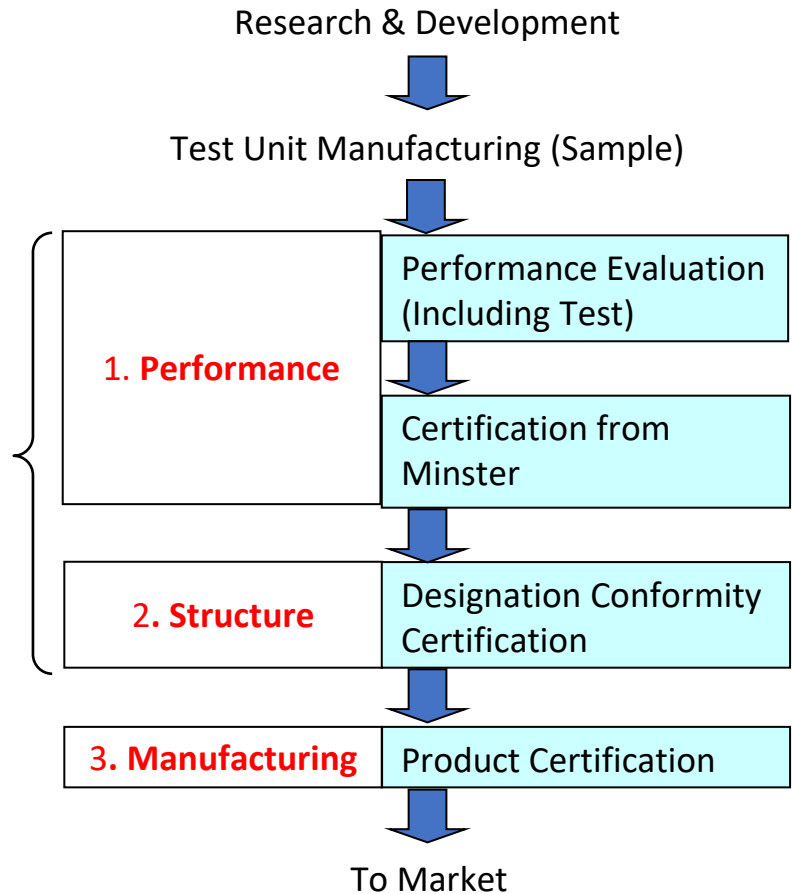
**Without Government Certificate, Johkasou cannot be in Japan.**

1. MLIT (Ministry of Land, Infrastructure, Transportation and Tourism of Japan) certifies the **performance** of Johkasou.
1. The Building Center of Japan certifies for **Structure** of Johkasou.
1. **Manufacturing process** needs to be approved by government.

Building Standards Act

Johokasou Act

### Product Certification Process



**Prevents the installation of inappropriate products**

# ③ Operaiton/ Maintanance for johkaosu

## 1. Frequency

- Individual housing once a half year
- The factory and commercial building is monthly

## 2. Maintenance business license

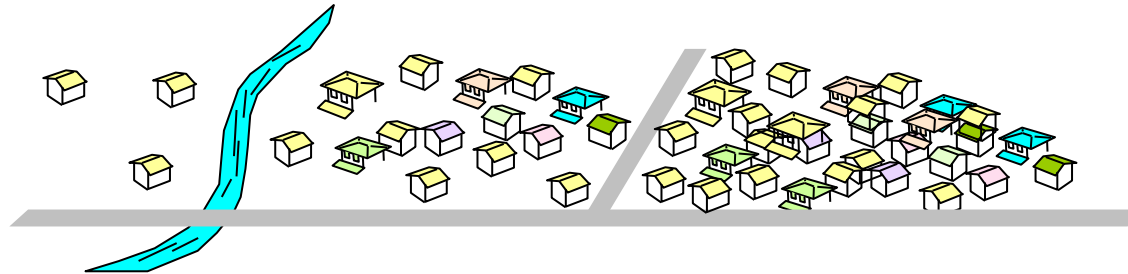
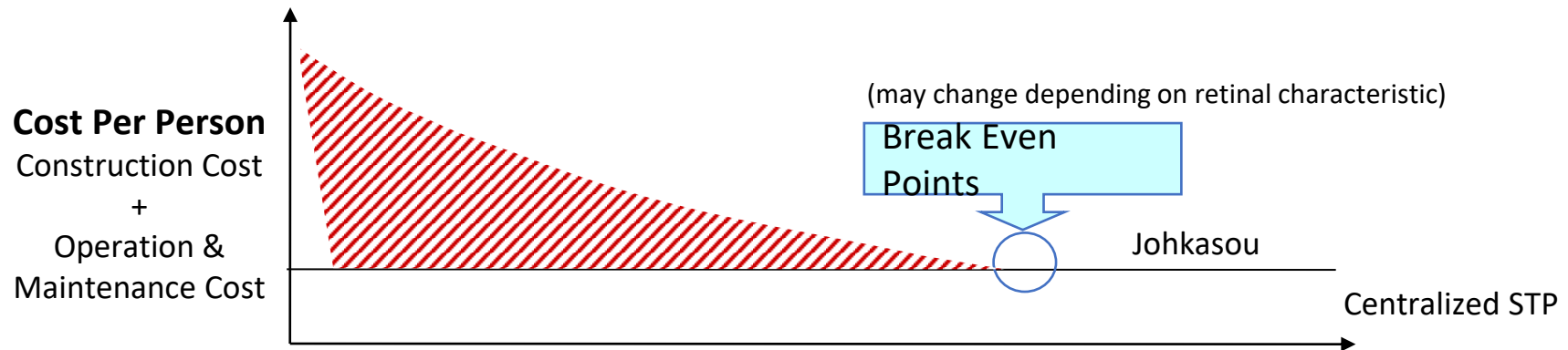
- Employee with a technician license
- Registration with each local government

## 3. Mandated reporting and storage

- Large facilities are obliged to keep reports
- Regular submission of reports produced by third parties

**Can be operated continuously with correct performance**

# Centralized STP and Johkasou STP

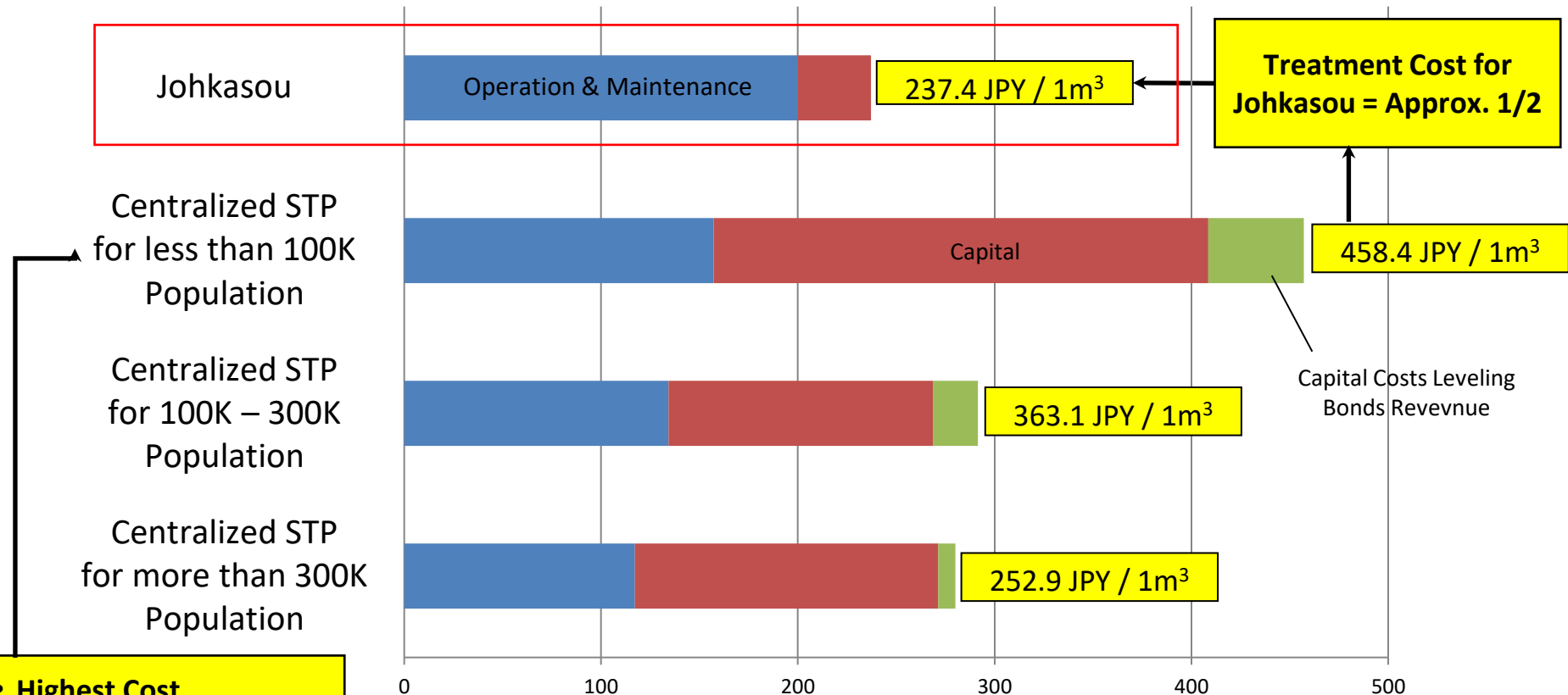


Population Density = Low Area  
Johkasou = Effective

Population Density = High Area  
Centralized STP = Effective

**Installation of Johkasou can be adjusted to  
development speed !!!**

# Comparison of Cost for Each Wastewater Treatment Plant



Treatment Cost for Johkasou = Approx. 1/2

458.4 JPY / 1m³

Capital Costs Leveling Bonds Revenue

363.1 JPY / 1m³

252.9 JPY / 1m³

## Wastewater Treatment Cost (Unit: JPY/m³)

(This cost is for 5 – 15 years after start operating WWTP)

\* Date is from Ministry of Environment

- Highest Cost
- 34.2% of municipalities are in this category in Japan.
- Approx. 2,000m³/day Capacity System



# Example of change in waste water treatment system in japan

## 1. Shimojo in Nagano (Population = 4,167 No. of Household = 1,213, )

- Wastewater Coverage Ration against Population = 93% (in 2007)
  - Cost of Centralize STP (Quotation Basis) = 44.5 Billion JPY
    - Johkasou (Actual Cost) = 6.2 Billion JPY (819 Units)
- Project cost is reduced by 86% (38.3 Billion JPY)

## 2. Miharumachi in Fukushima (Population = 9,190)

- Wastewater Coverage Ration against Population = 58% (in 2007)
  - Cost of Community STP (Quotation Basis) = 10 Million JPY / Household
    - Johkasou (Actual Cost) = 1.1 Million JPY / Household
- Project cost is reduced by 89% (8,9 Million JPY / Household)

## 3. Ota City , Shimane (Population = 550 No. of Household = 230)

- Wastewater Coverage Ration against Population = 19% (in 2007 as a whole Ota City)
- Cost of Centralize STP = 10 Billion JPY
  - Johkasou = 1.5Billion JPY (207 Units)
- Project cost is reduced by 85% (8.5Billion JPY)

# Type of Johaksou in Japan

## 小規模 浄化槽 5～50人槽

For Small Size  
PE = 5 - 50  
(1 - 10m<sup>3</sup>/day)

### Contents

放流水質 (mg/ℓ以下)

コンパクト型	MCP型 処理人員/5～10	BOD 20	SS 20	6 Products Line UP
ディスポーザ対応型	DSJ型 処理人員/5～10	BOD 15	T-N 20 SS 20	
高度処理型	KRN型 処理人員/5～10	BOD 20	T-N 20 SS 15	
高度処理型	DRN型 処理人員/5～10	BOD 10	T-N 10 SS 10	
コンパクト型	TRB型 処理人員/14～50	BOD 20	COD 30 SS 20	
高度処理型	KRN型 処理人員/14～50	BOD 20	T-N 20 SS 15	

## 中規模 浄化槽 51～2,675人槽

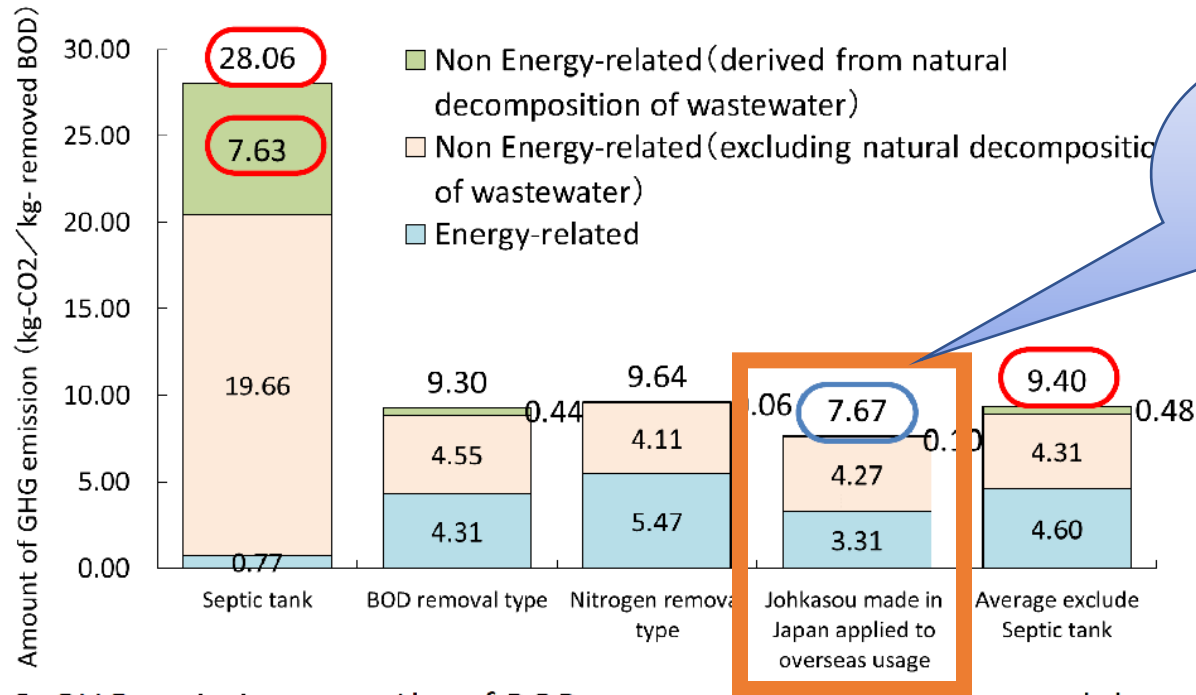
For Middle Size  
PE = 51 - 2,675  
(10.2 - 535m<sup>3</sup>/day)

コンパクト型	RBF型	BOD 20	COD 30	SS 20	pH値 20	6 Products Line UP		
ベーシック型	CN2型	BOD 20						
ベーシック型	CR2型	BOD 20						
高度処理型(膜分離)	FBF型	BOD 10	COD 15	SS 5	pH値 5			
高度処理型(膜分離)	FCF型	BOD 5	COD 10	T-N 20	T-P 1		SS 5	pH値 3
高度処理型(膜分離)	FN2F型	BOD 5	COD 10	T-N 10	T-P 0.5		SS 5	pH値 5

# Comparison Table of STP: Discharge GHG

- 1) Facility scale : 1,000L/person · d (individual house 5PE)
- 2) Utilizing condition : Equivalent to performance evaluation test  
by EU regional standard EN12566-3+A2Waste

Comparison of GHG emissions considering natural decomposition of effluent / untreated wastewater



**Loest  
discharge  
GHG**

Figure -6 GHG emissions per 1kg of BOD removed considering natural decomposition of effluent / untreated wastewater (CO<sub>2</sub> equivalent)

**“Johkasou” can reduce GHG more than the 3times!!!**

# Making the way for SDGs



**Green product certification for STP for  
the first time in India**



2

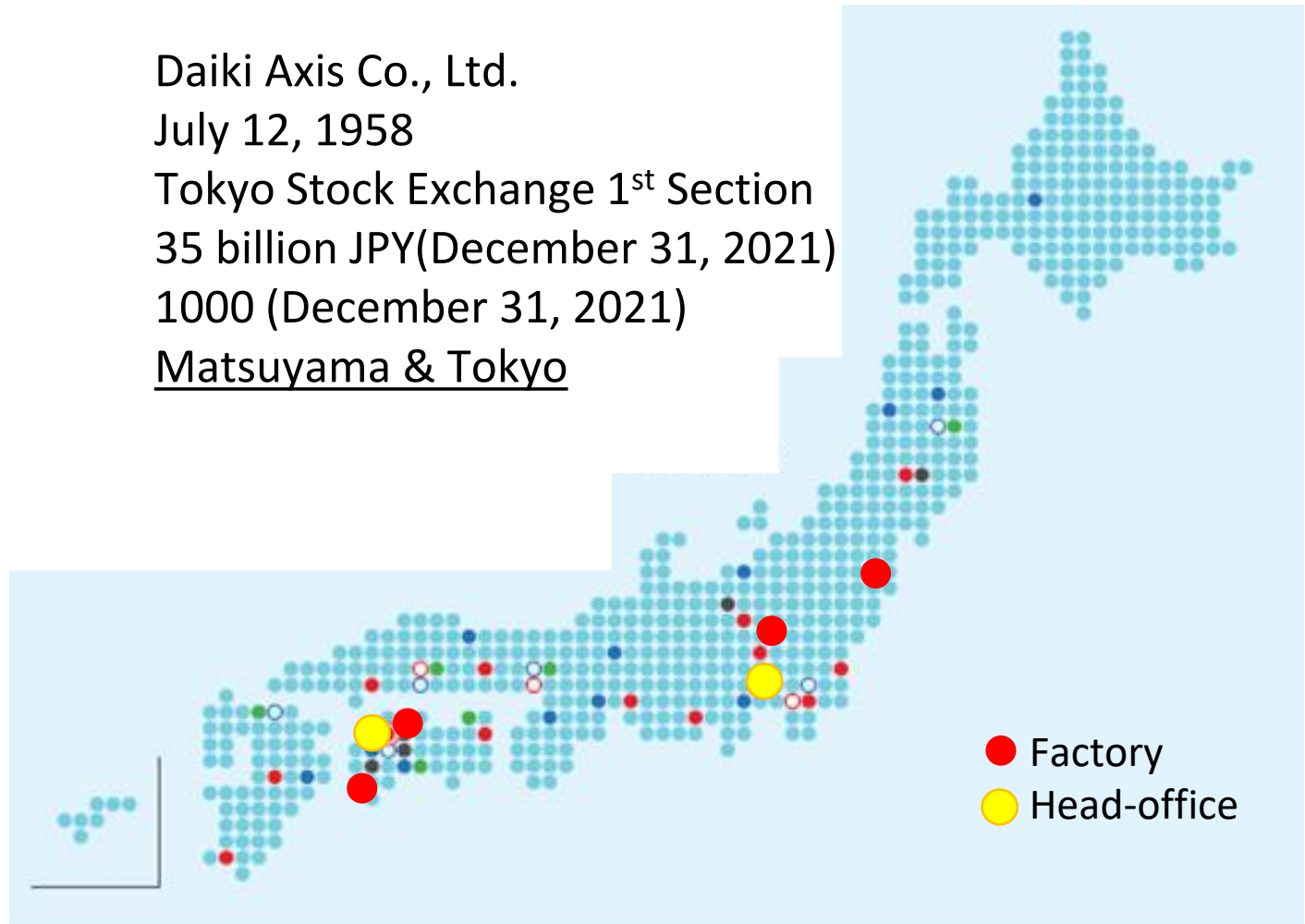
## **Company Profile & Activities**

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# Daiki Axis Company Profile

## Company Profile:

Company Name:	Daiki Axis Co., Ltd.
Date Founded:	July 12, 1958
Listed:	Tokyo Stock Exchange 1 <sup>st</sup> Section
Turnover:	35 billion JPY(December 31, 2021)
Employees:	1000 (December 31, 2021)
Headquarter:	<u>Matsuyama &amp; Tokyo</u>

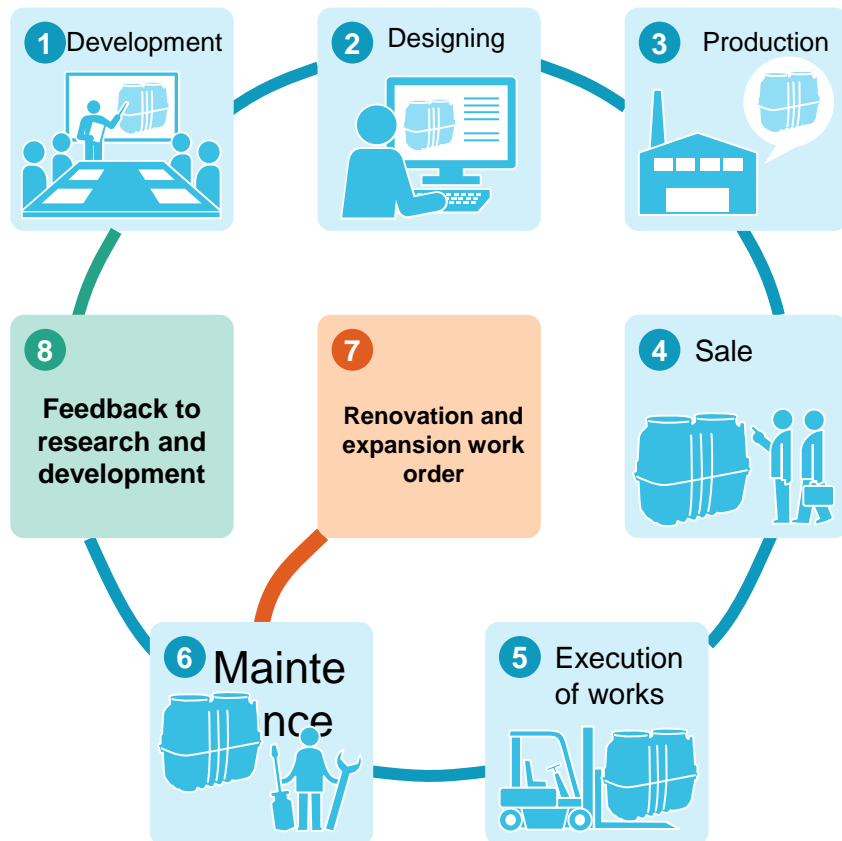


# Daiki Axis Business in Japan

## ■ Integrated system business

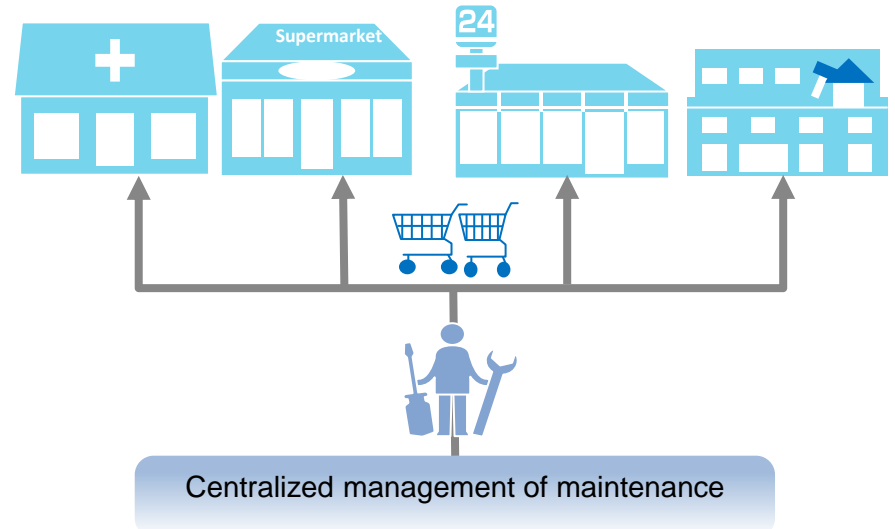
Designing, production, execution of works, sales, maintenance, and analysis

### Flow of the Integrated Maintenance System

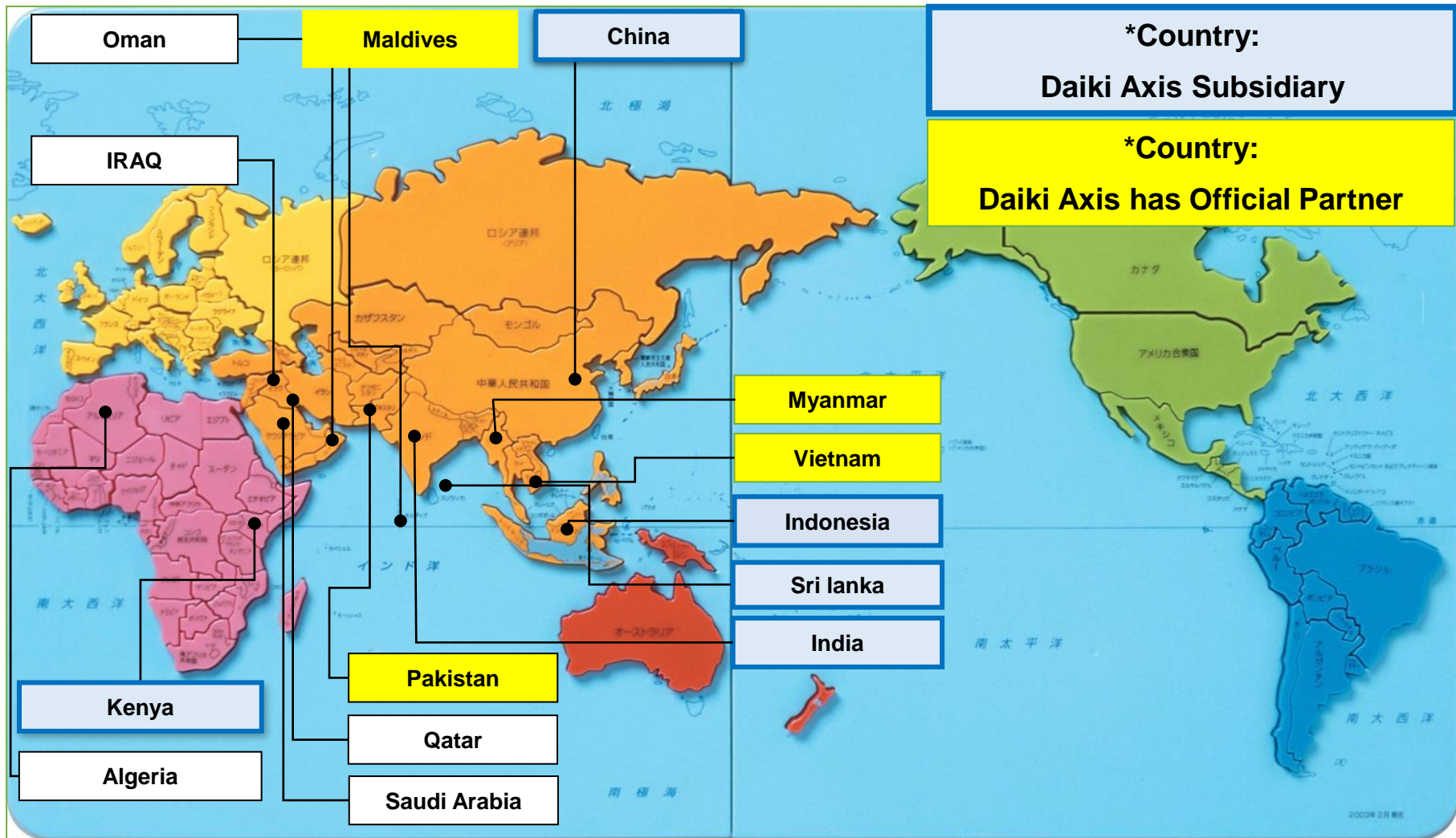


### Reaching out to chain stores throughout Japan

**Daiki group give the perfect support and solution by the total service and over 60years experience**



# Daiki Axis Johkasou Delivery Record 2021



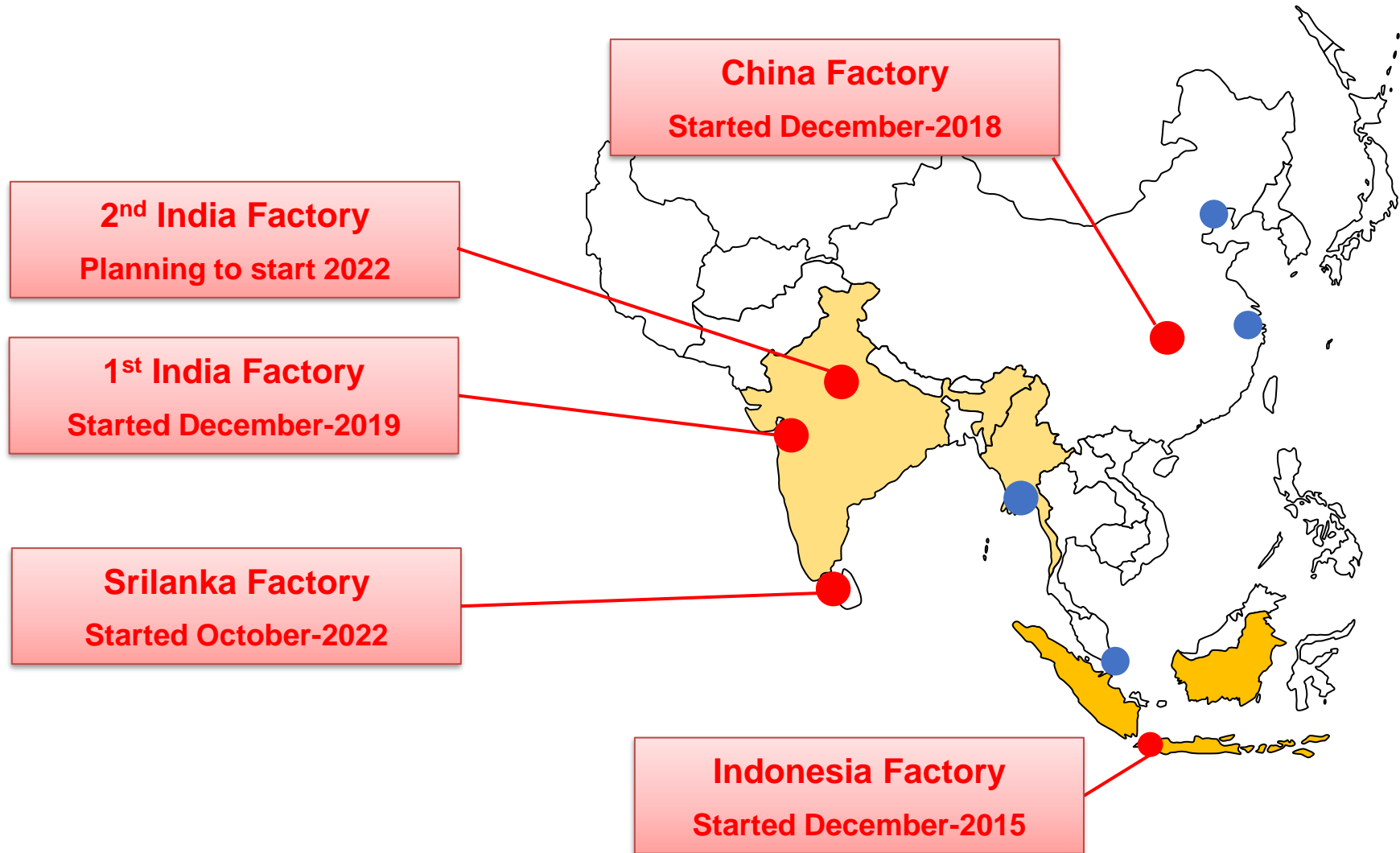
Overseas Factory: Capsule Type = 1,000 Units  
 Japan Factory: Capsule Type = 10,000 Units

Cylindrical Type = 500 Units  
 Cylindrical Type = 1,000 Units



# Daiki Axis Overseas Factory

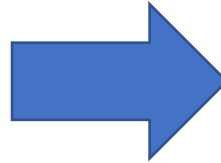
- Now we have 4 factory & new factories in north side of India



# Factory in Indonesia

## Factory in Indonesia and Factories in Japan are:

- Same Production Process
- Using Same Production Equipment



## Product in overseas factory

- **High Quality Product**  
**(Same Quality as Product in Japan)**
- **Local Cost**



Cylindrical Molding Machine



Automatic Opener



Automatic Molding Machine



Indonesia Factory Appearance



In The Factory



Work Landscape

3

## Product Structure & USP

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TOILET SEWARAGE



KITCHEN WASTE



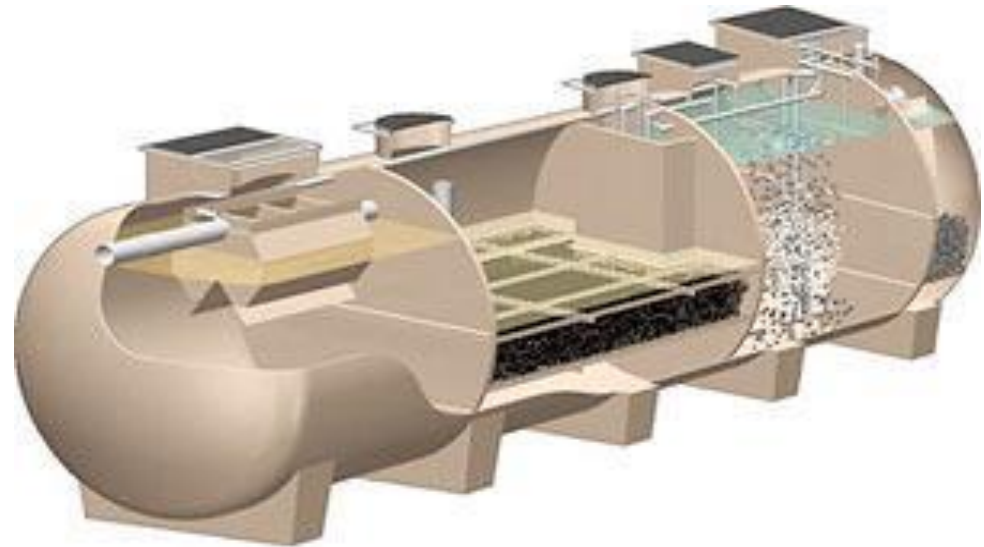
SHOWER WASTE



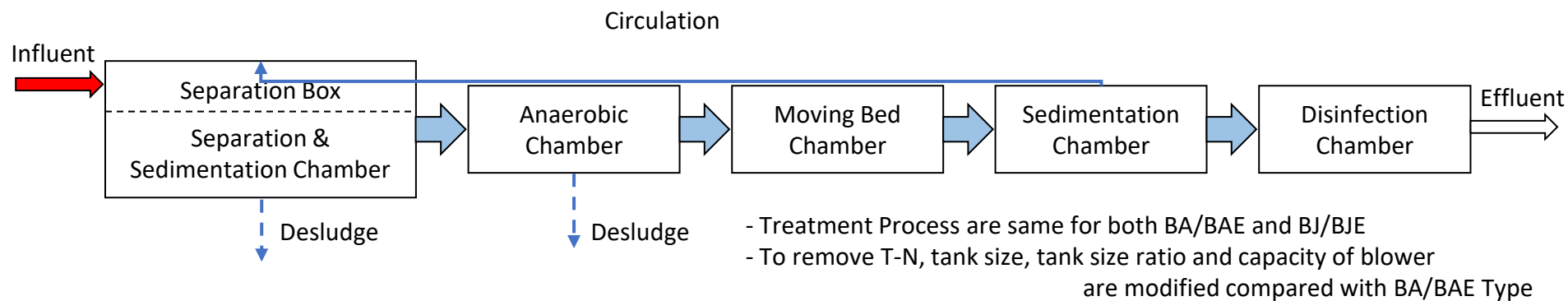
WASHING WASTE



# JOHKASOU-STP



## Flow for the treatment system



# JOHKASOU-STP

- We make JOHKASOU-STP from 100% FRP (no corrosion material)



Capsule Type: 1~15m<sup>3</sup>/day



Cylinder Type: 20~50m<sup>3</sup>/day

# Water volume calculation in japan

**Treatment  
Capability?**

**Already consider FOOD condition**

- Japan : BOD200
- Oversea : BOD300

Typical Quantity and Quality for Domestic Wastewater				
Types of Wastewater		Quantity	BOD	
			Load	Concentration
		L/Person • Day	g/Person • Day	mg/L
Black	Toilet	50	13	260
Gray	Kitchen	30	18	600
	Washing Clothes	40	9	75
	Bath & Shower	50		
	Sink	20		
	Cleaning and others	10		
Total		200	40	200

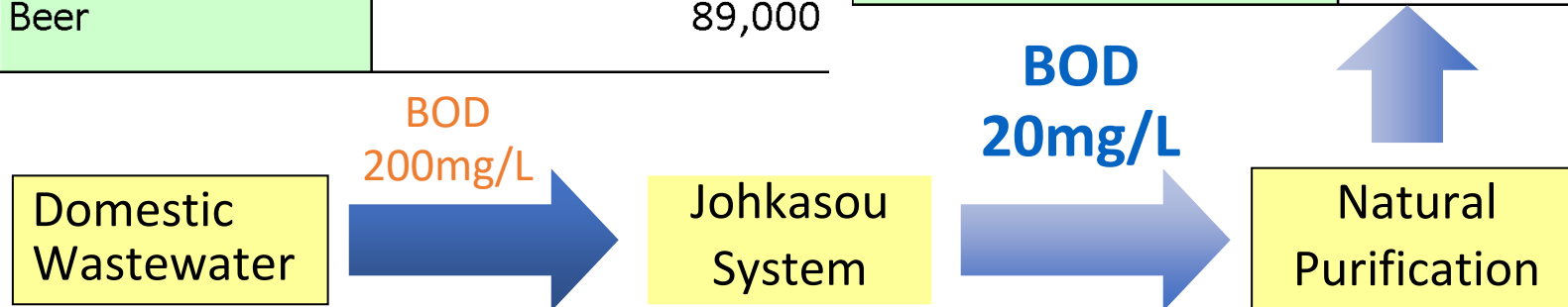
900mg/L

BOD 300mg/L

# What is the “BOD”

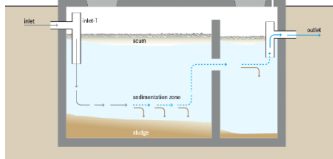
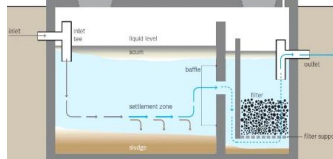
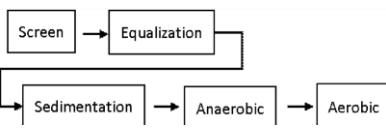

Exmaples of BOD Level	
Specimen	BOD Concentration (mg/L)
Water Used for Washing Rice	2,400
Miso-Soup	3,700
Coffee (Can)	116,000
Japanese Sake	188,000
Beer	89,000

Example of Indicator for Living Creature in Water	
Living Creature in Water	BOD Concentration (mg/L)
Fresh Water Crab, Trout	$\leq 2.5$
Fresh Water Clam	2.5 - 5
Carp	5.0 - 10.0
Possible to Use as Water Supply in Japan	$\leq 3.0$



# Comparison Table of STP: Johaksou Performance

**Johkasou Performance is very much better than septic tank!!!**

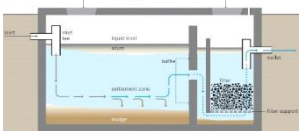

	Septic Tank (RC)	Modified Septic Tank (RC)	Sewage Treatment Plant (RC)	Johkasou (FRP)
				
<b>For</b>	<b>Black Water</b>	<b>Black &amp; Gray Water</b>		
<b>Process</b>	<b>Sedimentation</b>	<b>Sedimentation + Anaerobic</b>	<b>Sedimentation + Anaerobic + Aerobic</b>	
<b>Treated water (BOD)</b>	<b>100 - 150 mg/L</b>	<b>75 - 100 mg/L</b>	<b>&lt;20 mg/L</b>	<b>&lt;20mg/L</b>
<b>Effective Capacity</b>	<b>Small 1 - 2m3/day</b>	<b>Small - Middle 1 - 200 m3/day</b>	<b>Middle - Large 500 m3/day ~</b>	<b>Small - Middle 1m3/day - 500m3/day</b>
<b>Construction</b> (Example: 20m3/d)	<b>2 weeks</b>	<b>3 weeks</b>	<b>2 months</b>	<b>1 week</b>
<b>Space</b> (Example: 20m3/d)	<b>1</b>	<b>1</b>	<b>1.2</b>	<b>0.9</b>



# Comparison Table of STP: Discharge Waste

1) Target area : 5,000person

2) Waste water volume : 1,000m<sup>3</sup>/d

STP type	Bio Septic Tank		Johkasou
			
For	Black Water	Black & Gray Water	
Treated water (BOD)	250 mg/L (100 + 250 )	100 mg/L	<20 mg/L
Discharge waste	98,000 kg/Year	43,000 kg/Year	14,000 kg/Year
	7 times	3 times	1

**“Johkasou” can reduce 84,000kg/year waste discharge !!!**

# Treated Water Quality request

**Table.1 How to treat the each parameter**

	Intel	Outlet	Step 1 GT	Step 2 GT BAE	Step 3 GT BJE	Step 4 GT BJE Coagulation	Step 5 GT MBR Coagulation	Step 6 GT MBR Coagulation UF
BOD	300	15	300	20	15	15	5	1
COD	200	100	200	50	30	30	20	1
Oil	80	5	50	10	5	5	5	1
T-N	50	0.5	50	45	20	20	10	0.5
T-P	10	3	10	8	8	1	1	1
Cost image			0.2	1	1.5	2	5	10

**Table.2 Cost comparison**

BOD			Remove	Cost
Inlet	Outlet	Remove	Rate	
300	5	295	1.05	5.00
300	15	285	1.02	1.50
300	20	280	1.00	1.00

**To spend 5 times the cost on a 5% difference !!!**

# Performance of JOHKASOU-STP

- Johkasou-STP BA-type & BJ-type are low maintenance & energy consumption model  
And it's approved government regulation

## Influent and Effluent Water Quality

Item		Unit	Influent Water Quality*1	BA Type Effluent Water Quality	BJ Type Effluent Water Quality
pH		-	6 – 8	6 - 8	6 - 8
BOD		mg/L	300	$\leq 20$	$\leq 10$
COD		mg/L	400	$\leq 50$	$\leq 25$
SS		mg/L	240	$\leq 30$	$\leq 20$
Oil & Grease		mg/L	40	$\leq 10$	$\leq 10$
T-P		mg/L	7.5	6 - 7	6 - 7
T-N		mg/L	50	45	$\leq 20$
T-N	NOX-N	mg/L	-	-	$\leq 10$
T-K-N	NH <sub>4</sub> -N	mg/L	(50)	40 - 45	$\leq 10$
Coliforms		MPN /100mL	-	$\leq 3000$	$\leq 3000$

Note: \*1: This is the expected influent water quality based on our experience.

\*2: This is the discharge water quality needs to meet with this system.

# BA Type Spec Table

Inflow Capacity	Type	Tank 1 [m]			Tank 2 [m]			Volume [m³]	Weight [kg]		Electric Consumption		Chlrine Consumption		Total Operation Cost		
		W	L	H	W	L	H				[kWh/day]	[USD/day]	[kg/day]	[USD/day]	[USD/day]	[USD/year]	
1 m³/day	BA-1/C	1.06	1.89	1.60				1.73	340			0.67	0.06	0.01	0.01	0.07	25.73
2 m³/day	BA-2/C	1.06	1.89	1.60				1.73	340			0.67	0.06	0.01	0.01	0.07	25.73
3 m³/day	BA-3/C	1.06	2.33	1.60				2.21	390			0.67	0.06	0.01	0.01	0.07	25.73
4 m³/day	BA-4/C	1.06	2.86	1.60				2.79	430			0.98	0.09	0.02	0.02	0.10	38.01
5 m³/day	BA-5/C	1.06	3.48	1.60				3.46	490			1.90	0.17	0.02	0.02	0.19	68.28
6 m³/day	BA-6/C	1.70	3.47	1.95				6.24	610			1.90	0.17	0.02	0.02	0.19	68.28
8 m³/day	BA-8/C	2.20	3.60	1.95				8.67	860			2.46	0.22	0.03	0.02	0.25	89.49
10 m³/day	BA-10/C	2.20	3.60	1.95				8.67	860			2.98	0.27	0.04	0.03	0.30	109.44
12 m³/day	BA-12/C	2.20	4.85	2.25				13.81	1,360			3.65	0.33	0.04	0.03	0.36	131.52
15 m³/day	BA-15/C	2.20	4.85	2.25				13.81	1,360			4.61	0.41	0.05	0.04	0.45	165.97
20 m³/day	BA-20/S1	φ 2170	5.37	2.30				16.60	1,270			5.95	0.54	0.07	0.06	0.59	215.96
25 m³/day	BA-25/S1	φ 2170	6.03	2.30				18.92	1,430			7.30	0.66	0.09	0.07	0.73	265.95
30 m³/day	BA-30/S1	φ 2170	7.13	2.30				22.54	1,690			9.22	0.83	0.10	0.08	0.91	331.95
35 m³/day	BA-35/S1	φ 2170	7.77	2.30				24.66	1,840			9.22	0.83	0.12	0.10	0.93	337.79
40 m³/day	BA-40/S1	φ 2170	8.67	2.30				27.64	2,050			10.27	0.92	0.14	0.11	1.04	378.32
45 m³/day	BA-45/S1	φ 2170	9.67	2.30				30.73	2,290			11.90	1.07	0.15	0.12	1.19	434.85
50 m³/day	BA-50/S1	φ 2170	10.67	2.30				34.23	2,530			13.82	1.24	0.17	0.14	1.38	503.76
55 m³/day	BAE-55/S2	φ 2170	6.14	2.30	φ 2170	6.62	2.30	39.84	1,670	1,330	20.16	1.81	0.19	0.15	1.97	717.74	
60 m³/day	BAE-60/S2	φ 2170	6.68	2.30	φ 2170	7.01	2.30	42.90	1,820	1,410	23.04	2.07	0.20	0.16	2.23	815.26	
65 m³/day	BAE-65/S2	φ 2170	7.20	2.30	φ 2170	7.39	2.30	45.86	1,960	1,490	25.73	2.32	0.22	0.18	2.49	909.40	
70 m³/day	BAE-70/S2	φ 2170	7.74	2.30	φ 2170	7.78	2.30	49.19	2,110	1,570	27.65	2.49	0.24	0.19	2.68	978.32	
75 m³/day	BAE-75/S2	φ 2170	8.27	2.30	φ 2170	8.16	2.30	52.18	2,250	1,640	27.65	2.49	0.25	0.20	2.69	981.24	
80 m³/day	BAE-80/S2	φ 2170	8.81	2.30	φ 2170	8.63	2.30	55.51	2,400	1,740	29.38	2.64	0.27	0.22	2.86	1043.84	
85 m³/day	BAE-85/S2	φ 2170	9.34	2.30	φ 2170	9.14	2.30	58.92	2,540	1,840	29.18	2.63	0.29	0.23	2.86	1043.37	
90 m³/day	BAE-90/S2	φ 2170	9.87	2.30	φ 2170	9.67	2.30	62.40	2,690	1,950	33.02	2.97	0.30	0.24	3.21	1172.44	
95 m³/day	BAE-95/S2	φ 2170	10.40	2.30	φ 2170	10.18	2.30	65.82	2,830	2,050	36.86	3.32	0.32	0.26	3.57	1304.42	
100 m³/day	BAE-100/S2	φ 2170	10.94	2.30	φ 2170	10.99	2.30	70.24	2,980	2,210	36.86	3.32	0.34	0.27	3.59	1310.26	

- Note:
1. For electric consumption, use Loading Factor = 80%
  2. 1 year = 365 days of operation
  3. For operation cost, desludging is not considered because it depends on the region and also the operation condition.
  4. Chlrine unit cost: 0.8USD/kg
  5. Electric unit cost: 0.09USD/kwh

# How to decide the Size ①

1) Inflow BOD : 300mg/L

2) Inflow water volume : 10.1m<sup>3</sup>/day

Inflow Capacity	Model	Tank 1 [m]		
		W	L	H
8 m <sup>3</sup> /day	BAE-8/C	2.20	3.60	1.98
10 m <sup>3</sup> /day	BAE-10/C	2.20	3.60	1.98
12 m <sup>3</sup> /day	BAE-12/C	2.20	4.85	2.28
15 m <sup>3</sup> /day	BAE-15/C	2.20	4.85	2.28

BAE-10	10m <sup>3</sup> /day	1 0 . 1 > 1 0 ... ×
BAE-12	12m <sup>3</sup> /day	1 0 . 1 ≤ 1 2 ... ◎

**BAE-12**

## How to decide the Size ②

1) Inflow BOD : 300mg/L

2) Number of users

A : Hotel : 200person × 200L/person · Day  
= 40m<sup>3</sup>/d = BAE40

B : Office : 200person × 50L/person · Day  
= 10m<sup>3</sup>/d = BAE10

C : Public toilet : 200person/time × 15L/time · Day  
= 3m<sup>3</sup>/d = BAE3



## How to decide the Size ③

- 1) Inflow BOD : **400mg/L** (Standard 300mg/L)
- 2) Inflow water volume : 10.1m<sup>3</sup>/day
- 3) BOD-Load : 10.1m<sup>3</sup>/day × 400mg/L = 4,040 g/day

BAE-10	10m <sup>3</sup> /day(Inlet:BOD300mg/ℓ)	10×300=3000g/day
BAE-12	12m <sup>3</sup> /day(Inlet:BOD300mg/ℓ)	12×300=3600g/day
BAE-15	15m <sup>3</sup> /day(Inlet:BOD300mg/ℓ)	15×300=4500g/day

BAE-10	3000g/day	4 0 4 0 > 3 0 0 0 ... ×
BAE-12	3600g/day	4 0 4 0 > 3 6 0 0 ... ×
BAE-15	4500g/day	4 0 4 0 ≤ 4 5 0 0 ... ◎

**BAE-15**

# Unique sales points & Features of 'Johkasou-STP'

- Johkasou-STP solve all your problem about domestic waste water treatment

50% Save  
Energy Cost

No need Operator

Quick Maintenance

Nitrogen Treatment

No Leak Smell  
No noisy Sound

No need  
Equalization Tank

Shock Flow  
Control

1 day Installation

High Treatment  
Performance

# 1 day Installation

- 1 day installation: just connect inlet & outlet pipe, and electric cable!





# Installation condition\_Under Green Area

- JOHKASOU-STP can be installed under green area



Hotel\_ 100m<sup>3</sup>/day



Hotel\_ 50m<sup>3</sup>/day

# Installation condition\_Under Car Parking

- JOHKASOU-STP can be installed under car parking



Car parking\_ 40m<sup>3</sup>/day



Apartment top floor\_ 15m<sup>3</sup>/day



# Installation condition\_Under Car Parking

- Of course, it can be installed above ground & basement floor



Public Sewage\_ 35m<sup>3</sup>/day



Hotel\_ 25m<sup>3</sup>/day

# Function of 'Johkasou STP'\_ Blower

- Small air blower is the only product that Jhokaso STP require electricity

Noise?

**Less noise! Just below 48db**

- ✓ Roots-type blower : 65db or more  
It's like a truck engine sounds
- ✓ Our blower sound is like vibration of your mobile phone!!



# USPs\_Running Cost\_ Electric consumption

- Save the energy is important for saving the environment
  - For example in 50KLD, conventional STP use 6 times more electric energy!!

## Running Cost?

	10m3/d		50m3/d		100m3/d	
	Blower	Pump	Blower	Pump	Blower	Pump
DaikiAxis Johkasou-STP	0.08kwh	0kwh	0.74kwh	0kwh	1.98kwh	0kwh
Conventional STP	1.50kwh	0.38kwh	3.75kwh	2.25kwh	7.50kwh	2.25kwh

10m3/d

- $0.08\text{kwh} \times 24\text{h} \times 365\text{ days} \times \text{USD}0.1 = \text{USD}70.00$
- $(1.50 + 0.38)\text{kwh} \times 24\text{h} \times 365\text{ days} \times \text{USD}0.1 = \text{USD}1645.00$

1,575USD

50m3/d

- $0.74\text{kwh} \times 24\text{h} \times 365\text{ days} \times \text{USD}0.1 = \text{USD}648.00$
- $(3.75 + 2.25)\text{kwh} \times 24\text{h} \times 365\text{ days} \times \text{USD}0.1 = \text{USD}5254.00$

4,606USD

100m3/d

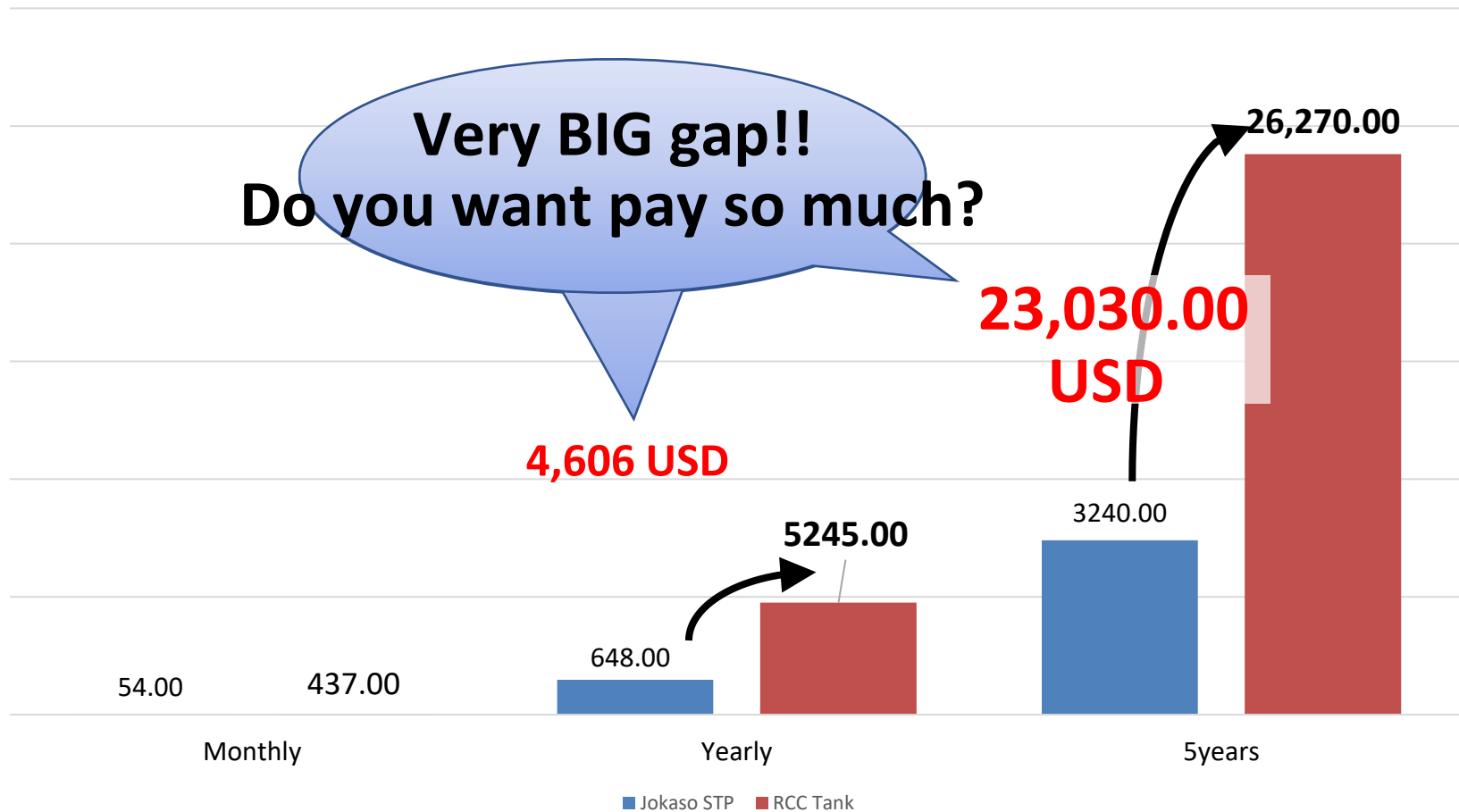
- $1.98\text{kwh} \times 24\text{h} \times 365\text{ days} \times \text{USD}0.1 = \text{USD}1,734.00$
- $(7.50 + 2.25)\text{kwh} \times 24\text{h} \times 365\text{ days} \times \text{USD}0.1 = \text{USD}8,540.00$

6,806USD

## USPs\_Running Cost\_Case study\_ 50m3/d

- STP use 10years 20years long time, running cost will become very big gap!

Comparison of Electric Cost



4

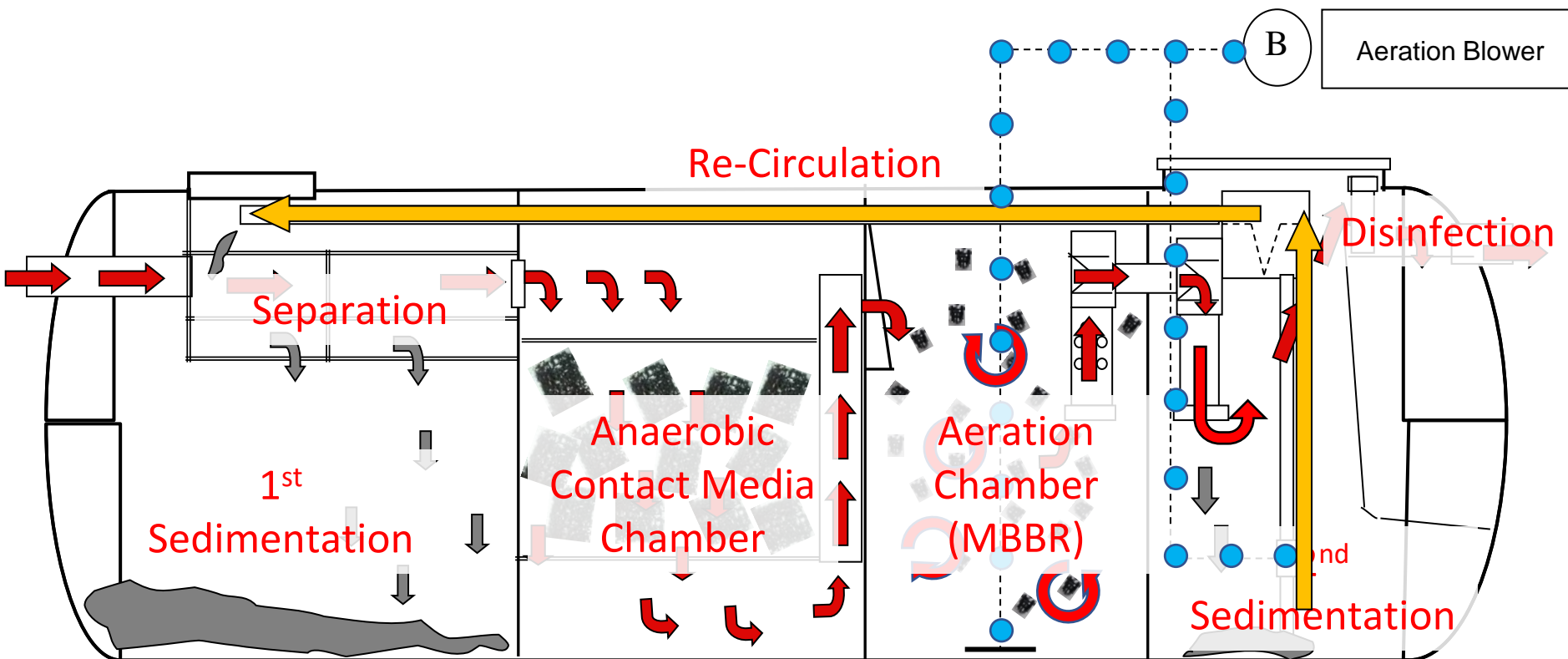
## Function of JOHKASOU STP

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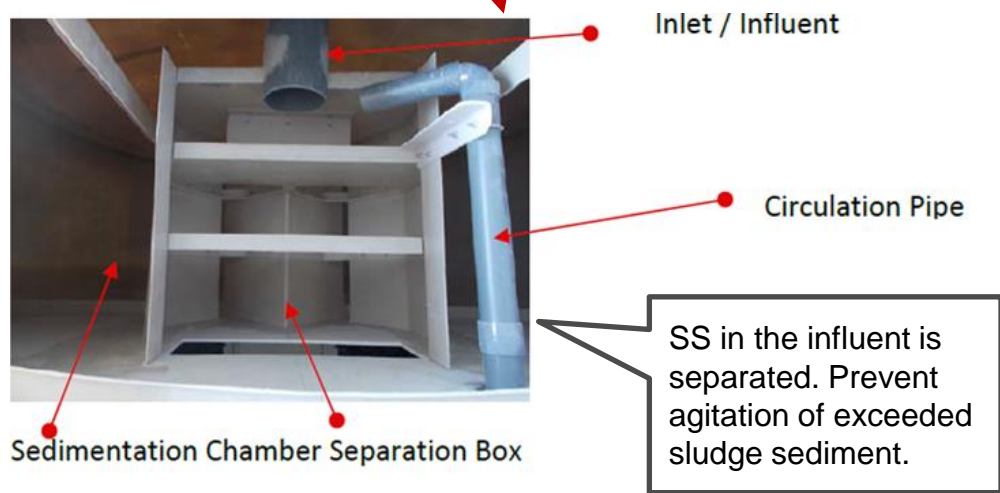
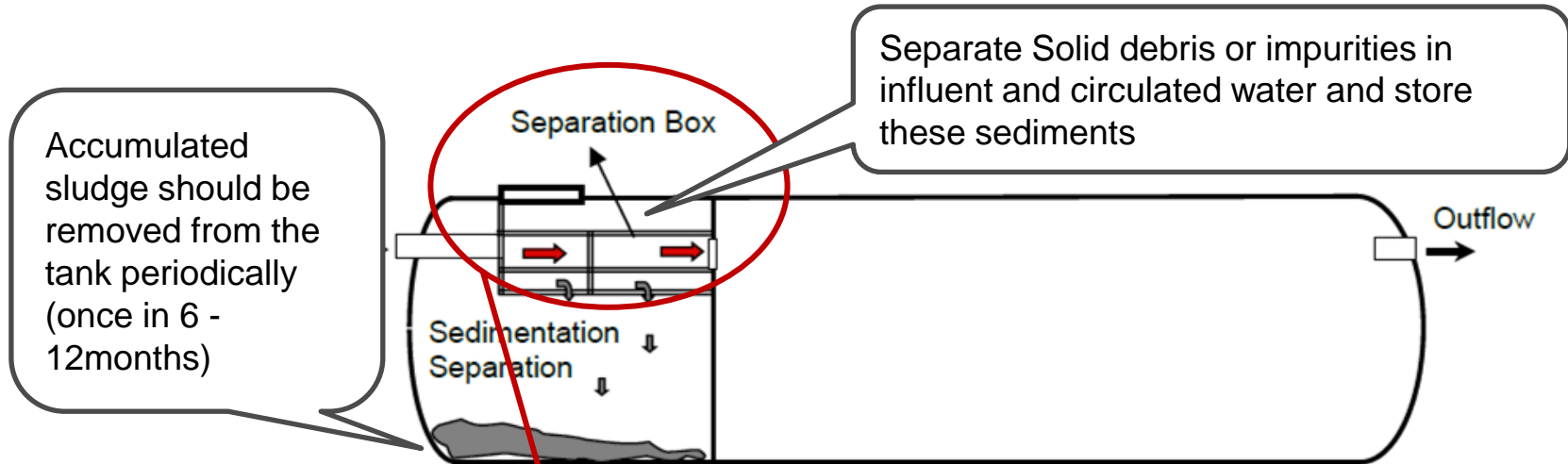
# Image of inside & function of each chamber

- By gravity flow & only small blower air, always water flow inside Johkasou, and treat again and again



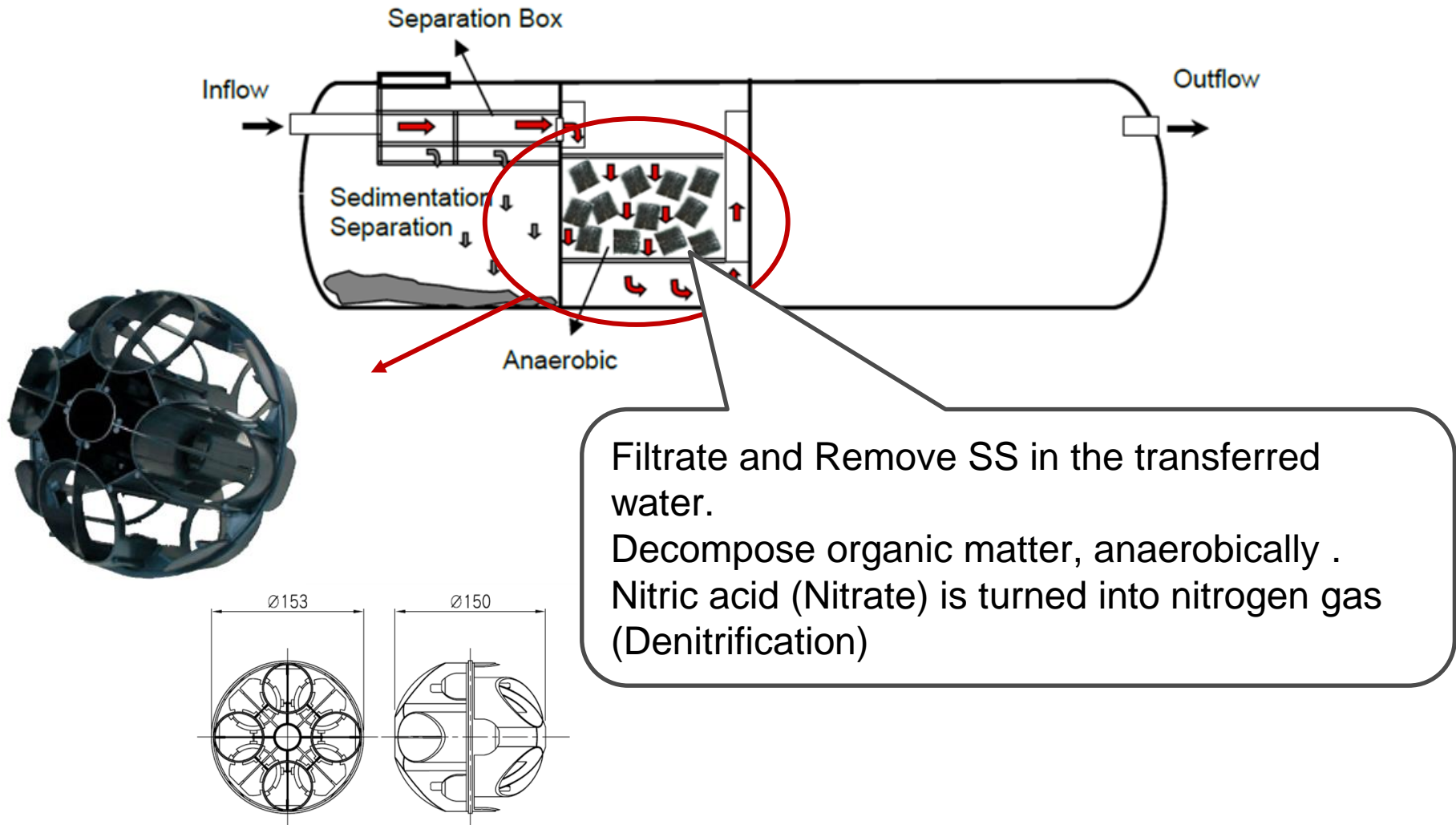
# 1<sup>st</sup> Chamber\_ Separation & 1<sup>st</sup> Sedimentation

- Separating solid waste and liquid waste based on their gravity



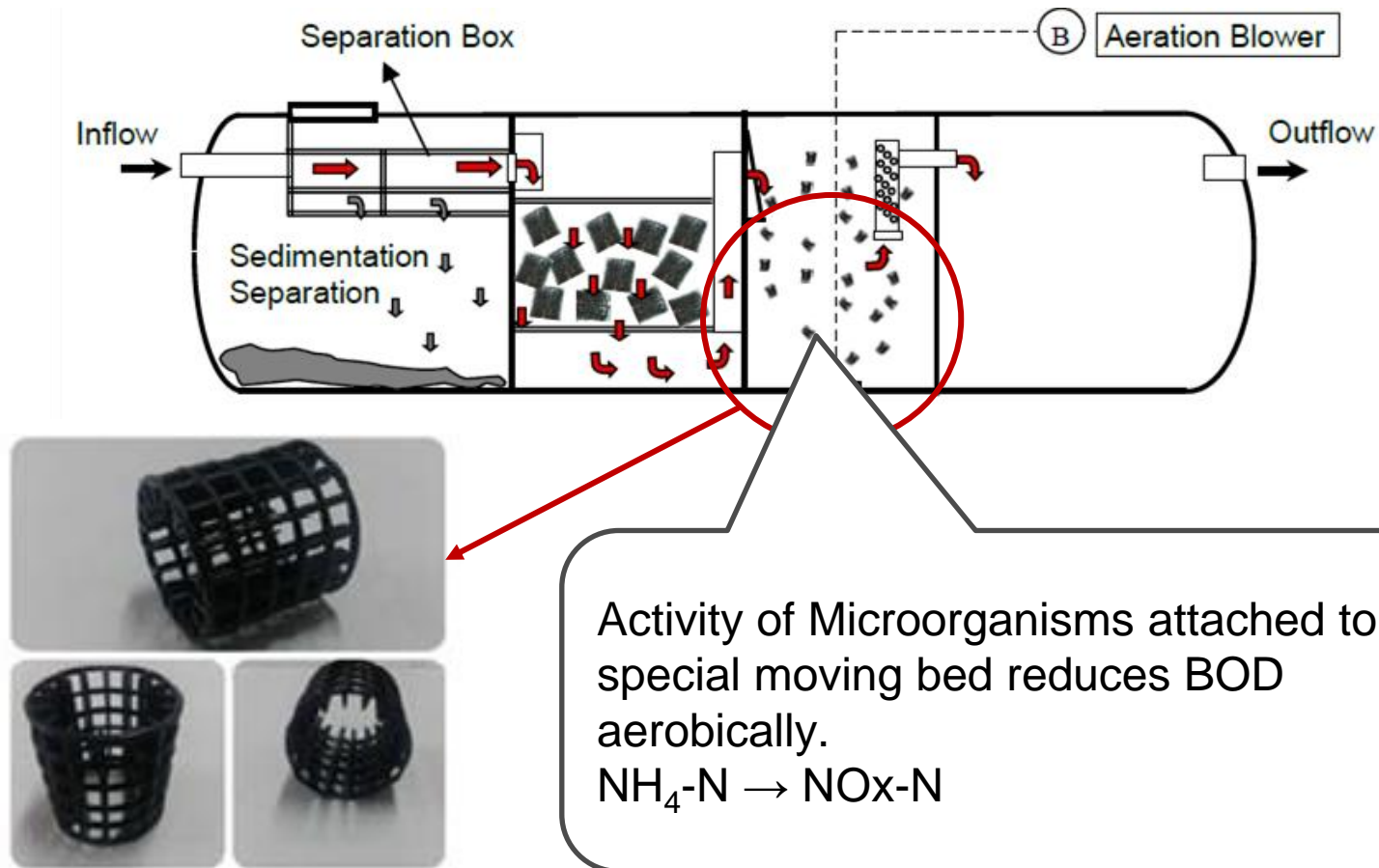
## 2<sup>nd</sup> Chamber\_ Anaerobic Contact Media Chamber

- Anaerobic media is the place where microorganism is growing up to decompose organic material contained in domestic waste water



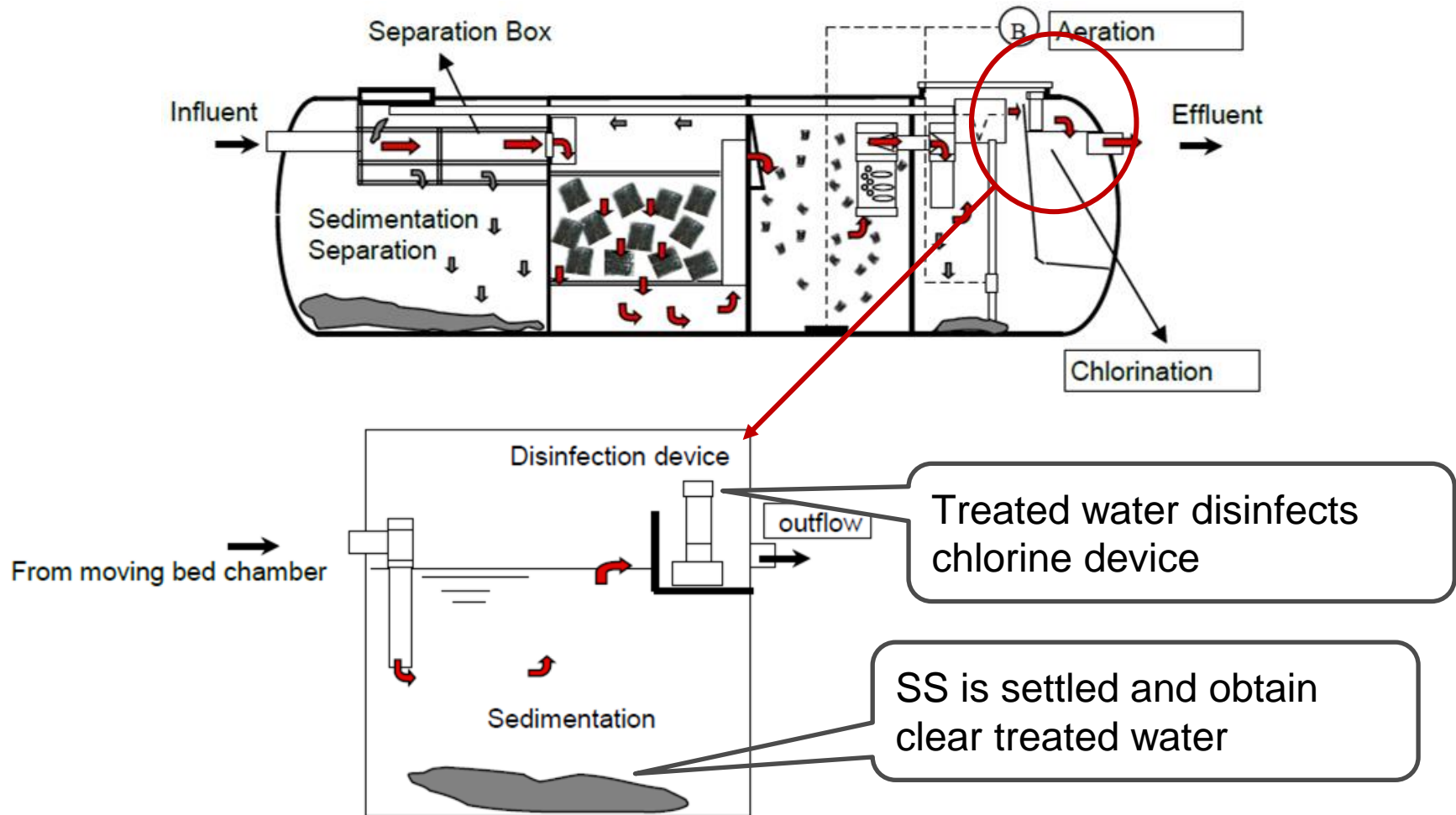
## 3<sup>rd</sup> Chamber\_ Aeration Chamber: MBBR

- Moving bed chamber filled by Moving Bed Media that move by blower aeration  
This Chamber fill this up with 40-50% of the volume



## 4<sup>th</sup> Chamber\_2<sup>nd</sup> Sedimentation & Disinfection

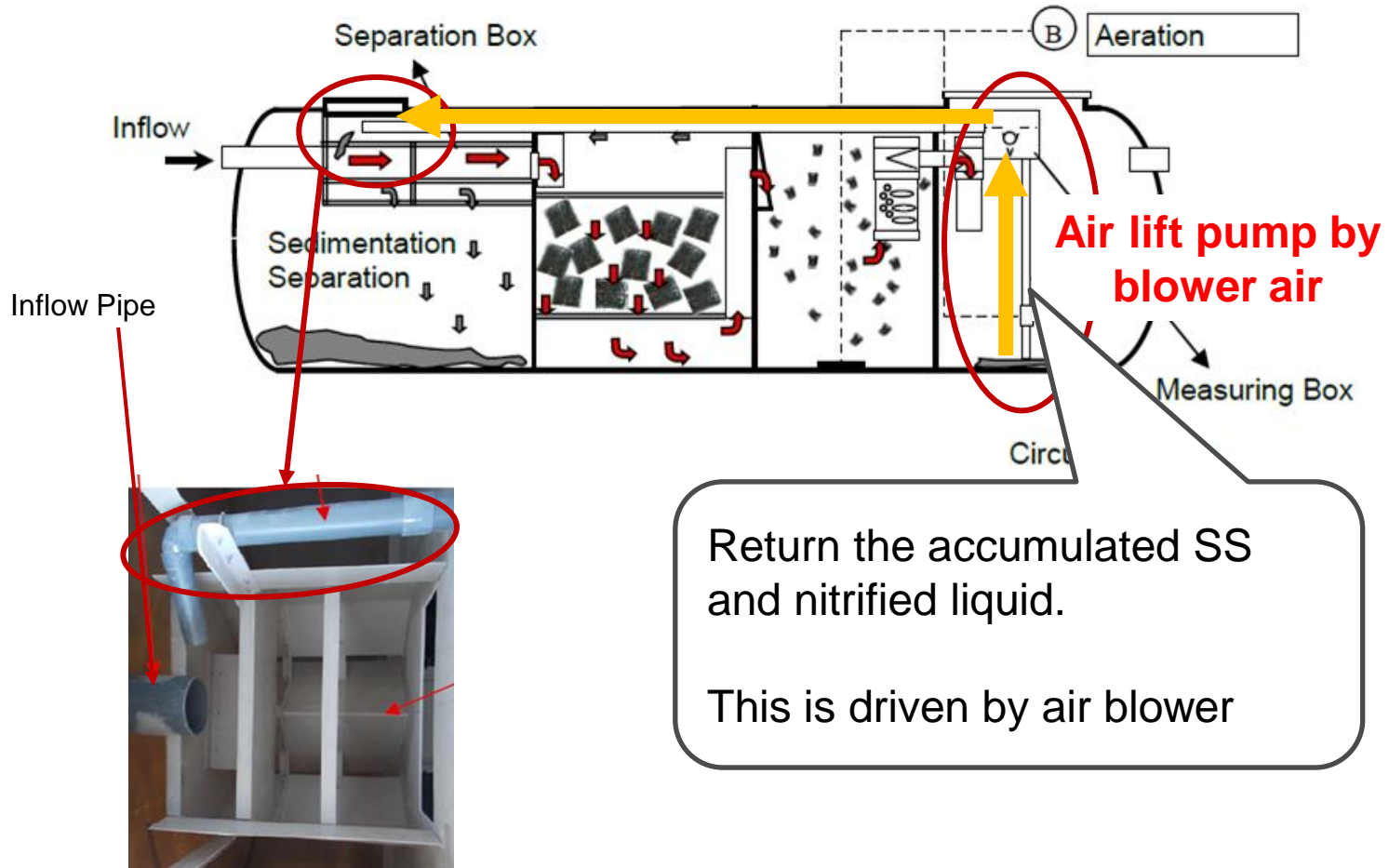
- Disinfectant as a sterilization agent pathogenic microorganisms in the treated water before discharged into the environment





# Most important function\_ Re-Circulation system

- This part is Sedimentation and Circulation Chamber for re-treatment those water. Water treat again & again. And go to 2<sup>nd</sup> Anaerobic for De-nitrification.





## Key point for the Treatment

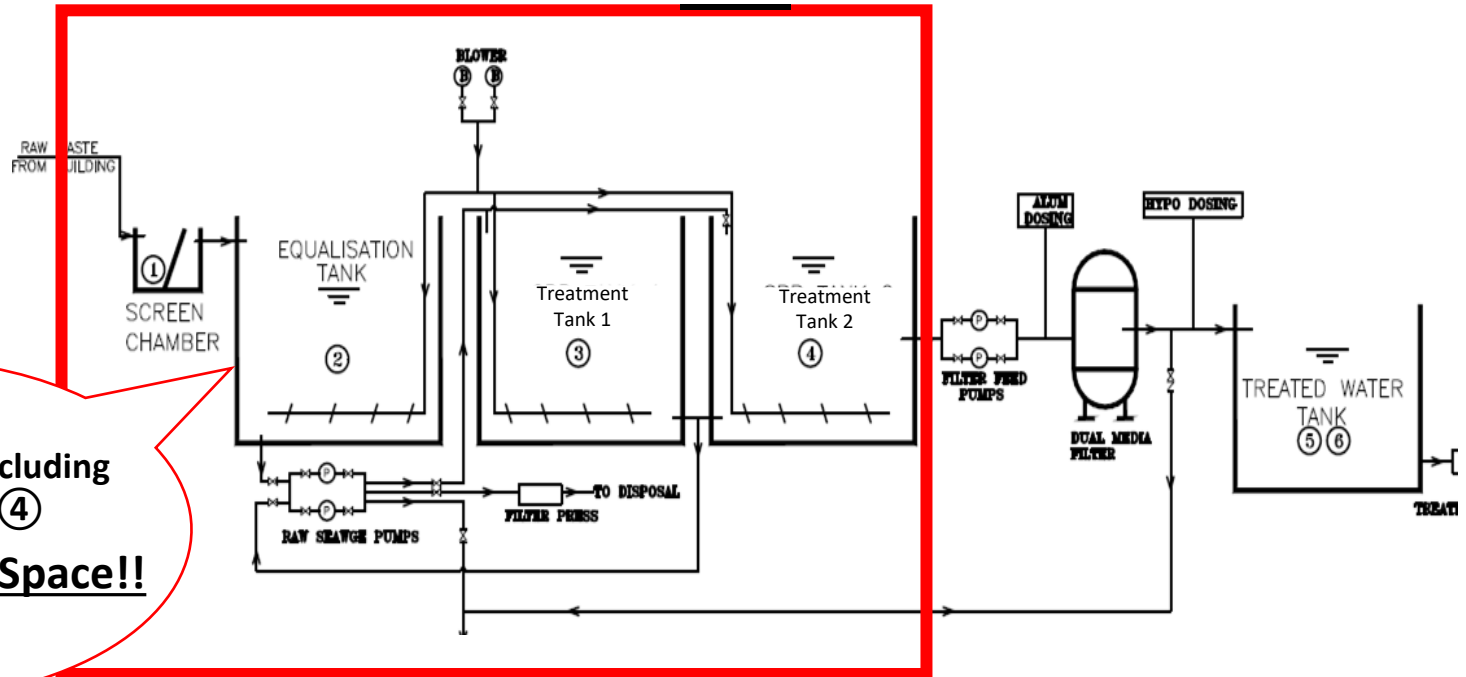


**Flow rate  
control?**

**Already calculate peak flow control.  
It can control 2.5 times high flow rate  
than average**

## Conventional STP Process

## Flow



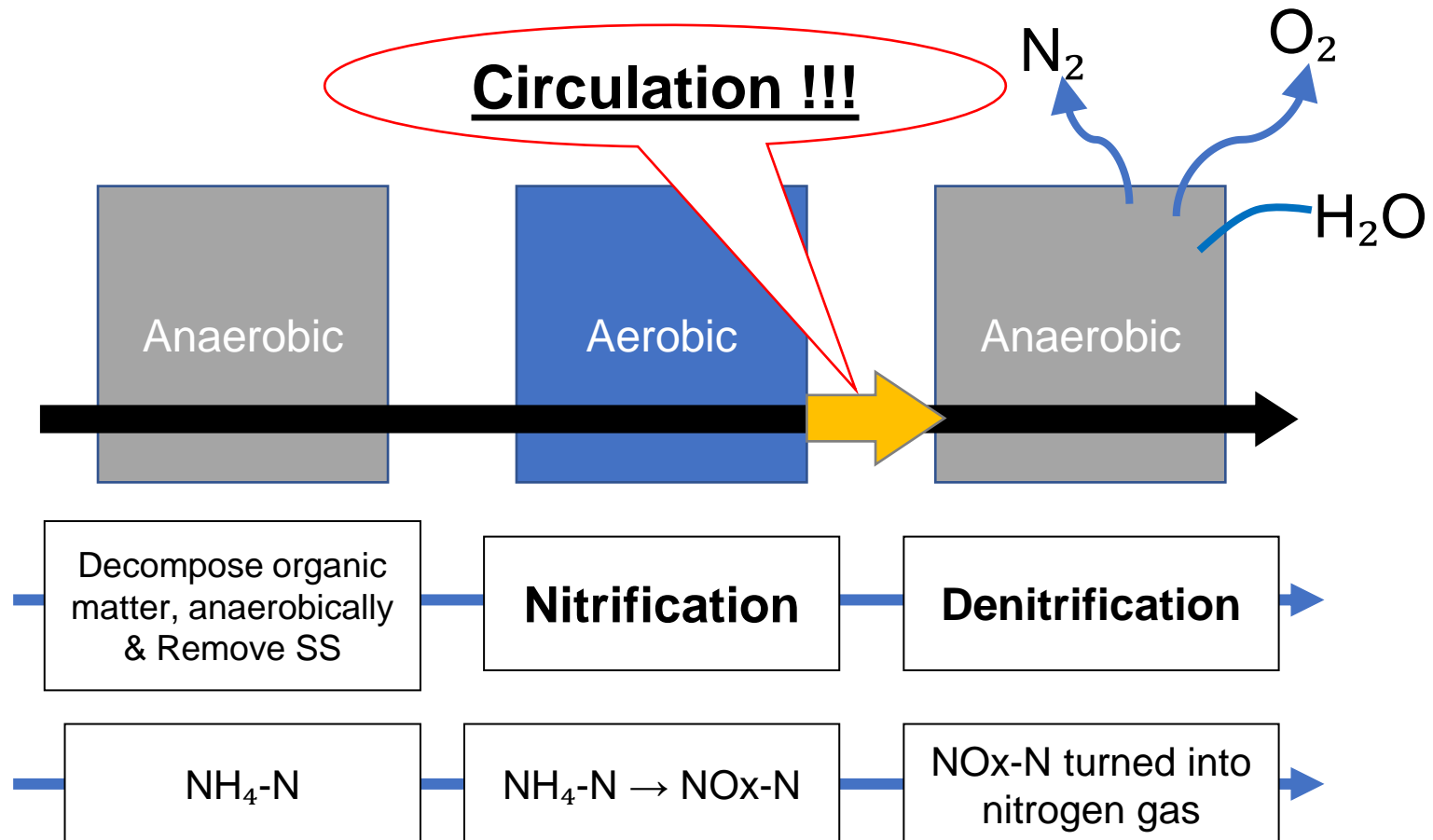
**JOHKASOU STP is including  
function ① to ④**

**You can save the Space!!**

## You can save the Space!!

## Key point for the Treatment

- Key point for the treatment is to react 'Nitrification' and 'De-nitrification' **continuously in succession**



5

## Installation Examples

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# Example of Projects - Myanmar

Daiki Axis has installed a lot of Johkasou in Myanmar with our local partner from 2016.



Apartment house (BAE-100)



Public toilet (BAE-20)

# Installation site\_ Tourist Spot Toilet





# Mandaly Hospital (1KL/d)





# Affordable housing project with Johkasou in Myanmar



**Location** : Myanmar  
Mandalay City

**Client** : Mandalay City Gov  
**Plant size** : 900m<sup>3</sup>/d



# Most Recent Sample Project for Hospital



## Project Detail

**Building Name**  
: Mingalar Hospital Mandaly

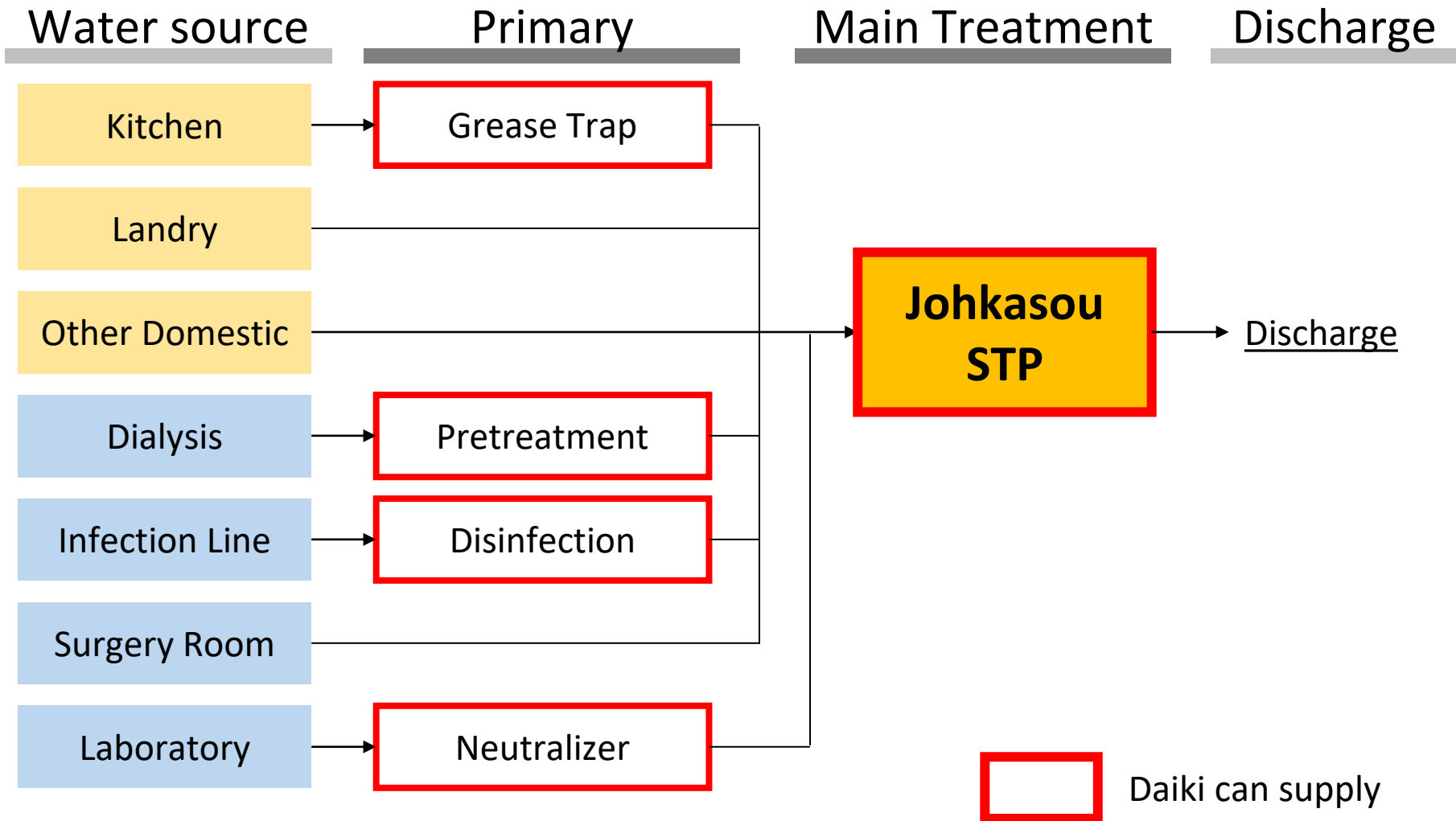
**Location**  
: Mandalay , Myanmar

**Date of installation**  
: August / 2019

**Plant Spec**  
**Johkasou** : 100m<sup>3</sup>/d  
**Neutralizer** : 1m<sup>3</sup>/d



# Hospital Wastewater Treatment Flow





# Image of Installation Johkasou-STP



Algeria\_ 500KL/day



Indonesia\_ 200KL/day



Malaysia\_ 500KL/day



Philippine\_ 500KL/day

Image of Installation Johkasou-STP

## **Biggest size of the Johkasou plan in IRAQ**

**Capacity : 3,600m<sup>3</sup>/d**





# Mount Fuji Car Parking Johkasou Project



## Project Detail

**Place : 5<sup>th</sup> station Car Parking**

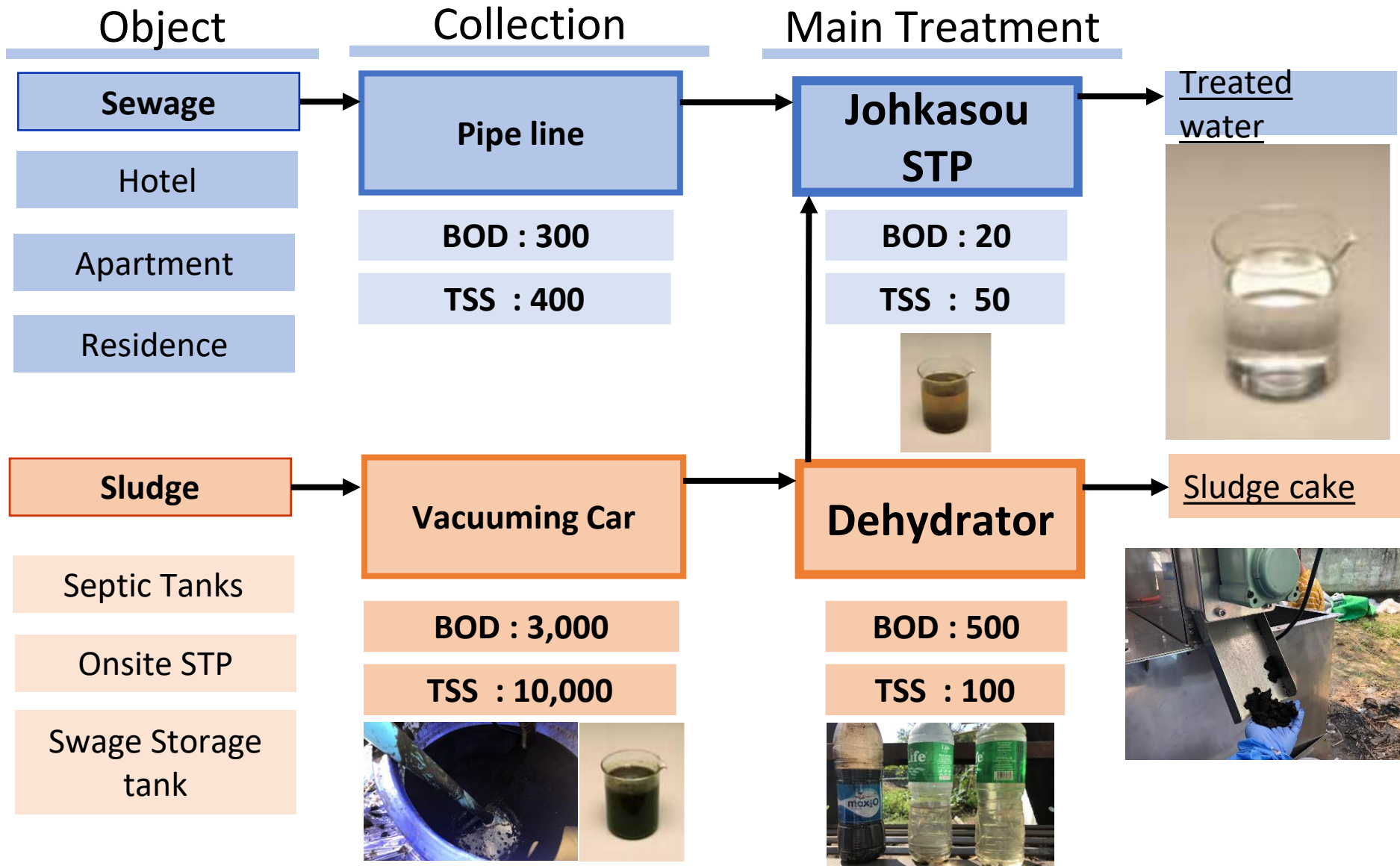
**Volume : 138m<sup>3</sup>/d**



# Sludge treatment plant

After the Johkasou

# Difference "Sewage" and "Sludge" Management





# Differece “Sewage” and “Sludge” Manegement

## Disposal Condition

- Place : 10mile from City
- Volume : 80m<sup>3</sup>/d  
28,800m<sup>3</sup>/Year  
(2.5year operating)
- Mainly septic tank sludge  
(BOD 500~7000mg/L)

## Main problems

- Did not Treat High BOD sludge  
(Pollution of groundwater)
- Already over capacity  
(7million < 10million )



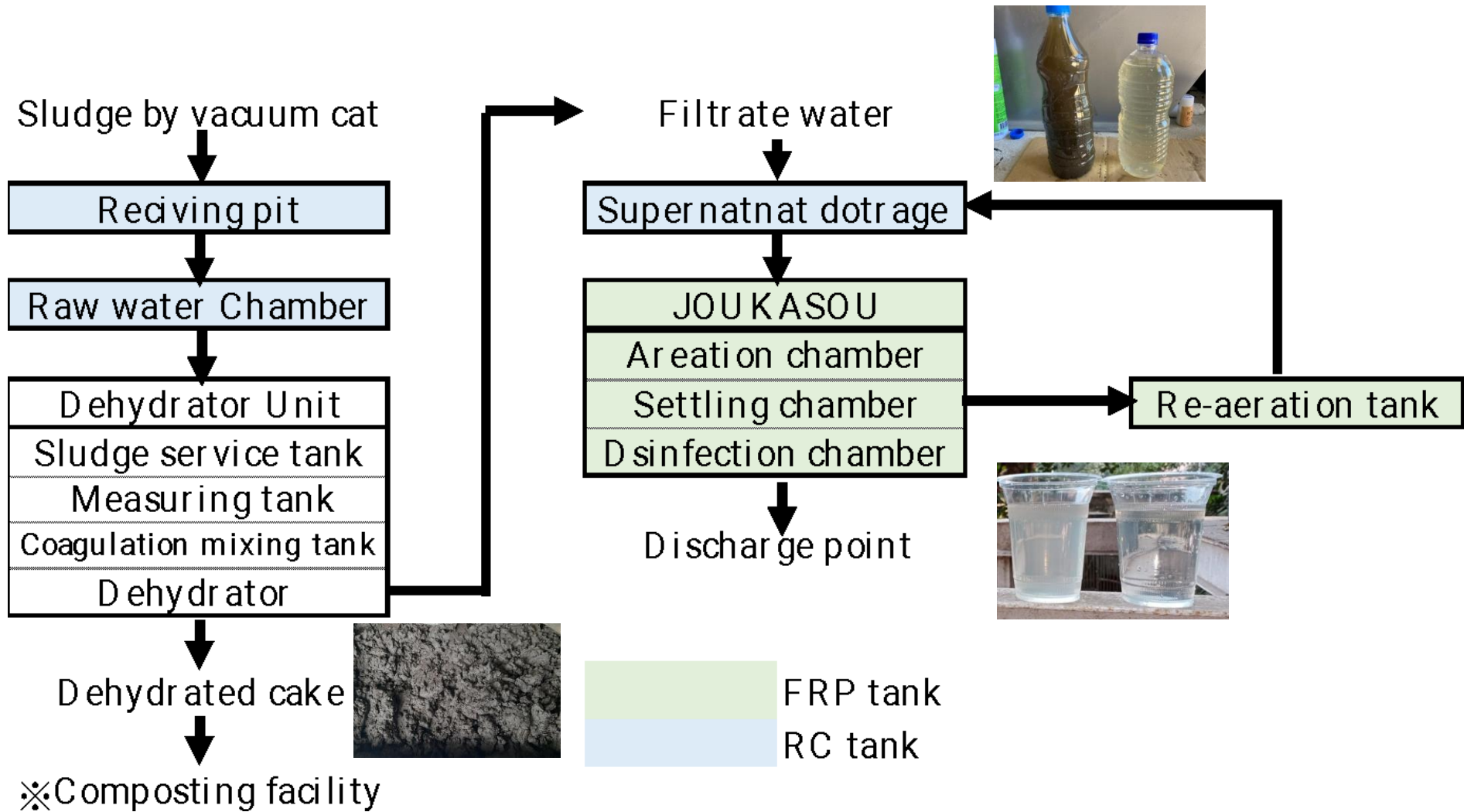


# Sludge treatment plant in Srilanka 30m3/d





# Flow Process



## Treated Water



**Thank you!!**