

PROTECT x CHANGE

Daiki  
**AXIS**

October 16<sup>th</sup>, 2025

JOHKASOU

Performance Check

# Presenter Profile

## Kazuo Saeki

### Educational Background

- Ehime University, Japan (1989)  
School of Agriculture, Agricultural Chemistry Development
- Graduate School of Agricultural Science,  
Ehime University(1991)
- United Graduate School of Agricultural Science,  
Ehime University  
PhD of Agriculture(1994)

### Work Experience

- Daiki Axis Co., Ltd.  
R&D department (1994 - 1998)  
Central R&D Labs (1998 - 2003)  
PT. Daiki Axis Indonesia (2013 – 2015)  
Global Business Promotion Section (2018 – 2024)  
Global Engineering Section (2025 - now)

## Saw Sandar Aung

### Educational Background

- Technological University (Taungoo), Myanmar  
Civil Engineering Department (2016)

### Work Experience

- A.C.R Thu Kha Chan Thar Co., Ltd.  
Engineering Department  
Drafter (2018-2022)
- Daiki Axis Co., Ltd.  
Global Business Promotion Section(2022 - 2024)  
Global Engineering Section (2025-now)

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- # Chapter 1      Daiki Axis Profile
- # Chapter 2      What is Johkasou ?
- # Chapter 3      Daiki Axis Johkasou
- # Chapter 4      Johkasou Performance Check

# DAIKI AXIS Profile

# 1-1. DAIKI AXIS Profile

## DAIKI AXIS Contributes to the Quality of Living



Through solar panel, wind turbine, BDF※1 businesses, we contribute to realizing a more sustainable world.



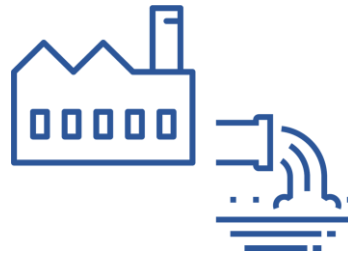
Through Johkasou, we treat domestic wastewater into a safe & clean water and return it to the nature.



We provide sanitary products centered around toilets, kitchens, and baths.



We provide a safe drinking water that can be easily accessed by everyone.



Through WWTP, we treat industrial wastewater into a safe & clean water and return it to the nature.



By obtaining ISO9001※2、ISO14001※2, we commit to a responsible Quality Control & environmental impact considerations.

※1 BDF (Bio Diesel Fuel), an alternative for fossil fuel made from recycled tempura oil and can be used as the fuel for diesel engines.

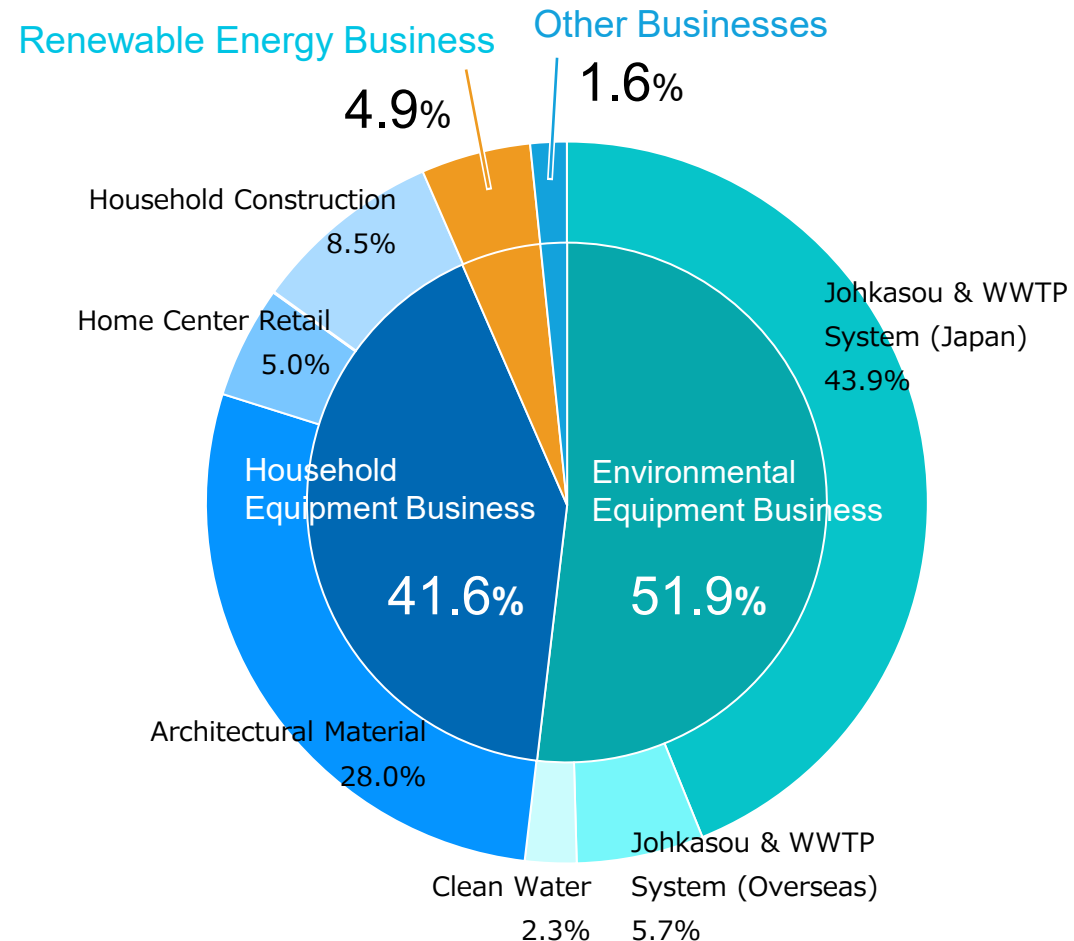
※2 ISO9001 : a Quality Management System standard that ensures the improvement of quality control of product & service in accordance with International standards.  
ISO14001 : an Environmental Management System standard that ensures the contribution towards sustainability.



# 1-2. DAIKI AXIS Profile

## Revenue Percentage per Segment

(Total Revenue in December 2022: **39.4 billion Yen**)



### Environmental Equipment Business

- Johkasou & WWTP (including maintenance service) Japan & Overseas



Johkasou



Water Recycle System

- Clean Water Business



### Renewable Energy Business

- Solar Panel Business
- Bio Diesel Fuel Business
- Small Scale Wind Turbine Business



Solar Panel Facility



Small Scale Wind Turbine



### Household Equipment Business

- Architectural materials
- Home center retail
- Household construction
- External Wall Work
- Greenhouse
- Air Conditioner for HC
- Etc.



External Wall Tiling



System Kitchen



### Other Businesses

- Household Drinking Water



Water Dispenser



Bottled Water Dispenser

# 1-3. DAIKI AXIS Profile



## Environmental Equipment (Japan)

We provide a comprehensive solution in clean water, recycled water, wastewater treatment.



### Protect the Water Environment in Japan

- DAIKI AXIS Environmental Equipment Business was established in 1964 to tackle environmental problem faced by Japan during the rapid economic boom era.
- Today, we provide a comprehensive solution in water treatment field from R&D, production, installation, to maintenance service.



## Environmental Equipment (Overseas)

We promote Johkasou as a solution for rapid industrialization & urbanization, and contribute to sanitary improvement & environmental protection.



### Create a Clean Water Environment for the World

- Many developing countries face challenges in the provision of large-scale wastewater infrastructure.
- Through Johkasou, we bring technology & expertise that have been cultivated for a long time in Japan to the world.
- We also collaborate with national government & local authorities in regulation-making related to wastewater treatment.

# 1-4. DAIKI AXIS Profile



## Japan HQ & Factories

Design, development, and technical support  
Ships Johkasou from four factories to Japan and the world



## Indonesia Office & Factory

Office is located in Jakarta & Surabaya  
Ships Johkasou from a factory near



## India Office & Factories

Factories near Delhi  
Johkasou sold through distributors spread throughout India



## Sri Lanka Office & Factory

Office and factory located near Colombo  
Factory manufactures small Johkasou



## China Office & Factories

Offices in Shanghai and Dalian  
Factory manufactures small Johkasou for rural villages



## Bangladesh Office

Office is located in Dhaka  
A factory is planned to be built



# 1-5. DAIKI AXIS Profile

## Overseas Factory (Indonesia)

Factory in Indonesia and Japan are using:

- Same production process
- Same production equipment



- Low cost compared to Japanese products
- Uniform and high quality products



Cylindrical molding machine



Automatic opener



Automatic molding machine



External view



Interior of the factory



Employee at work

# What is Johkasou (On-site Sewage Treatment Plant)

## 2-1. What is Johkasou ?

Difficult to Distinguish Johkasou from other tanks



**Johkasou**



**Septic tank**

Tanks may look the same, but their performances of wastewater treatment are different. It is difficult for general user to understand the difference. So, let me explain what the definition of "Johkasou" is.

## 2-2. What is Johkasou ?


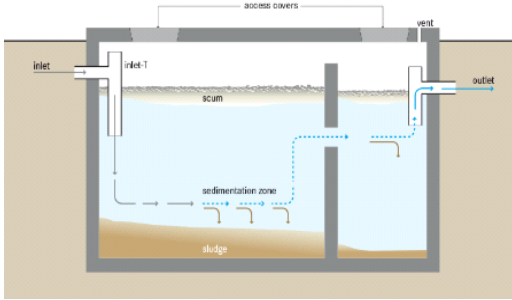

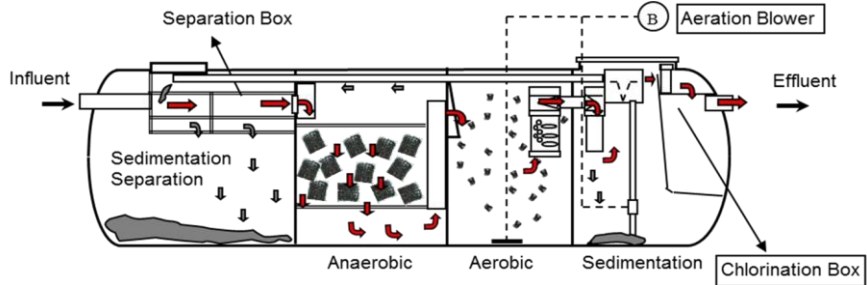
Uses the Anaerobic treatment and Aerobic treatment

**Johkasou is a system that uses microorganisms to treat domestic wastewater and prevent pollution of the water environment**



**Prevent pollution of the water environment by treating domestic wastewater in Johkasou and discharging it into rivers**

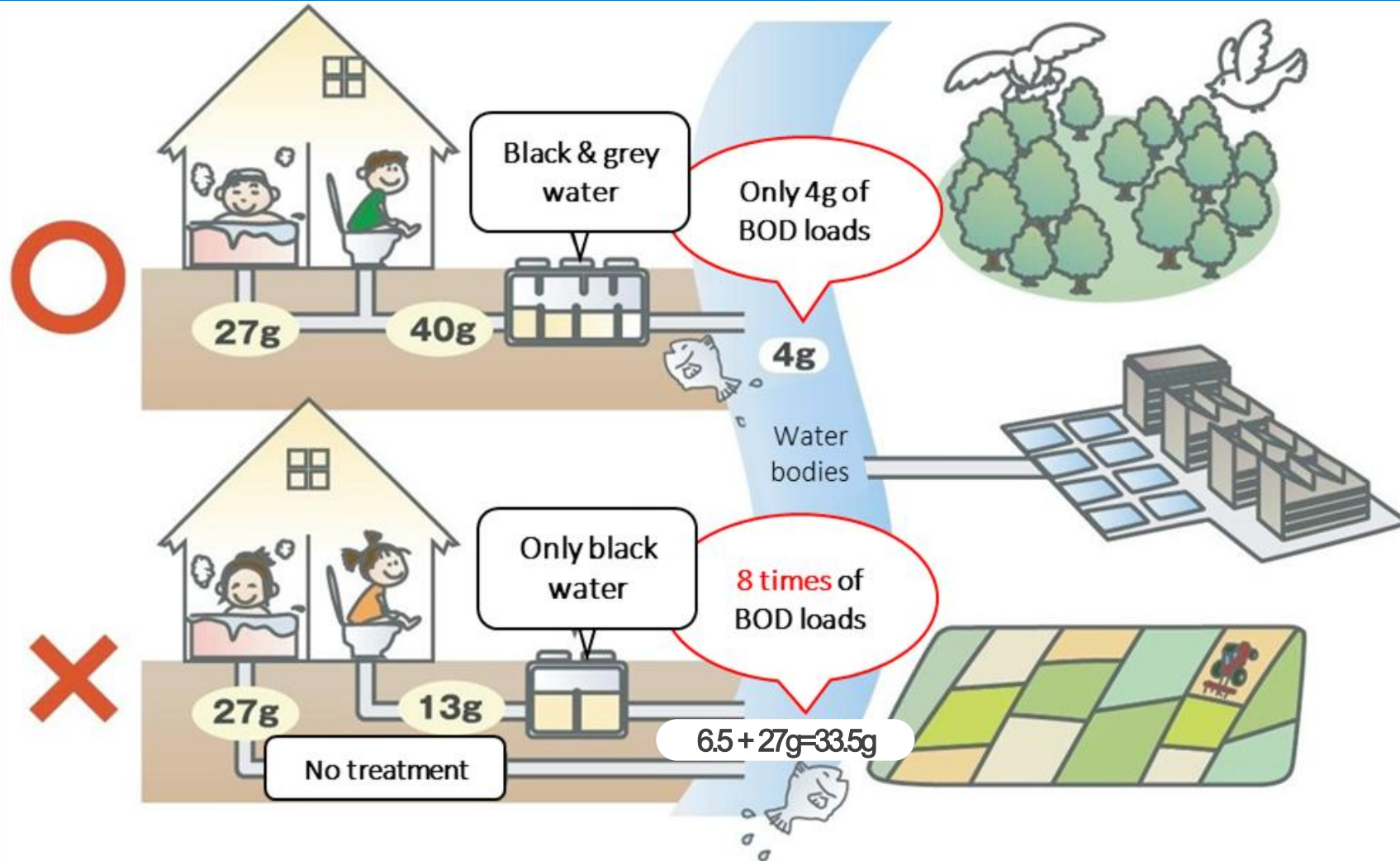
## 2-3. What is Johkasou ?

Comparison	Septic Tank (RC/PP)	Johkasou-STP (FRP)
Image	 	 
Target	Black Water	Black and Gray Water
Treatment Process	Sedimentation	Sedimentation→Anaerobic→Aeration...
Raw Water Volume	Small 1 – 2m <sup>3</sup> /d	Small – Mid 1 – 500m <sup>3</sup> /d
Treatment Performance	BOD 100 – 150mg/L	BOD 10 – 20mg/L

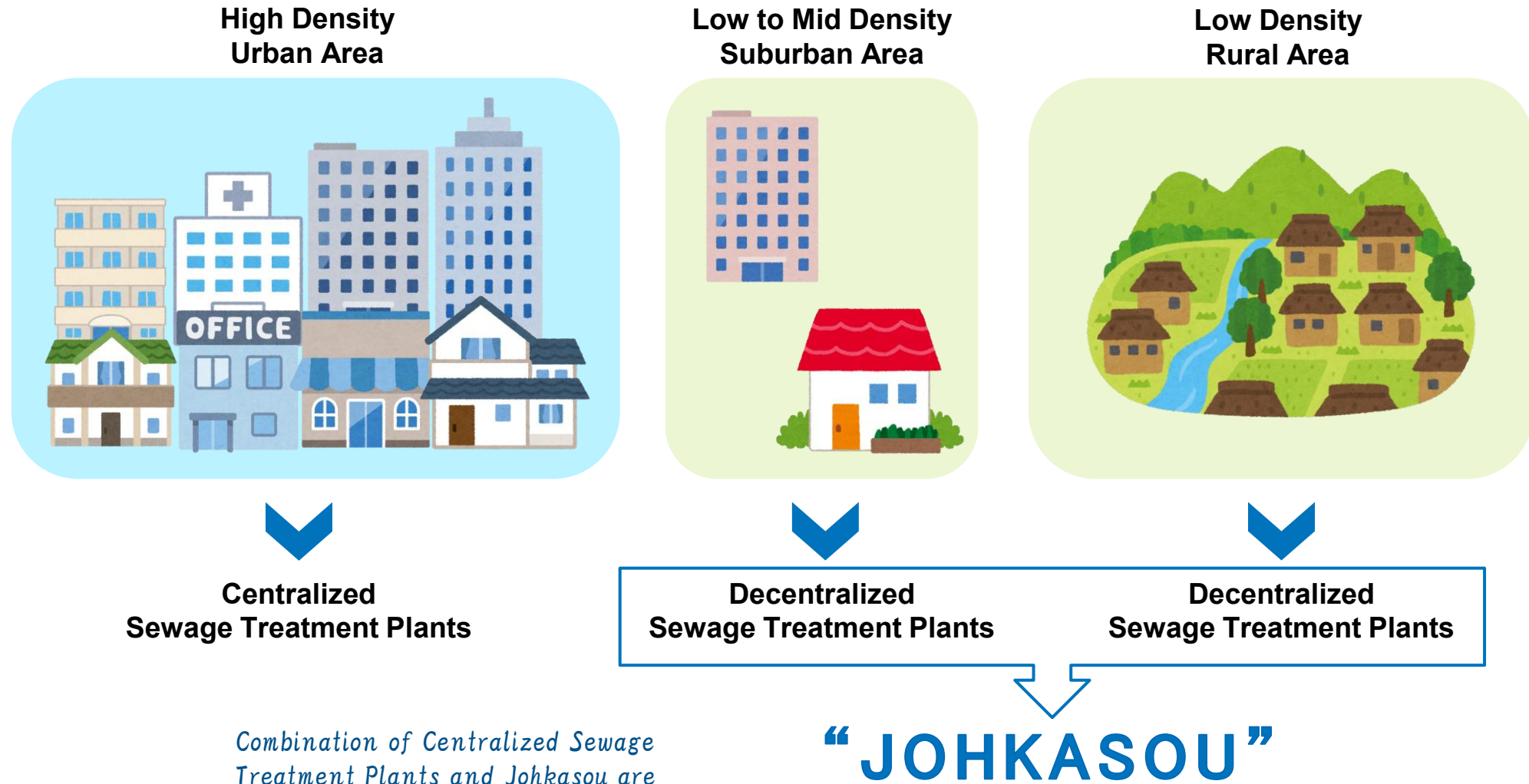


## 2-4. What is Johkasou ?

### Pollution load of only Black and Black+Grey water treatment



## 2-5. What is a “Johkasou”?



*Combination of Centralized Sewage Treatment Plants and Johkasou are needed for urban planning!*

## 2-6. Definition of “Johkasou” in Japan

### Two categories for **Johkasou** Certification

#### A. Standard Structure Johkasou (Type 1 – Type 11)

Johkasou that are designed according to the “Structural Standard” specified by the Minister of Land, Infrastructure, Transport and Tourism of Japan.

##### **The Johkasou’s specification is set by the Government.**

- Treatment capacity, treated water quality, treatment process, and structural arrangement are specified by the Government.
- The design is based on conventional treatment technology. Comparatively large and expensive.
- It is rarely installed except for some large scale Johkasou.

#### B. Customized Structure Johkasou

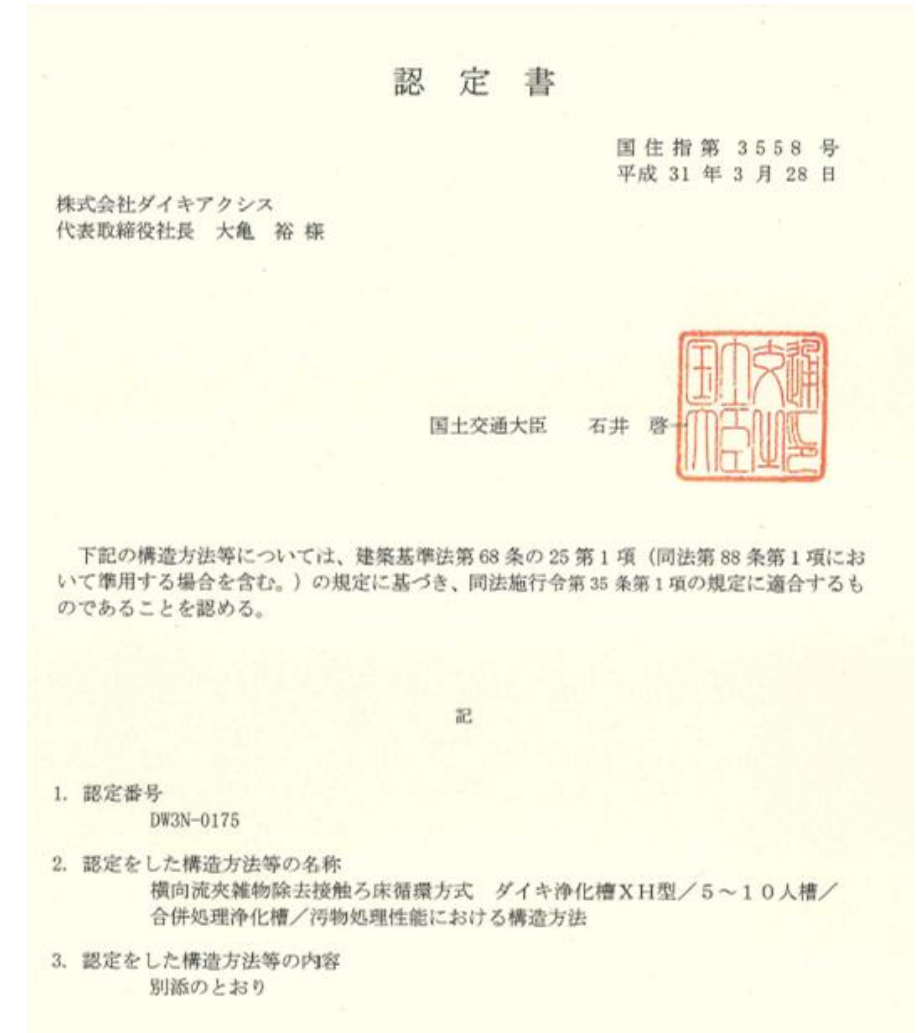
Original Johkasou that are acknowledged by the Minister of Land, Infrastructure, Transport and Tourism of Japan.

##### **The Johkasou’s specification is set by the manufacturer.**

- The Johkasou is acknowledged by the Minister of Land, Infrastructure, Transport and Tourism of Japan given that it satisfies performance evaluation tests that are managed by a third-party. The tests include evaluation of treatment process & structure, and maintenance performance.
- The design is based on the manufacturer’s original technology. Mostly are compact in size.
- Johkasous in this category are common in Japan.

## 2-7. Definition of “Johkasou” in Japan

- ▶ **Johkasou** is a packaged sewage treatment plant (STP) which is verified and guaranteed not by the manufacturer but by a third party.
- ▶ To distribute **Johkasou** in the market, Government's certification and approval of these following aspects are required:
  - Wastewater Treatment Performance
  - Tank Structure (Strength)
  - Manufacturing Process
- ▶ Treatment tanks that are made of FRP, PP, or PE cannot be called a **Johkasou** without the certification and approval from the Government.



## 2-8. Definition of “Johkasou” in Japan

Before it can be marketed as a **Johkasou**, it must pass several tests & inspection.

### 1. Treatment Performance Test

#### **A. Standard Structure Johkasou (Type 1-Type 11)**

Johkasous that comply with the “Johkasou Structural Standard” which specified by the Minister of Land, Infrastructure, Transport and Tourism of Japan.

#### **B. Customized Structure Johkasou**

Johkasous which do not fall under the 11 types of standard structure, but has passed the performance evaluation test and certified by the Minister of Land, Infrastructure, Transport and Tourism of Japan.

### 2. Tank Strength Test

Evaluates whether the Johkasou will not deform under the designed pressure.

### 3. Manufacturing Method, Raw Materials, Manufacturing Factory Inspection

Evaluates whether the Johkasou is manufactured under approved condition. The inspection includes manufacturing method, raw materials, manufacturing factory condition, etc.



## 2-9. What is a “Johkasou”?

- ▶ **Johkasou** is a packaged sewage treatment plant (STP) which is developed in Japan.
- ▶ **Johkasou** can reduce the concentration of BOD and T-N in domestic wastewater down to 20mg/L or less, making it safe to discharge the treated water into natural water bodies.
- ▶ To distribute **Johkasou** in the market, Government's certification and approval of these following aspects are required:
  - Wastewater Treatment Performance
  - Tank Structure (Strength)
  - Manufacturing Process
- ▶ **Johkasou** has advantages such as shorter construction period and lower initial cost compared to the centralized sewage treatment plants.
- ▶ Unlike centralized sewage treatment plants, **Johkasou's** treated water can be reused for gardening or toilet flush purposes since it is installed on the site.

# DAIKI AXIS

## Johkasou for Global Market

## 3-1. Daiki Johkasou

### How to Select Johkasou

#### WATER VOLUME

1 ~ 50 ~ 100 ~ 1000 ~  
[m<sup>3</sup>/Day]

#### WATER QUALITY

(Building Usage)  
Residence  
Office  
Factory  
Restaurant  
Hotel  
Public toilet

#### DISCHARGE STANDARD

BOD : 10 mg/L~  
COD : 20 mg/L~  
TSS : 10 mg/L~  
T-N : 10 mg/L~  
T-P : 1 mg/L ~

- Sizing
- Pre Treatment

- Select Johkasou Type
- Tertiary Treatment

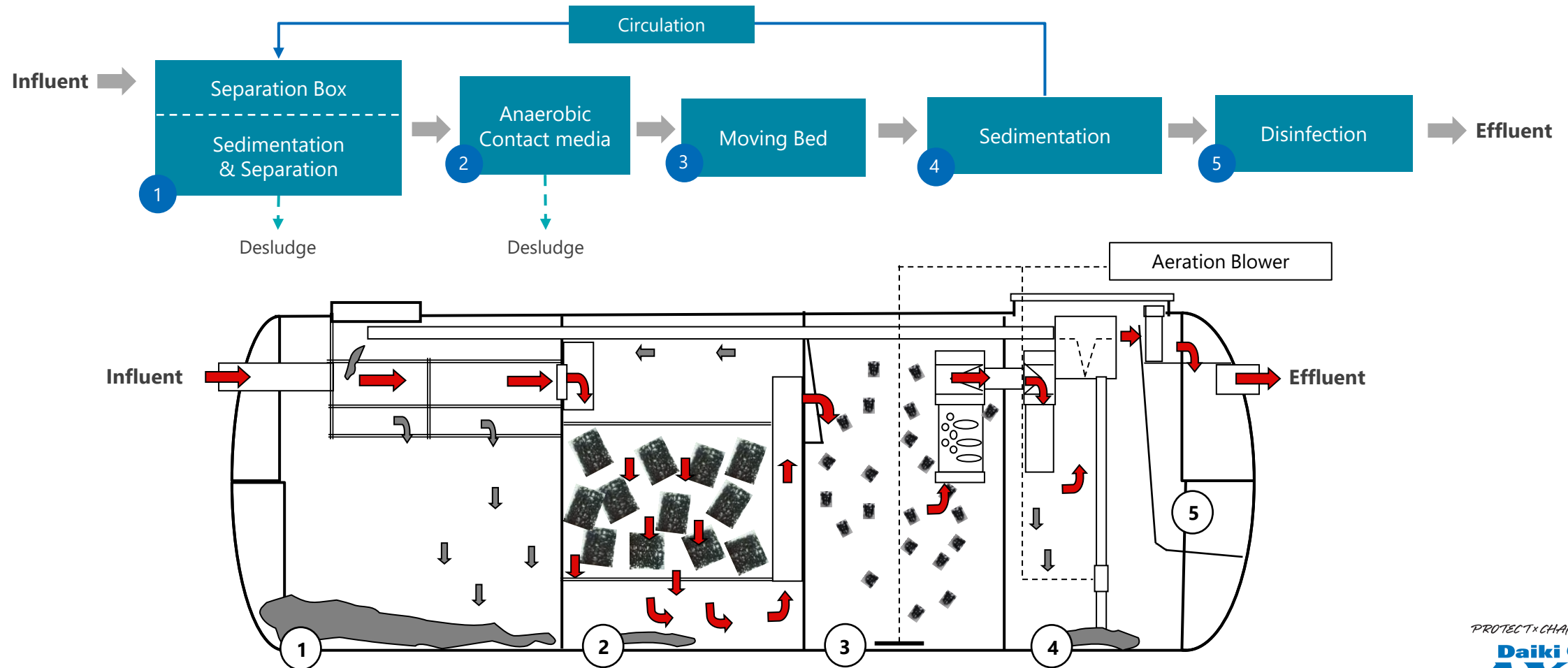
Treatment Performance

Treatment Performance

Item	Unit	Inlet	Johkasou Type		
			BAE	BJE	BC
BOD	mg/L	300	20	10	10
SS	mg/L	200	30	20	10
T-N	mg/L	50	-	20	10

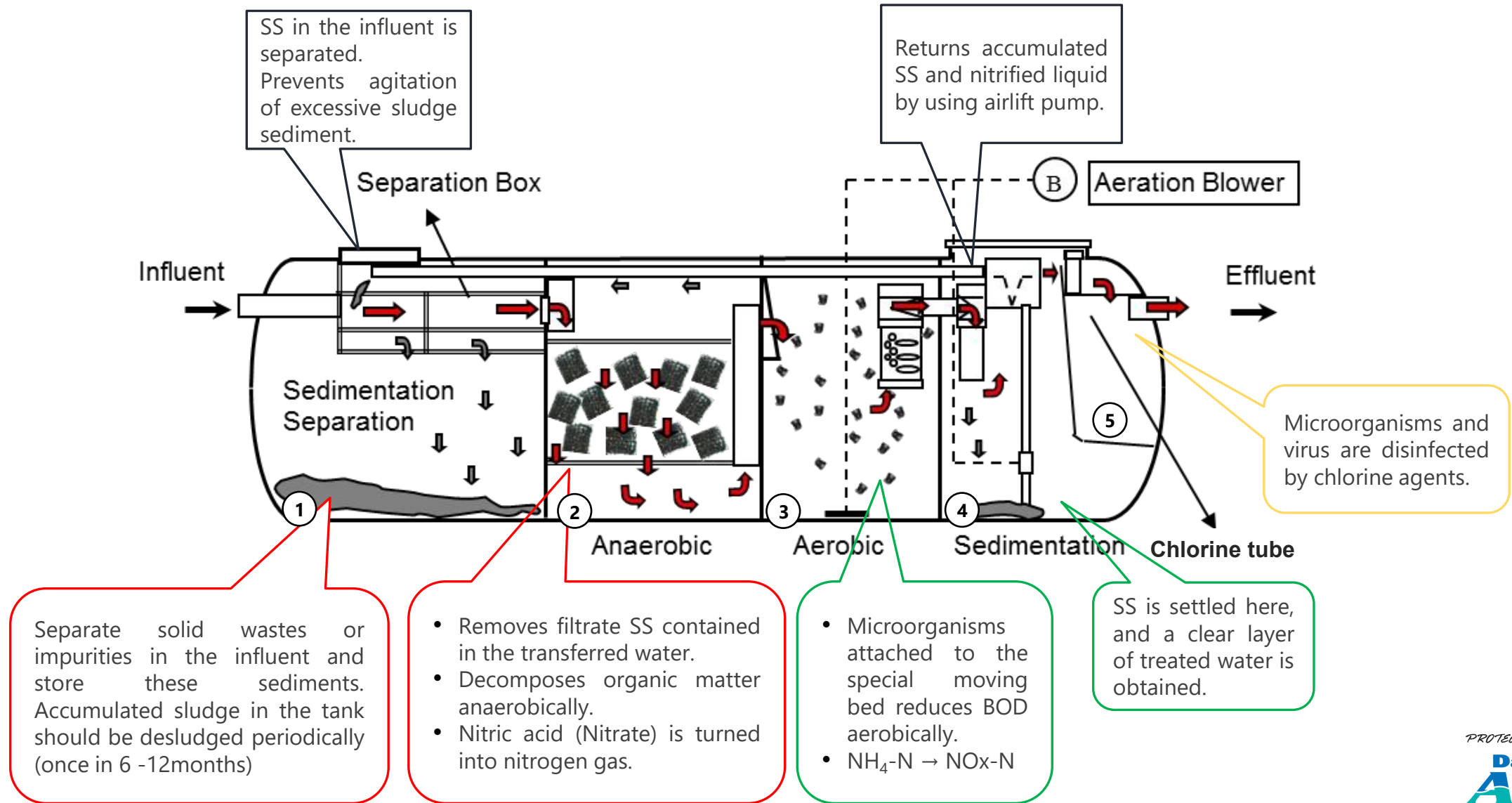
### 3-3. Daiki Johkasou / Treatment Process

## BAE and BJE have Moving Bed Bio Reactor





## 3-4. Daiki Johkasou / Treatment Process



## 3-5. Daiki Johkasou / Installation

### Underground Installation



### Aboveground Installation





## 3-6. Daiki Johkasou / Installation



### **JICA ODA Project: Oil Refinery Modernization Project in Iraq**

- Desalination Equipment and Johkasou Sewage Treatment Plant
- Daily Treatment Capacity = 3,600m<sup>3</sup>/d

# JOHKASOU Performance Check

## 4-1. Johkasou Performance Check - Certified Structure Type (1/4)

### Three Types of Johkasou Performance Evaluation Test in Japan

There are three types of Johkasou performance evaluation tests and can be selected to test performance from one of them.

Type	Place for Testing	Duration	Temperature Control	Volume control for waterflow	Concentration control for raw water
1. Constant temperature test	Test Center for Johkasou	4 months	Strictly control	Yes	Yes
2. Site test-1	Can manage by third party	1 Year	No	Yes	Yes
3. Site test-2 ※Only for small scale Johkasou	General Residence	1 Year	No	No	No

#### ► Note

- In Japan, temperature will vary depending on seasons. Therefore, if it is hard to control constant temperature, test will take 1 year duration.
- Maintenance performance is also evaluated during the test (Johkasou with poor maintenance performance will not be certified).

## 4-2. Johkasou Performance Check - Certified Structure Type (2/4)

### 1: Short-term Constant-temperature Test

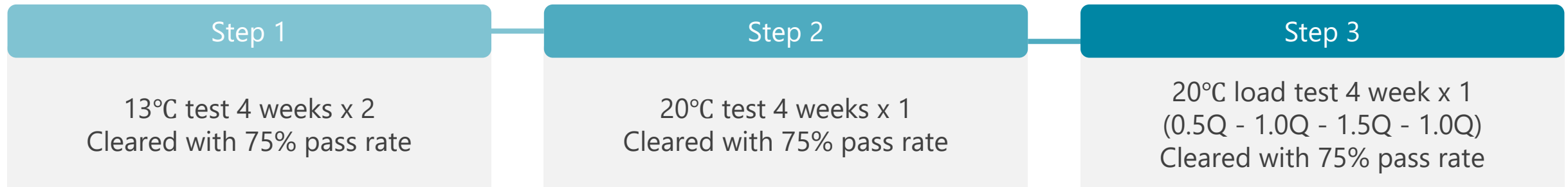


It is held in Testing Center for Johkasou

( Tests in which room temperature, raw water temperature, and raw water concentration are strictly controlled )

- Sampling is conducted once a week, and the water quality is considered acceptable if all water quality is clear.
- We check if Johkasou can perform its treatment performance at different temperatures over a short period of time, or with different water volumes by trying different conditions such as room temperature and water volume.

#### ► Test procedure



※ Need to conduct a sludge storage test

(Due to the short period of the test, a sludge volume of 8 months should be calculated and added at the start of the test to confirm that a year's amount of sludge can be stored.)



## 4-3. Johkasou Performance Check - Certified Structure Type (3/4)

### 2: On-site Test - 1

- 📍 Tests are conducted at places where raw water can be easily taken, such as sewerage facilities.  
( The place is recognized as suitable for testing by The Building Center of Japan. )
- The examiner must be certified and registered by The Building Center of Japan.
  - Raw water must be adjusted to the prescribed concentration.
  - The test must be conducted for one year (48 weeks)
  - The air temperature and raw water temperature must be kept below 13°C during the three months from January to March.

#### ▶ Test procedure

##### Step 1

Sampling will be conducted 20 times every two weeks.

##### Step 2

Short-term constant-temperature test is conducted twice.  
 $(0.5Q - 1.0Q - 1.5Q - 1.0Q) \times 2$   
(8 times samplings in total every week.)

← A total of 28 times samplings are completed with a 75% pass rate. →

## 4-4. Johkasou Performance Check - Certified Structure Type (4/4)

### 3: On-site Test – 2 (Limited Small Scale Johkasou)

 Installed on actual site

- The site may be selected based on the number of people using it because the water volume cannot be adjusted due to the actual site. (2, 3, or 5 people)
- No adjustment of raw water (is made).
- The air temperature and raw water temperature must be kept below 13°C during the three months from January to March.
- Sampling is conducted every two weeks.

#### ► Test procedure

##### Step 1

Conducting full-day tests

← A total of 28 times samplings are completed with a 75% pass rate. →

## 4-5. Johkasou Performance Check / DAIKI AXIS Global Activities

### Johkasou Performance Check with Local Universities (India)



**Pilot Johkasou Installed in the Indian Institute of Technology (IIT) Roorkee**  
(IIT-Roorkee is established in 1847, the oldest technical institution in India)

We conducted studies on Johkasou with local universities in India and Sri Lanka. From the studies we were able to confirm the performance of Johkasou and its applicability in local conditions.



Environmental researchers at IIT-Roorkee have carried out research on Japan's Johkasou technology (JT) for its adaptation and validation in Indian conditions. JT deals in sewage treatment plants (STPs).



<https://timesofindia.indiatimes.com/city/dehradun/iit-roorkee-validates-adaptability-of-japanese-technology-based-stps-for-hilly-regions/articleshow/94819485.cms>

## 4-6. Johkasou Performance Check / DAIKI AXIS Global Activities

### Johkasou Study with Local Universities (Sri Lanka)



**Pilot Johkasou Installed in Sri Lanka Institute of Information Technology**  
(SLIIT is established in 1999)

We conducted studies on Johkasou with local universities in India and Sri Lanka. From the studies we were able to confirm the performance of Johkasou and its applicability in local conditions.

#### **Project Report on Monitoring Three Johkasou Test Plants at SLIIT premises**

Performance Test of Daiki Axis Johkasou Technology and Products in  
collaboration with Sri Lanka Institute of Information Technology

Prof. Shiromi Karunaratne

Ms. Gayathri Chamani

**Sri Lanka Institute of Information Technology,**

New Kandy Road,

Malabe

October 2024



## 4-7. Johkasou Performance Check

### Malaysia STP / DAIKI Johkasou

Can prevent pollution of the water environment

SPAN Certification in Malaysia

1. Treatment Performance Test

2. Tank Strength Test

3. Manufacturing Method, Raw Materials,  
Manufacturing Factory Inspection

No Certifications in other countries

Performance check with third party

Products with same equipment, materials and methods

Can prevent pollution of the water environment



Thank you for your attention.

For further inquiry please feel free to reach out to us!  
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