Introduction of ‘Johkasou’

Contribute to African Clean City
Example of Pollution in Water Bodies

To prevent these environmental pollution Daiki Axis is in the Africa!
Daiki Axis Introduction

- 60 years experience water treatment company
- Having four Johkasou factories in Japan, and one factory in Indonesia.
- Two more new factories will be established in China and India in 2018.
- Having an official distributor in Kenya.
- Attended the TICAD Ministerial Meeting Side Event, African Clean Cities Platform held in Mozambique in August 2017.
Septic Tanks in Kenya

Apartments 30m³/d

Individual House 5m³/d

These Septic Tanks are not appropriate water treatment system
What is Johkasou?

- Johkasou is decentralized onsite domestic wastewater treatment system.
- Developed and improved by Japanese government and companies from 1960s.
- To produce Johkasou in Japan, manufactures must get government certification.
- Designed for treating both black and gray water discharged from facilities.
- Anaerobic & aerobic system enable low running cost and small foot print.
- Johkasou treated water and sludge are easy to reuse.
- Very low initial cost compare than centralized system.

Johkasou was developed to solve water pollution caused during the rapid economic growth of the 1960s.
### Small scale Daiki Axis Johkasou (Capsule Type)

#### Example of Capsule Type: 1～15m3L/day

<table>
<thead>
<tr>
<th>Type</th>
<th>Inflow Capacity (m3/day)</th>
<th>Length (m)</th>
<th></th>
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<tbody>
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<td></td>
<td>W</td>
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<td>H</td>
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- **Main material**: FRP
- **Technology**: Anaerobic & Aerobic (MBBR)
- **Designed in Japan**
- **Manufactured in Indonesia**

Effluent treated water quality is BOD less than 20mg/L
Large scale Daiki Axis Johkasou (Cylinder Type)

Example of Cylinder Type: 20 ～ 50 m³/day

<table>
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<td></td>
<td>Φ2.17</td>
<td>10.70</td>
<td>2.30</td>
</tr>
</tbody>
</table>

*BAE80, BAE100 (more than BAE 50 needs two tanks)

BAE20 : Cylinder Type Johkasou

BAE is BOD removal type
- Effluent BOD < 20mg/L
- BOD removal rate is 90% or more
Structure & Function

- Johkasou is packaged system, and completely different from Septic tank!!

1. SS in the influent is separated. Prevent agitation of exceeded sludge sediment.
2. Separate Solid debris or impurities in influent and circulated water and store these sediments.
3. Accumulated sludge should be removed from the tank periodically (once in 6-12 months).
4. Return the accumulated SS and nitrified liquid. This is driven by air. It is less chance of failure.
5. SS is settled and obtain clear treated water.
6. Johkasou is packaged system, and completely different from Septic tank!!
7. Chlorination Box
8. Activity of Microorganisms attached to the special moving bed reduces BOD aerobically. 
   \[
   \text{NH}_4^-\text{N} \rightarrow \text{NOx-N}
   \]
Indonesia Factory

- Produce in Automation factory, always we can provide high quality product!!

Factory in Indonesia and Factories in Japan are:

- **Same Production Process**
- **Using Same Production Equipment**

Product in Indonesia:

- **High Quality Product**
- **Local Cost**

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Cylindrical Molding Machine

Automatic Opener

Automatic Molding Machine

Indonesia Factory Appearance

In the Factory

Work Landscape
Kenya Project Example

Nairobi Apartment Project 60m3/d
Johkasou introduction at the installation site
Kenya Project Example

Small scale Johkasou installation_1m3/day
Kenya Project Example

Small scale Johkasou installation_1m3/day
Kenya Project Example

Training for Kenyan plumbers at installation site
Kenya Project with our Local Partner

- Kenyan Domestic Water Treatment Situation

- Design

  - Apartment House
  - Septic Tank
  - Soak Pit

- Actual

  - Apartment House
  - Septic Tank
  - Soak Pit

  *Bad design*

  *Not working*

Need to remove liquid & solid from the septic tank, and sent to pond or lagoon.

*Soak Pit: As wastewater (greywater or blackwater after primary treatment) percolates through the soil from the soak pit, small particles are filtered out by the soil matrix and organics are digested by microorganisms.*
Kenya Project with our Local Partner

- **Septic Tank & Soak Pit System**
  - If soak pit is not working because of some problems...
    → Need to remove wastewater (liquid & solid waste) weekly or monthly.

- **Johkasou**
  - Johkasou treated water is very clean (BOD less than 20mg/L)
    → Treated water can be reused and discharged directly.
  - **Removing solid waste is once in 6 month**
    → Johkasou can separate solid waste & liquid waste, and store solid waste for 6 month.

Johkasou can reduce amount of waste (liquid & solid)
Daiki Axis will expand knowledge and technology of water treatment and waste management by installing Johkasou in African countries with the cooperation of local governments, partners, Ministry of the Environment, Japan and JICA.
Treated Water Quality

Thank you!!