Maintenance and Management of Johkasou System
—Its Maintenance, Desludging and Inspection

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Domestic Wastewater Treatment System in Japan

1. Small scale systems for only treating flush toilet wastewater
   ![Diagram 1]

2. Small to medium scale systems for treating miscellaneous domestic wastewater
   ![Diagram 2]

3. Large scale systems for treating miscellaneous domestic wastewater
   ![Diagram 3]
Number of facility

Johkasou
about 8,000,000

Sewerage System
about 2,200

periodical O/M

Johkasou
3~4 months
1 month
2 weeks
1 week
daily
etc.

Sewerage System
daily
The treated water is discharged into rivers, so Johkasou systems are highly favorable to the reservation and improvement of water environment.

To maintain effluent qualities
The maintenance and management (maintenance, desludging and inspection) are very important.

Johkasou systems = small scale and decentralized systems

Organization for Maintenance, Desludging and Inspection

- Request
  - Specified inspection agency
    - Qualified inspectors: about 1,100
  - Technical supervisor
    - Maintenance
      - Entrusted
        - Johkasou maintenance vendor
          - Qualified operators: about 69,000
    - Desludging
      - Entrusted
        - Johkasou desludging vendor
          - Qualified technicians: about 15,000
**Operation / Maintenance**

- Devices and instruments O/M
- Surrounding conditions
- Water flow condition
- Treatment performance
- Sludge accumulation
- Electrical and mechanical devices

**Water Quality Management**

- Site investigation
  - To judge the treatment effectiveness of unit equipments
  - To find the causes if any changes are observed and conduct to stabilize the treatment function

- Laboratory analysis
  - To investigate water quality in the discharged part regularly
  - To ascertain whether treatment is functioning steadily
Check up the way of inflow water
Accumulated Sludge
**Desludging and Cleaning**

- **Sludge accumulation**
  - To decide when to desludging and cleaning based upon treatment effectiveness and the accumulation of sludge

- **Sludge removal**
  - The method for removing sludge and the volume must be decided depending on the functioning of the unit equipments.
  - After desludging, water must be added as the amount of removed sludge.

**Vacuum Truck for Desludging**
Modified Vacuum Truck for Volume Reduction
Schematic diagram of Modified Vacuum Truck

- Flocculant tank
- Storage tank
- Flocculation tank
- Screen
- Separated water
- Thickened sludge
- Aeration
- Hose reel

Screen and thickened sludge
Separated water

TYPE OF JOHKASOU

Before thickening
SS %

After Thickening
SS %

Separated water
SS mg/l

TOTAL AERATION

0.3~0.7

3.5~5.0

< 100

SEPARATION-
CONTACT AERATION

1.0~1.5

4.0~6.0

< 200

SEPTIC TANK

1.0~2.0

4.0~6.5

< 200

ANAEROBIC FILTER

0.7~1.8

4.5~7.0

< 100

Experimental results by the modified vacuum truck
System needed for a johkasou plant

Installation, planning and design technology
Construction technology

Johkasou

Operational management and facilities management
Inspection and maintenance technology
Water quality analysis technology
Desludging technology