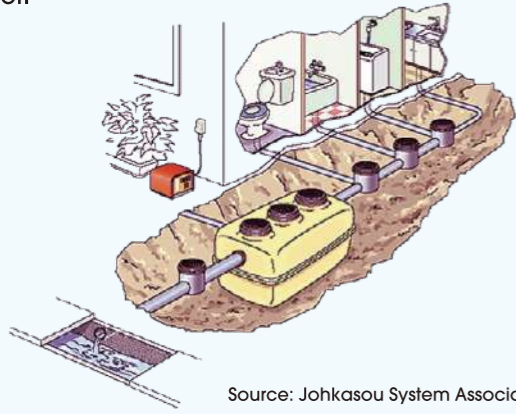


06 Advantages of Johkasou

Not only black water (toilet wastewater), but also gray water (wastewater from the kitchen, bath, and laundry) can be treated together by a Johkasou. Since gray water contains oil and detergent, it is reported to have a higher BOD load than black water.



Source: Johkasou System Association

Every Johkasou is designed to achieve a BOD effluent of 20 mg/L or less. Moreover, since Fiber Reinforced Plastic (FRP) Johkasou are produced in quality-controlled factories, the product quality is kept constant.



Source: NIKKO Co.,Ltd

Very compact design. Only one car parking space is required for a 5 PE Johkasou.

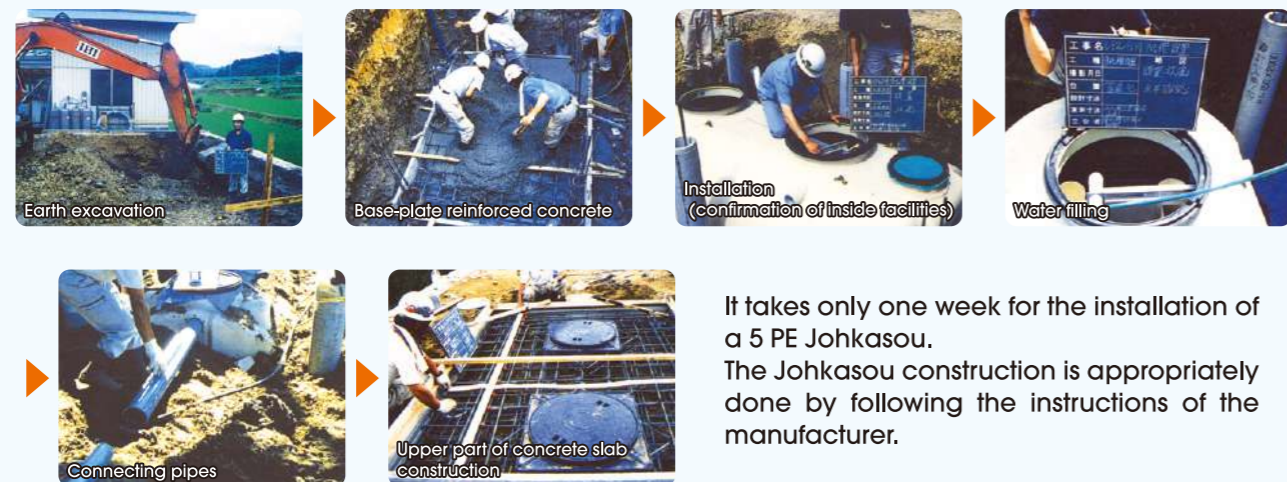


Source: Johkasou System Association

Blowers using electricity are indispensable for aerobic wastewater treatment. However, the power consumption of a 5 PE Johkasou is only about 30 W. This means that the Johkasou is energy saving compared to other decentralized domestic wastewater treatment facilities with the same treatment performance.

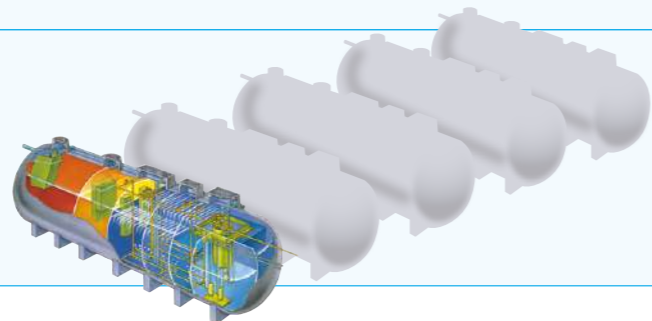


Source: FujiClean Co.,Ltd



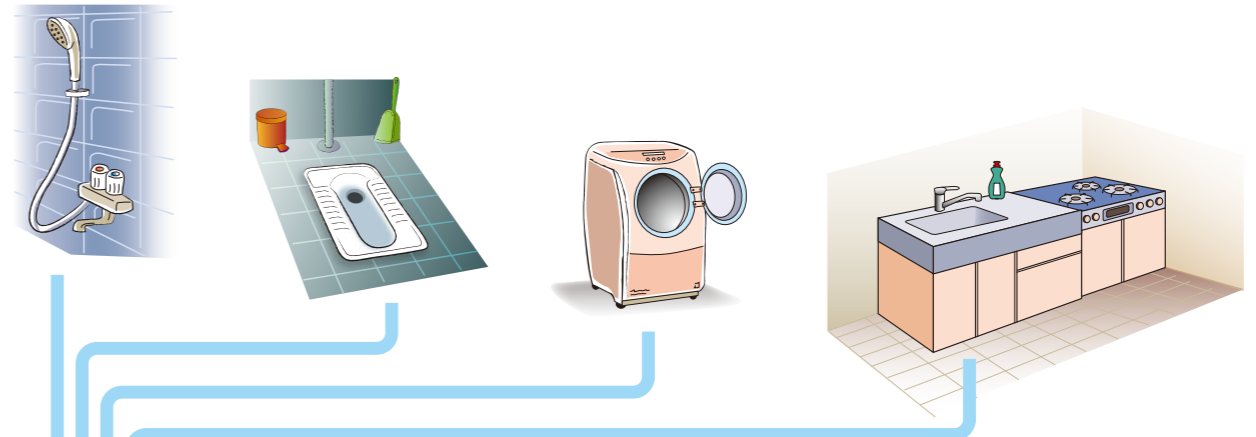
It takes only one week for the installation of a 5 PE Johkasou. The Johkasou construction is appropriately done by following the instructions of the manufacturer.

FRP-made Johkasou can be flexibly scaled up as much as needed, starting from 5 PE. For example, a 77,000 PE Johkasou has been installed at the Kansai International Airport in Japan.



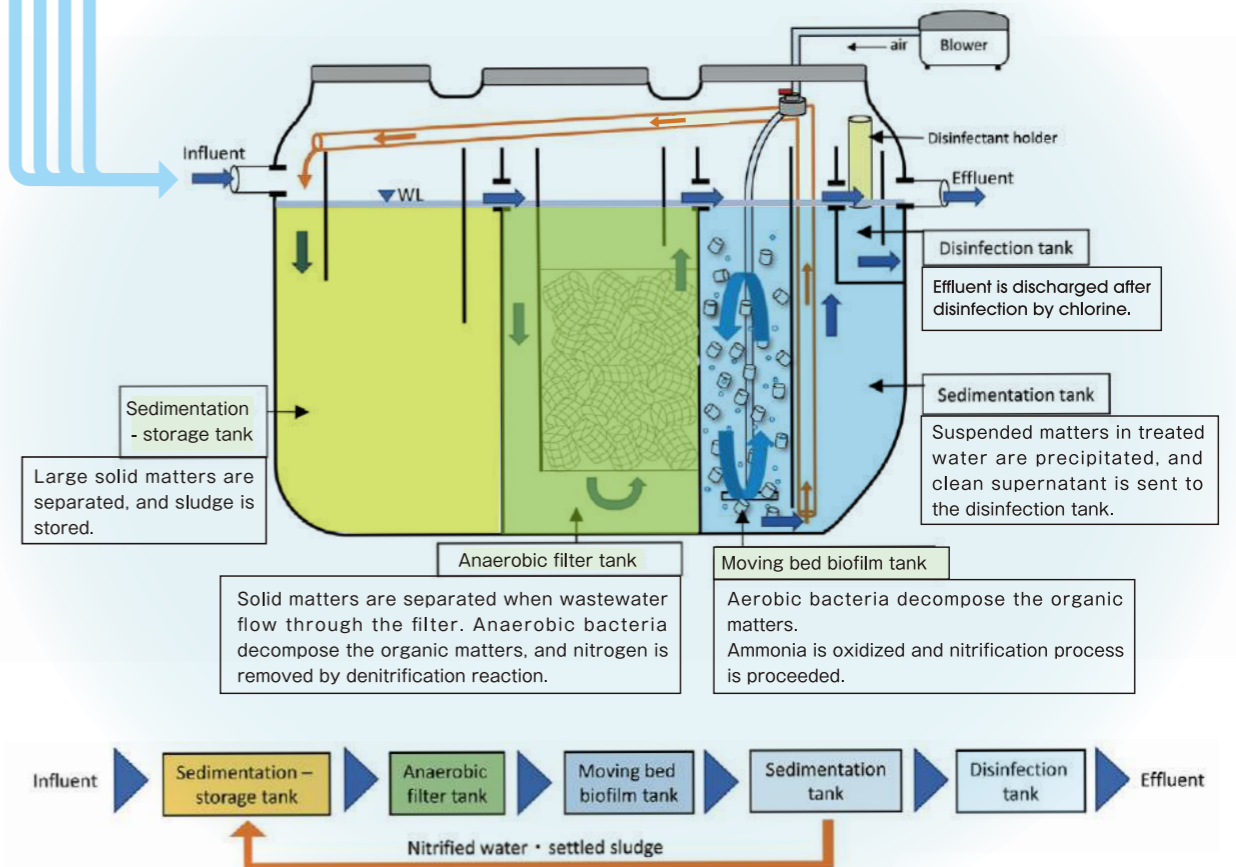
Japanese decentralized wastewater treatment facility

Characteristics of Johkasou



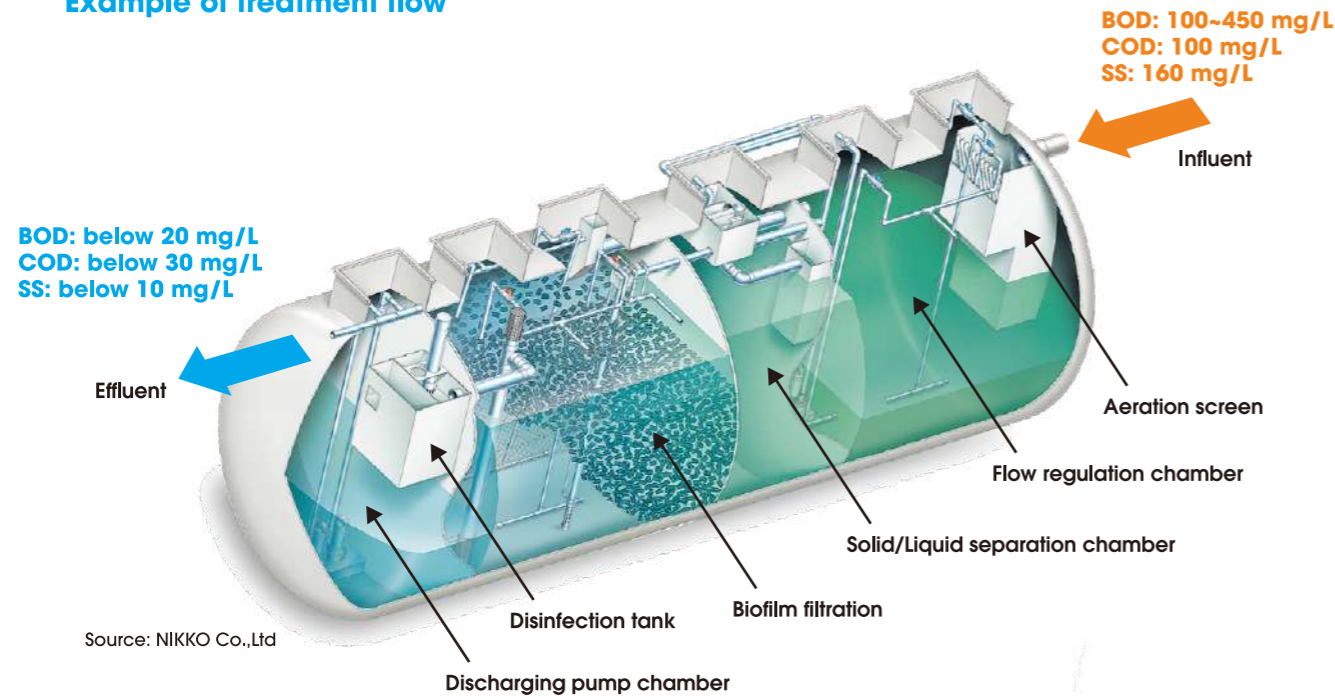
01 Example of small-scale Johkasou structure

Example of a 5-10 PE (population equivalent) Johkasou



02 Example of medium - and large - scale Johkasou structure

Example of treatment flow



03 Achievement in overseas countries



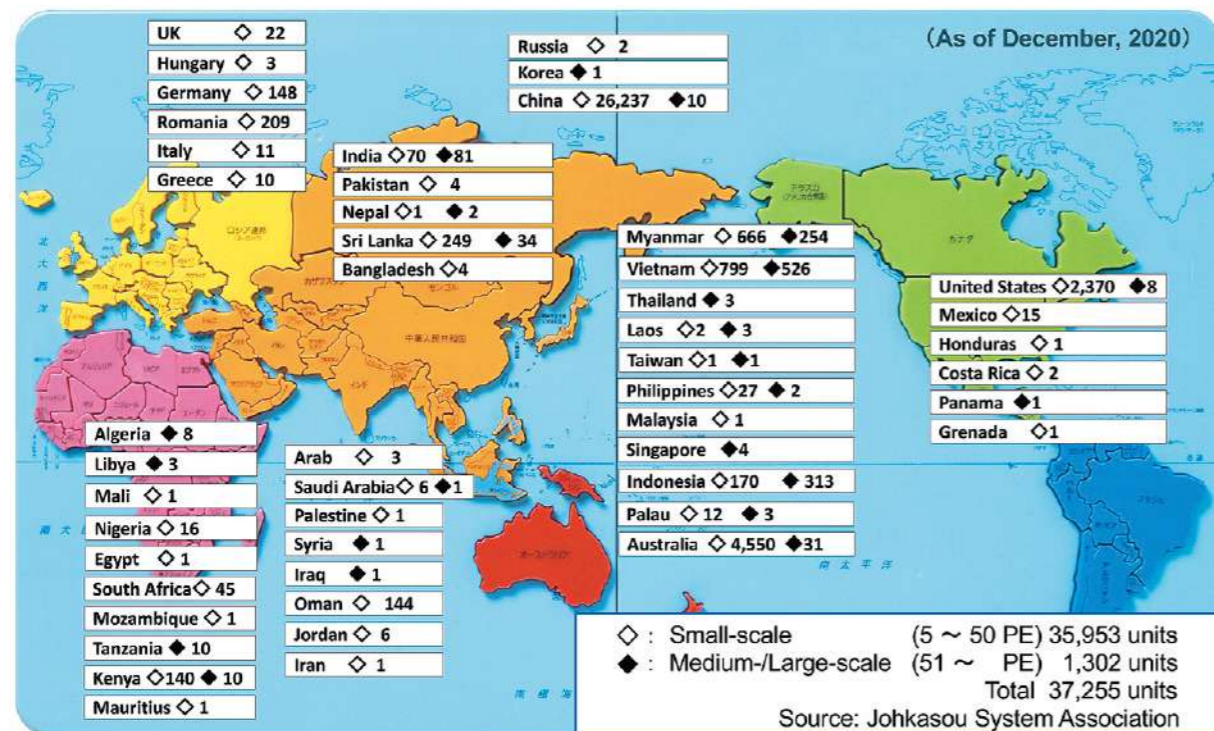
Golf resort (Vietnam: 20 m³/day)
Source: FujiClean Co.,Ltd



Vientiane Airport terminal (Laos: 250 m³/day)
Source: Kubota Johkasou System Co.,Ltd



Office (India: 20 m³/day)
Source: Daiki Axis Co.,Ltd



Number and location of Johkasou installed in overseas countries Source: Johkasou System Association

04 How to ensure the treatment performance ?

Japanese performance evaluation and testing system for Johkasou

According to the Building Standard Act and the Johkasou Act, the Johkasou manufactured at factories must be certified by the Minister of Land, Infrastructure, Transport and Tourism (MLIT).

A Johkasou performance evaluation and testing facility has been established in Ibaraki Prefecture. There, Johkasou performance evaluation and tests are conducted by a third party organization in an equitable way with the use of the actual domestic wastewater generated by a nearby village.

During the test, the pollutant load from domestic wastewater and the water temperature of 13 °C and 20 °C are controlled. A test is conducted for 8 weeks (when carrying the evaluation using 2 units) or 16 weeks (when carrying the evaluation using 1 unit). The treated effluent quality are examined to check whether they comply with the effluent quality standards.

If a Johkasou cannot pass this test, the manufacturing company is not allowed to produce the tested type of Johkasou as it cannot be certified by MLIT.

In this way, the treatment performance of Johkasou is guaranteed, and the consumers are protected.



Source: National Institute for Environmental Studies

05 How does Johkasou differ from other facilities?

All decentralized wastewater treatment facilities require regular maintenance in order to achieve their designed treatment performance.

Factory-produced FRP Johkasou are expected to achieve a stable treatment performance as they are rarely affected by the technical level of construction where they are installed.

Type of facility	Johkasou	Septic tank	Constructed wetland
Treatment process	Anaerobic-Aerobic (+ denitrification) HRT: 1.5~few days	Anaerobic digestion HRT: few days	A combination of physical filtration, chemical adsorption and biological degradation inhabited by plants HRT: few weeks
Treated effluent quality	[High, guaranteed] BOD ≤ 20(10) mg/L (T-N ≤ 20 mg/L)	[Low] BOD 100 mg/L~	[Middle] BOD 20 - 50 mg/L
Facility scale	[Small] (underground, on-ground)	[Small] (underground)	[Large area]
Initial cost	[High]	[Low]	[Middle]
Utility	Water, Electricity	Water	Water (Electricity)
Other requirements	Regular O&M and desludging	Regular desludging	Mowing Measures against clogging (Pre-treatment is required)