

Furano District Environmental Hygiene Center

(Sludge Treatment Center)

Furano District Environmental Hygiene Association

Information about the Furano District Environmental Hygiene Center

Overview of the Facility

Name:

Furano District
Environmental Hygiene
Center

Location:

Kamigo-ku, Furano City,
Hokkaido

Compound area:

30,183 m²

Building area:

6,321 m²

Treatment capacity

- Sewage: 46 kL/day
- Sludge from septic tanks: 14 kL/day
- Kitchen waste: 22 t/day

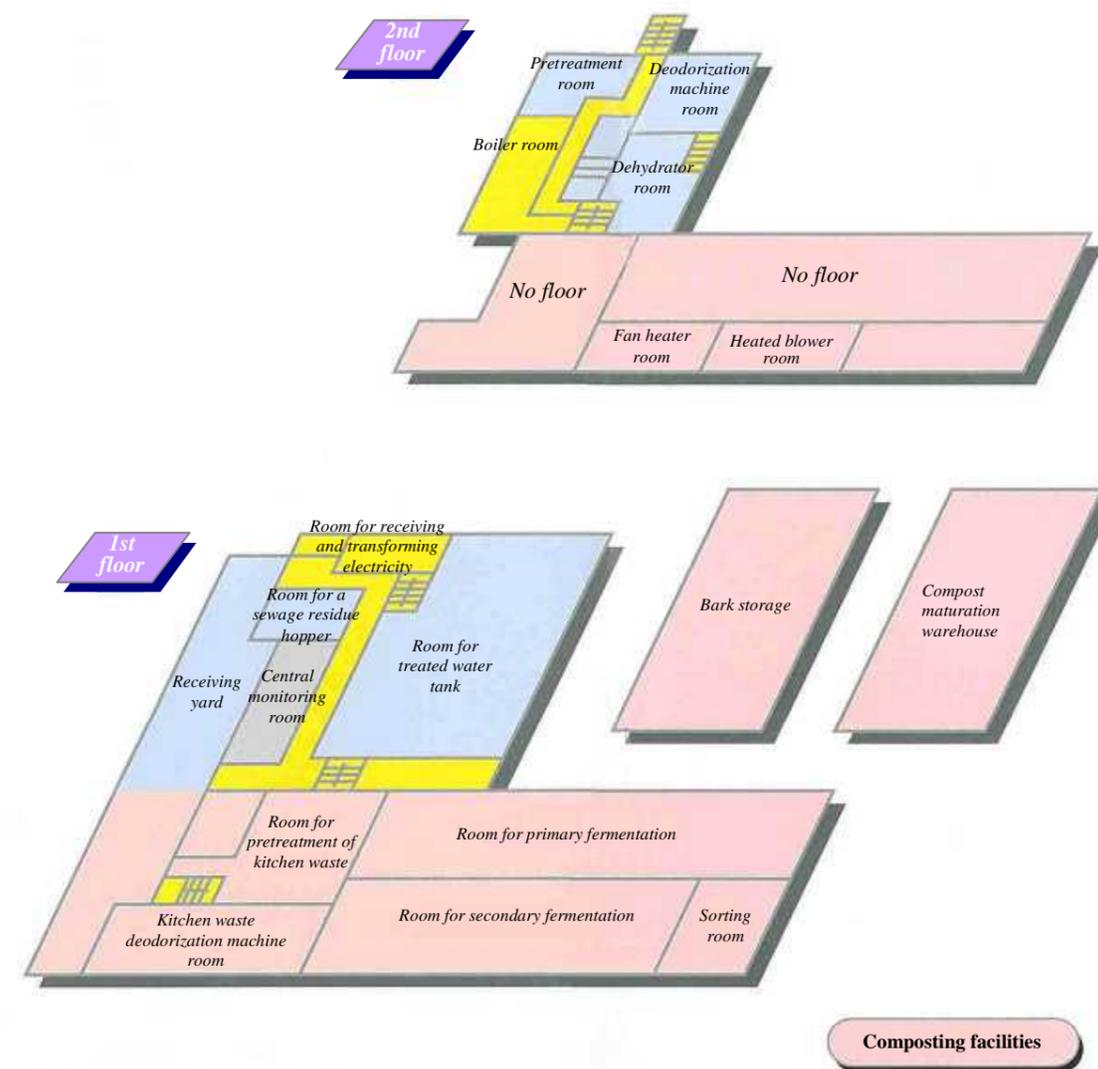
Treatment method

Water treatment facilities:

Standard denitrification
treatment method +
advanced sewage treatment

Composting facilities:

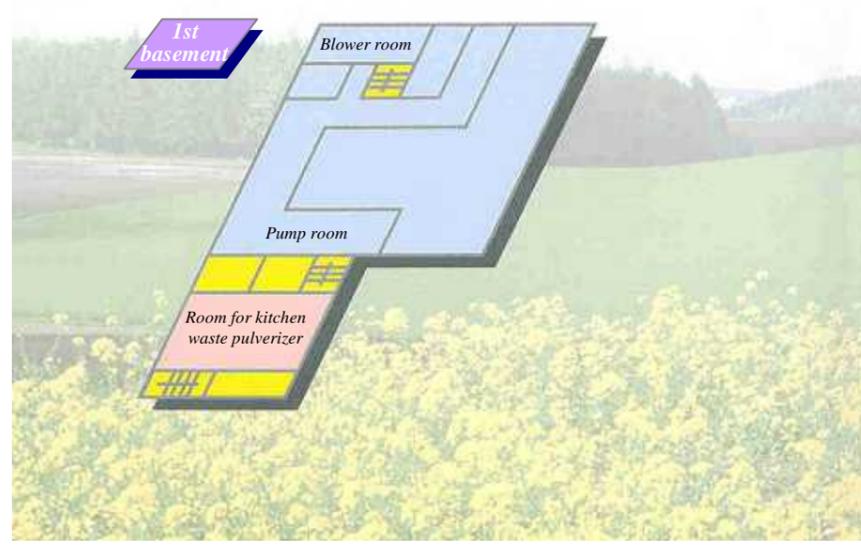
Rapid composting method



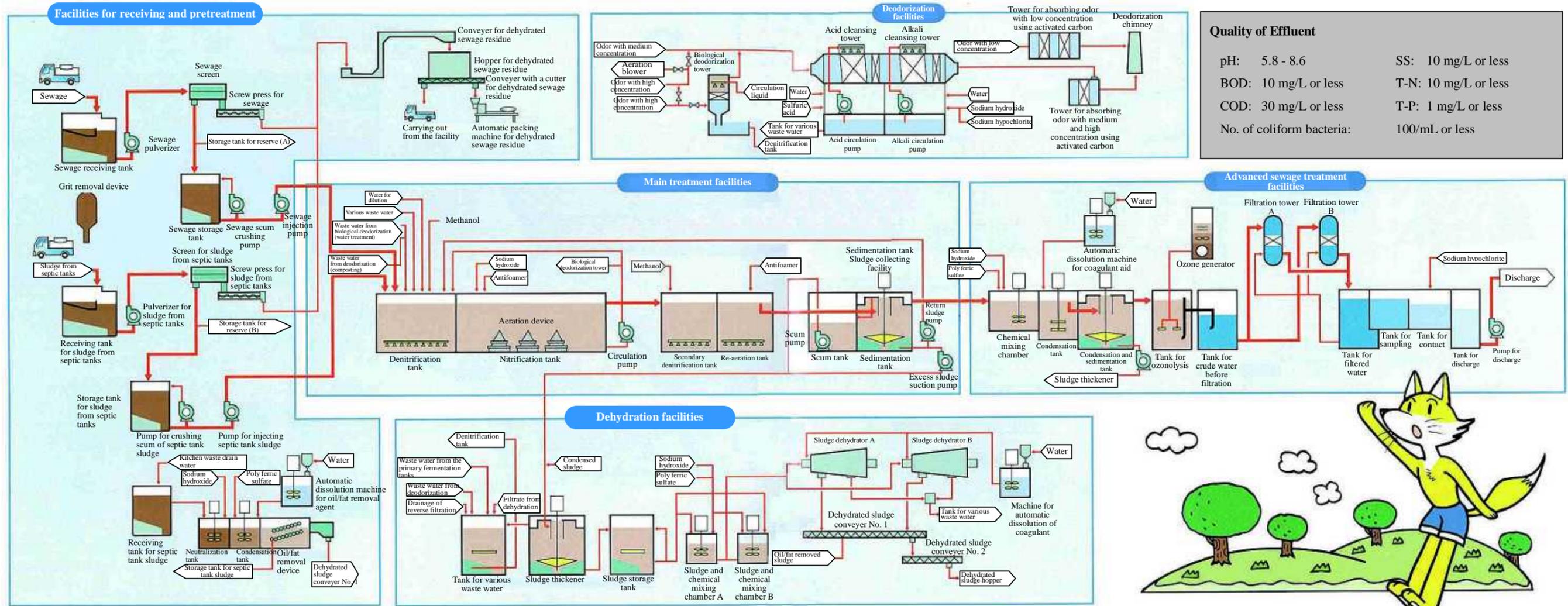
Water treatment facilities



Composting facilities



Flow Diagram for the Water Treatment Facilities



Water Treatment Facilities

Facilities for Receiving and Pretreatment

Sewage and the sludge from septic tanks are put into the receiving tank. Grit, etc. is removed in the grit removal tank. Foreign matter in the sewage, etc. is pulverized by the pulverizer and is removed using the screen. The remaining sewage is then stored in the storage tank, before it is treated at the main treatment facilities and at other facilities. The sewage residue which has been removed using the screen is dehydrated using the screw press. The grit is removed by the grit removal device and then cleansed. The sewage residue and the grit are then carried out from the facility.

Main Treatment Facilities

Sewage and sludge from septic tanks, together with dilution water, are injected into the denitrification tank. Bacteria which is called "activated sludge" removes nitrogen and organic matter from the sewage, etc. in the denitrification tank and in the nitrification tank. Liquid is circulated between the two tanks, by pumping back the liquid from the nitrification tank to the denitrification tank. In the denitrification tank, nitrogen in the circulating liquid is removed (denitrification) using the organic matter contained in the injected sewage, etc. The nitrification tank mainly decomposes and removes the organic matter and also oxidizes the ammonia nitrogen (nitrification). Treatment in the nitrification tank is followed by treatment in the secondary denitrification tank and the re-aeration tank, where the nitrogen is removed and organic matter is decomposed and removed once more. The sludge in overflow water is decomposed in the sedimentation tank and is sent back to the denitrification tank ("return sludge"). Excess sludge is removed from the process.

Advanced Sewage Treatment Facilities

Elements which could not be removed fully at the main treatment facilities are removed here. Firstly, the elements to be removed are condensed using coagulant, etc. These elements are then removed through a sedimentation process in the condensation and sedimentation tank. Secondly, chroma elements in the upper clearer layer of the fluid are removed through ozonolysis. Finally, the remaining suspended matter is removed through sand filtration.

Dehydration Facilities

After thickening the excess sludge and condensed sludge in the sludge thickener, the sludge is dehydrated using the sludge dehydrator. The filtrate is collected in the tank for various waste water before being treated at the main treatment facilities. The dehydrated sludge generated in this process is composted at the composting facilities.

Deodorization Facilities

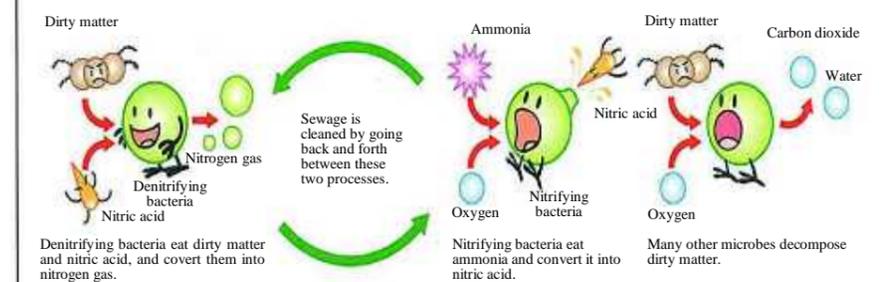
These facilities collect and remove the odor from the receiving tank, the storage tank, other equipment and the odor from various rooms such as the pump room. The deodorization facilities are comprised of the biological deodorization tower, the chemical cleansing towers and the towers for absorbing odor using activated carbon.

Facilities for Supplying Agents and Water

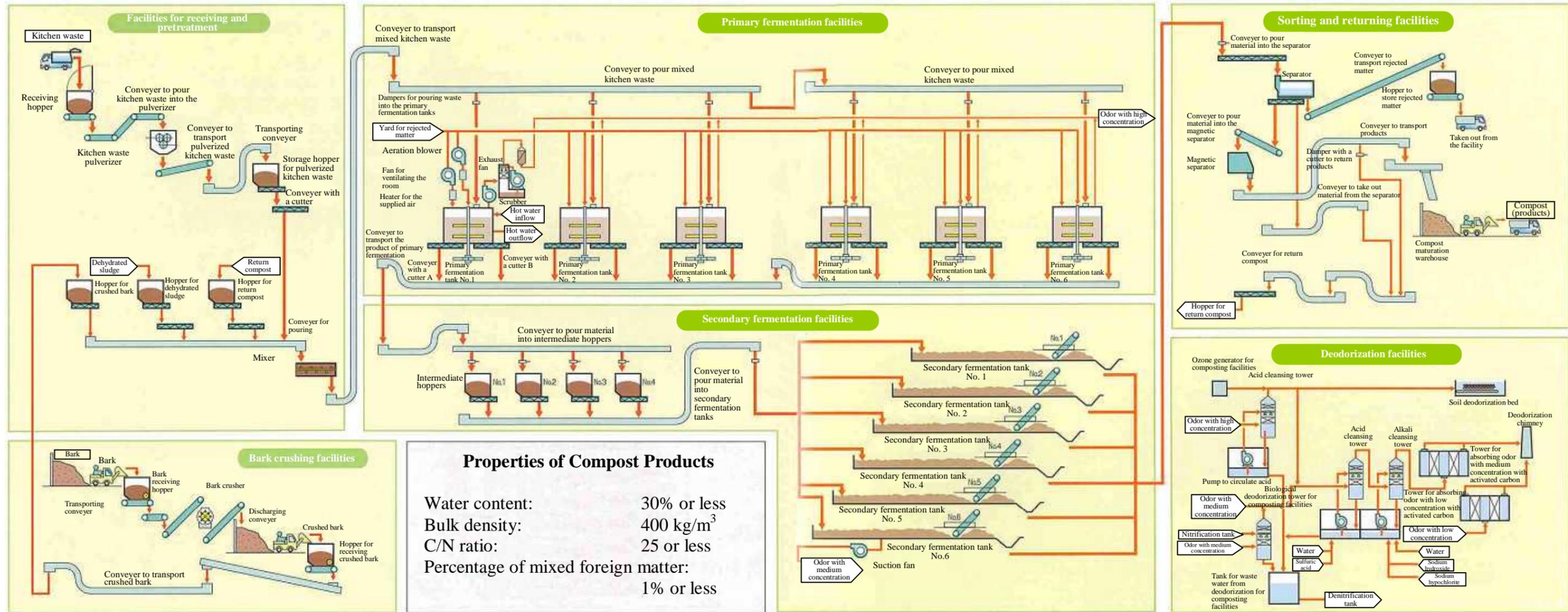
The facilities supply the water, agents, etc. which are needed for operation.



How do bacteria clean sewage?



Flow Diagram for the Composting Facilities



Composting Facilities

Facilities for Receiving and Pretreatment

Kitchen waste is received and pulverized by the kitchen waste pulverizer, before being stored in the storage hopper for pulverized kitchen waste. Dehydrated sludge, return compost and crushed bark (water content adjusting material) are added to the pulverized kitchen waste and they are mixed in the mixer. The mixed material is composted at the primary fermentation facilities. Drained water generated from kitchen waste is treated at the water treatment facilities.

Bark Crushing Facilities

These facilities crush bark and produce crushed bark which will be used to adjust water content.

Primary Fermentation Facilities

Kitchen waste mixed with crushed bark, etc. is poured into the primary fermentation tanks. These facilities mainly decompose easily-decomposed elements in the kitchen waste through fermentation. The optimum temperature for composting is maintained in the tanks by adjusting the balance between aeration and exhaust. Heat generated by the fermentation process causes the water to evaporate, and the vapor is discharged together with the odor. The generated odorous gas is washed by the scrubber and then deodorized.

Secondary Fermentation Facilities

The compost which completed the process of primary fermentation is poured into the secondary fermentation tanks. The compost is further fermented and its organic matter is further decomposed through appropriate aeration in the stirrer, so that consistent quality compost can be ensured.

Sorting and Returning Facilities

The separator and the magnetic separator separate inappropriate composting matter, grit and metals which are contained in compost which has completed the secondary fermentation process. After the inappropriate matter is removed, part of the compost is sent back and the rest is stored in the compost maturation warehouse for complete maturation, before being shipped as compost products.

Deodorization Facilities

These facilities collect and deodorize the odor generated by the equipment used in the composting facilities as well as deodorizing the building. The deodorization facilities are mainly composed of the biological deodorization tower, chemical cleansing towers and the towers for absorbing odor with activated carbon. In addition, odors from the primary fermentation tanks are deodorized in the soil deodorization bed. Deodorant spraying devices are also installed as a countermeasure to odor and they spray deodorant where necessary.

