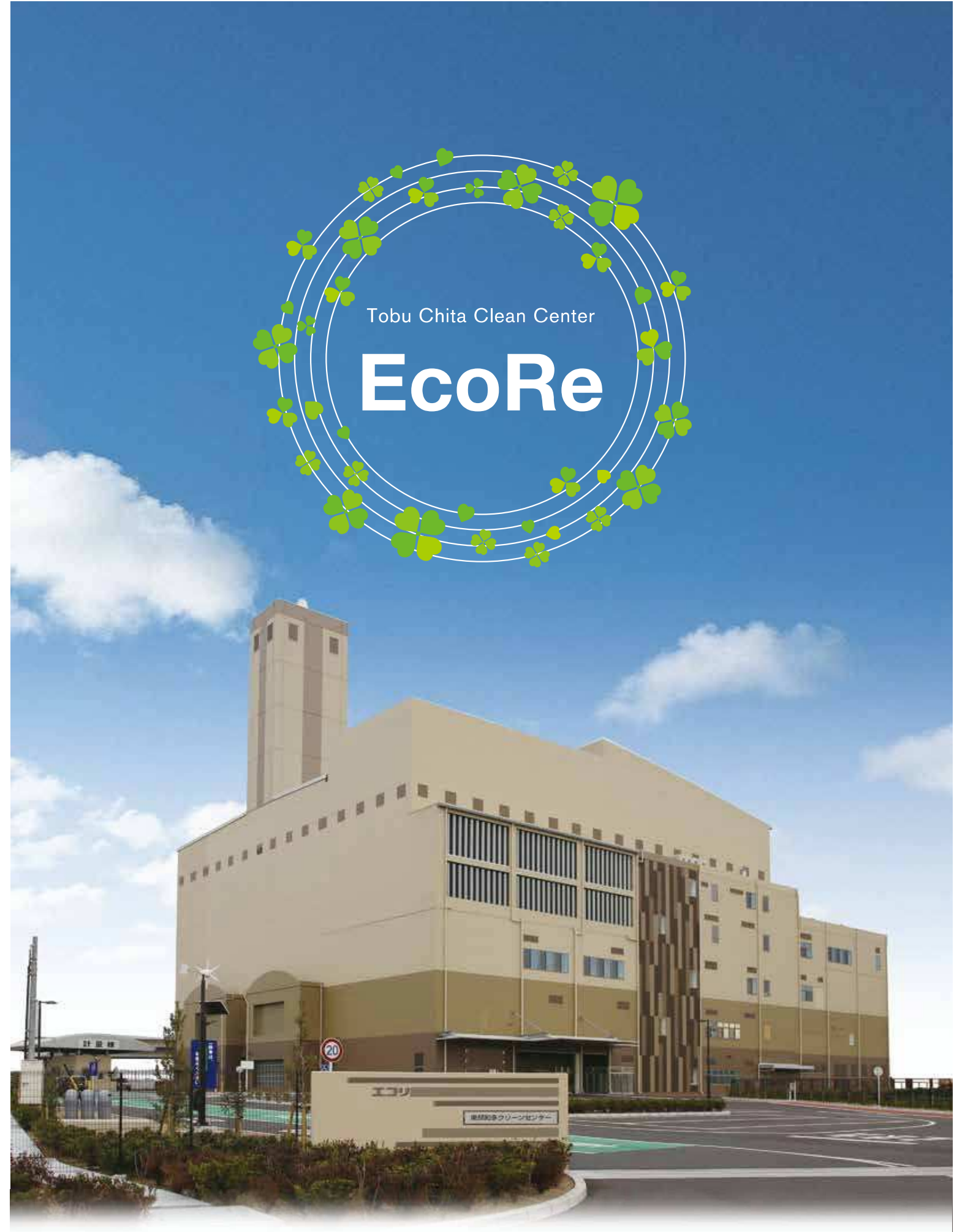


Access maps



Tobu Chita Environment Association

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Tobu Chita Environment Association

Outline of the Tobu Chita Clean Center

A safe and reliable facility

- * Processing a diverse range of refuse safely and reliably.
- * Information related to the facility and facility operation is available to the general public, as a trustworthy facility open to residents.

An environment-friendly facility

- * Effective pollution prevention measures have been implemented to minimize the environmental impact on the surrounding region.
- * Plant wastewater is contained in a closed-cycle system onsite, minimizing environmental impact.

Contributing to the low-carbon, recycling society

- * The heat energy from combustion is fully utilized, contributing to the establishment of a low-carbon society.
- * Produced slag and metal are utilized as resources, resulting in reduced landfill volumes.

Efficient design to maximize cost effectiveness

- * Design prioritizes minimal life-cycle cost from construction through long-term operation.

Facility outline

- Operator: Tobu Chita Environment Association
- Jurisdictions: Obu City, Toyoake City, Higashiura town, Agui Town
- Facility name: Tobu Chita Clean Center
- Address: 41 Aza Yoshino, Oaza Morioka, Higashiura Town, Aichi
- Site area: 26,438.54 m²
- Floor space: 12,189.10 m²
- Construction period: April 16, 2015 to March 8, 2019

Outline of major equipment

- Processed refuse: Combustible refuse, shredded combustible refuse, dewatered sludge
- Processing capacity: 200 tons/day (100 tons/day x 2 units)
- Furnace type: Shaft-type gasification melting furnace
- Receiving and loading system: Pit and crane
- Combustion gas cooling system: Waste heat boiler
- Exhaust gas processing system: Bag filter, dry HCl and SO_x removal systems
- Excess heat utilization: Steam turbine electricity generation, hot water supply

In-house exhaust gas standards

The facility is operated to in-house standards even more stringent than the regulations imposed by the Air Pollution Control Act.

- Fly ash: 0.02g/m³ max.
- Hydrogen chloride: 50 ppm max.
- Sulfur oxides: 50 ppm max.
- Nitrogen oxides: 70 ppm max.
- Dioxins: 0.1 ng-TEQ/m³ N max.

* Dry gas O₂ 12% equivalent



Heat energy utilization

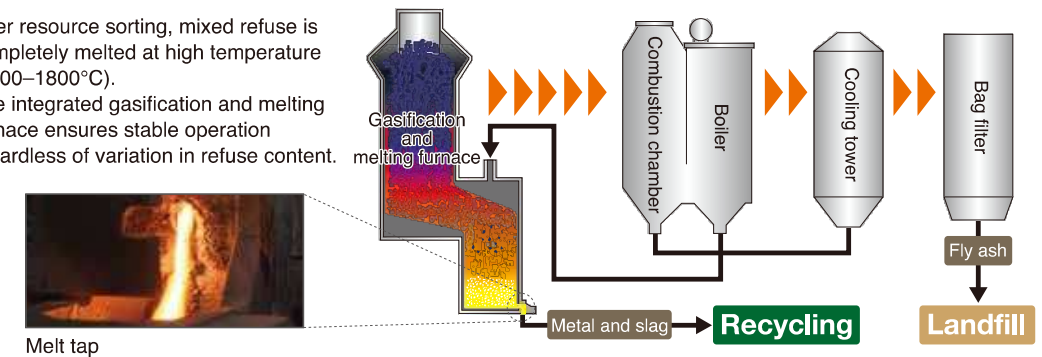
Heat energy from refuse processing is used to generate electricity, which powers the facility. Excess electricity is sold to the local electric power company and elsewhere.



Electricity supply

Direct melt and recycling system

- * After resource sorting, mixed refuse is completely melted at high temperature (1700–1800°C).
- * The integrated gasification and melting furnace ensures stable operation regardless of variation in refuse content.



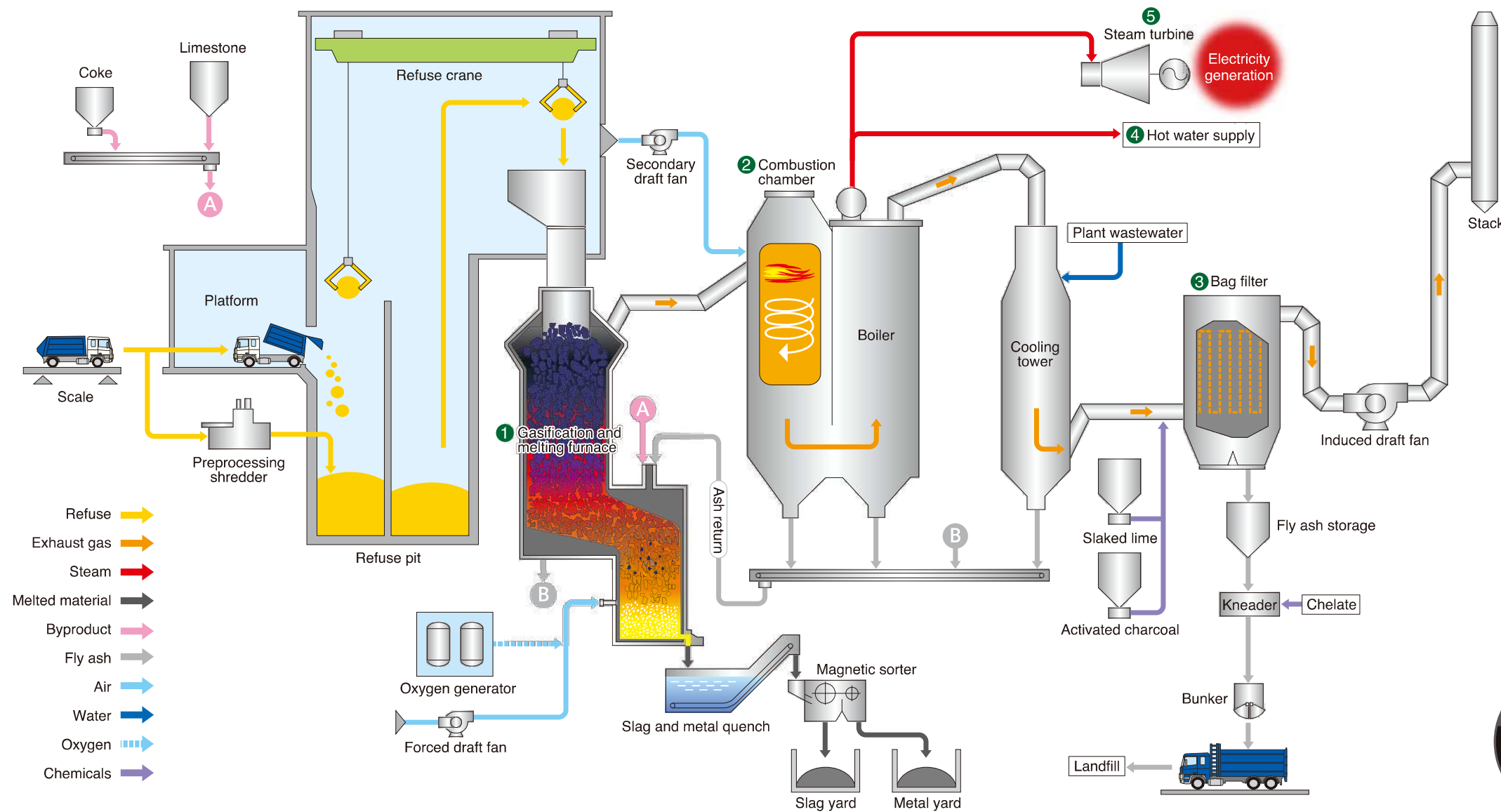
Melted resource recycling

Melted refuse is maintained in the high-temperature molten state for about an hour to provide sufficient time for heavy metal volatilization and basicity adjustment by limestone injection, ensuring safe melt with uniform quality. Recovered slag is as safe and harmless as natural sand, and is completely recycled along with recovered metal.

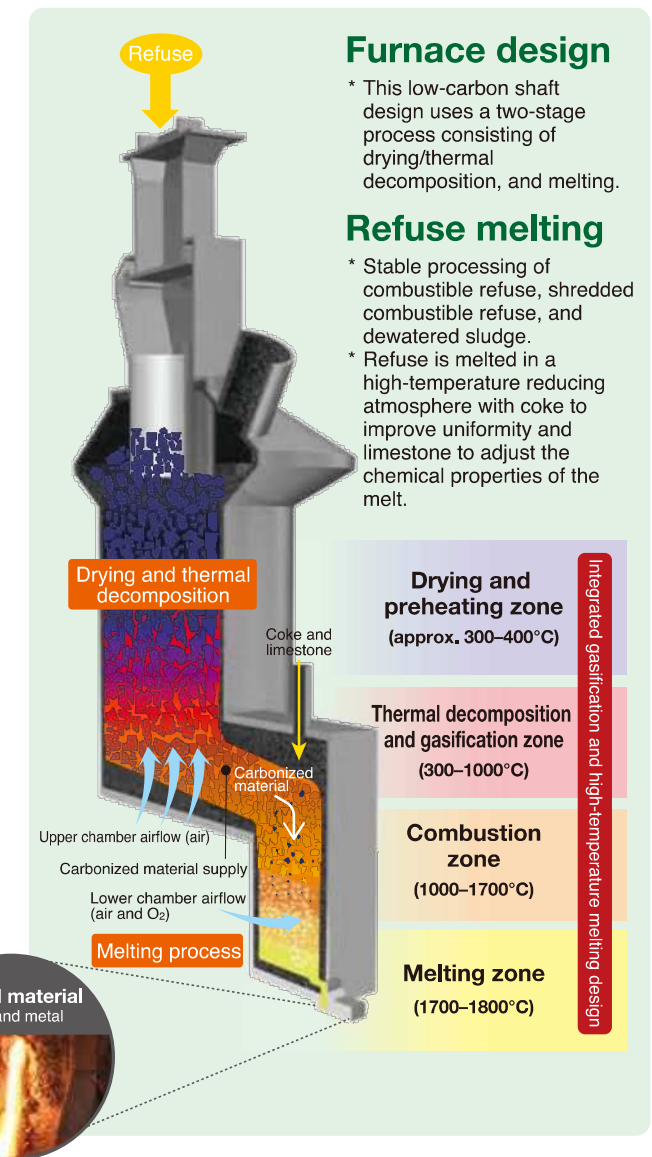


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Process flow



1 Low-carbon gasification and melting furnace



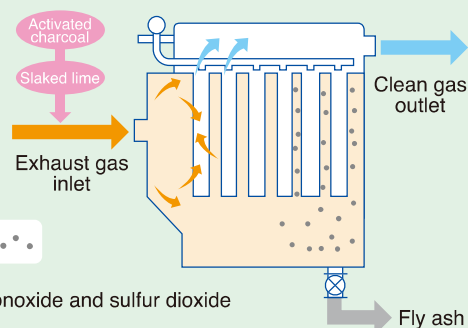
Suppressing release of hazardous substances

2 High-temperature combustion

Combustible refuse is thermal decomposed into combustible gas and residue in the gasification and melting furnace. The combustible gas is passed to the combustion chamber, where it is combusted at high temperature to break down dioxins.

3 Bag filter

Activated charcoal and slaked lime are injected into the exhaust gas upstream of the bag filter. SO_x, HCl, and other substances adhere, making it possible for the bag filter to capture the pollutants together with the fly ash.



Exhaust gas → Clean gas → Fly ash + ...

SO_x : Sulfur oxides such as sulfur monoxide and sulfur dioxide

HCl : Hydrogen chloride

Waste heat utilization

4 Heated pool utilizing waste heat

The heat generated from refuse combustion is used to heat water, which is supplied to the Tobu Chita heated pool.

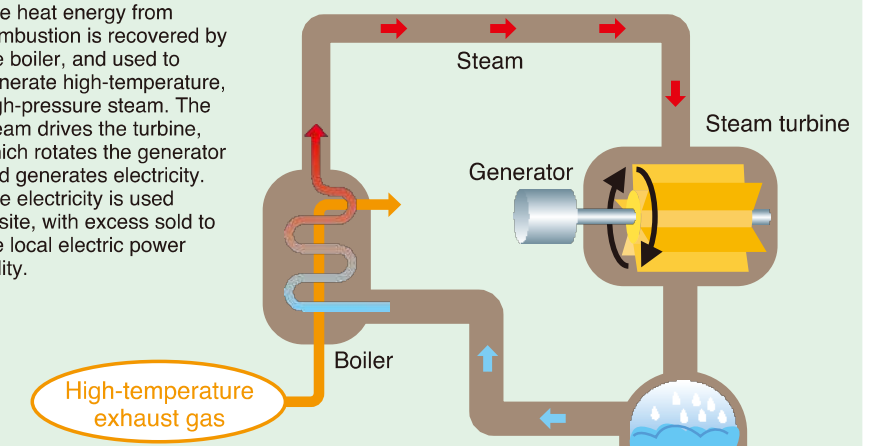


Heated pool

Electricity generation

5 Steam turbine generator

The heat energy from combustion is recovered by the boiler, and used to generate high-temperature, high-pressure steam. The steam drives the turbine, which rotates the generator and generates electricity. The electricity is used onsite, with excess sold to the local electric power utility.



Major equipment



Platform

The collection trucks are first weighed on the scale, and then enter the platform to dump their loads into the refuse pit.



Refuse pit

Refuse is stored here temporarily. It is mixed by the refuse crane, and then loaded into the gasification and melting furnace. The pit can hold the refuse of about 700 collection trucks.



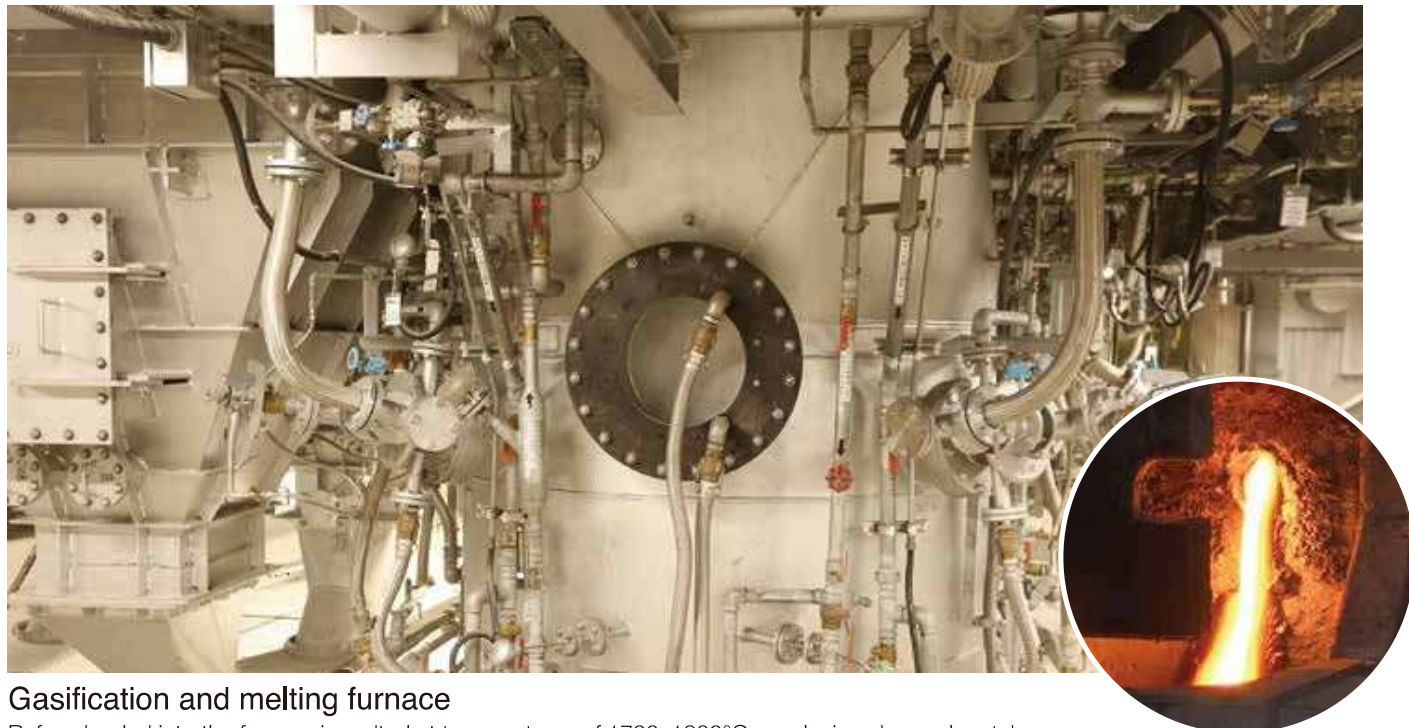
Combustion chamber

The thermal decomposition gas from the gasification and melting furnace is completely combusted in the combustion chamber, then passed to the boiler.



Boiler

The heat energy of the thermal decomposition gas is recovered and used to create steam, which is then used to generate electricity.



Gasification and melting furnace

Refuse loaded into the furnace is melted at temperatures of 1700–1800°C, producing slag and metal which can be recycled. There are two furnace units, each capable of processing up to 100 tons a day.

Melt tap



Bag filter

Tiny particles of fly ash and hazardous substances in the exhaust gas are trapped in the filters for safe removal.



Steam turbine generator

The steam from the boiler is utilized to generate up to 4450 kW of electricity, which is used on-site with the excess sold to the electric power utility.



Slag and metal quench

Located directly under the gasification and melting furnace, this cooling system quenches the molten slag and metal tapped from the base of the furnace. After it is cool, it is transported by conveyor to the magnetic sorter.



Magnetic sorter

The material from the slag and metal quench is magnetically sorted, separating the ferrous metal and slag for storage in separate yards.



Central Control Room

The system operates continuously under computer control 24 hours a day. All information needed to monitor and control the facility is channeled here, ensuring safe refuse processing.



Refuse Crane Control Room

The refuse crane is operated from here, and is under automatic operation 24 hours a day.