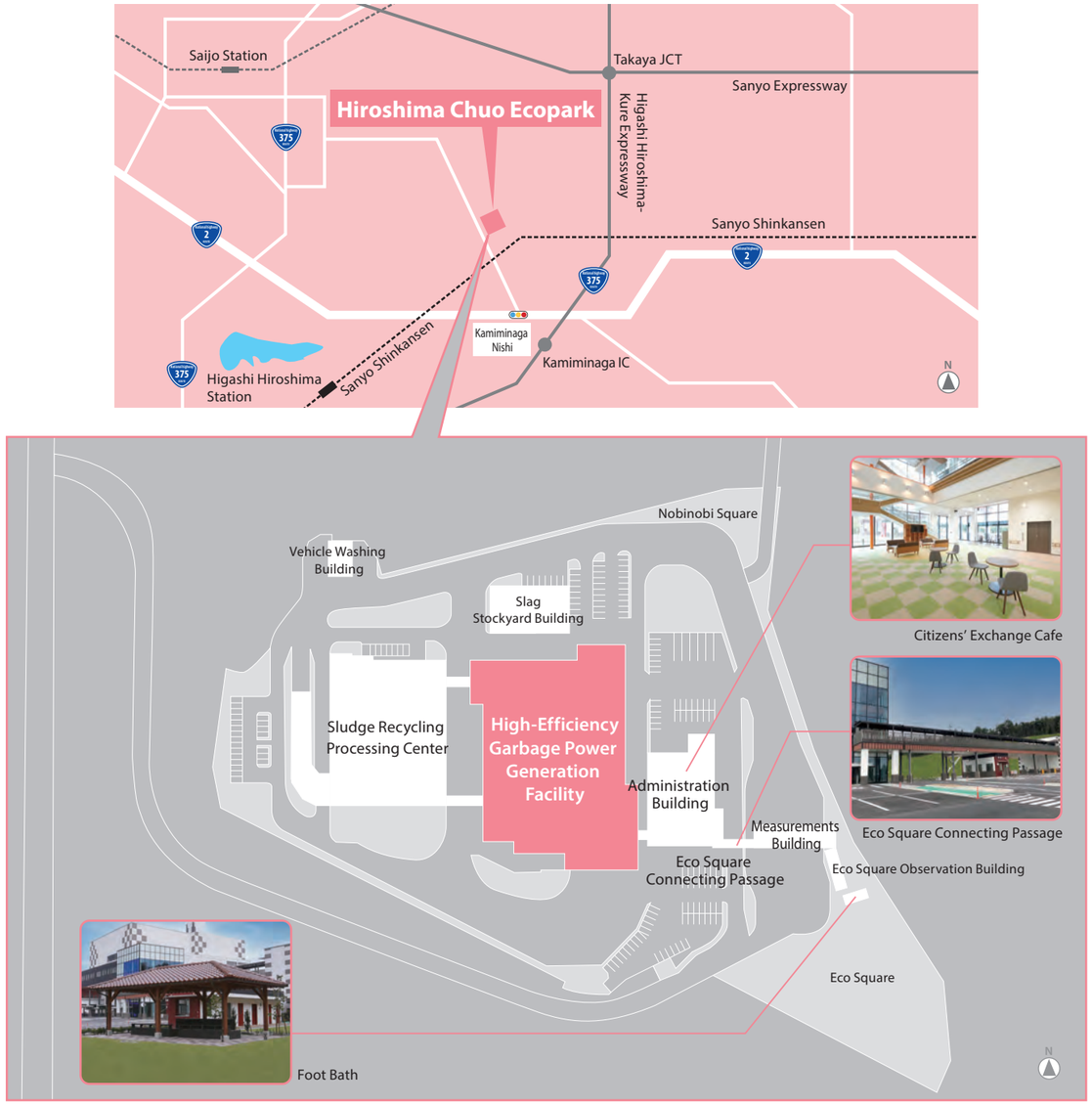
Facility Map



HIROSHIMA CHUO ECO PARK 10759-2 Kamiminaga, Saijo-cho, Higashi Hiroshima, Hiroshima 739-0022
Tel. 082-426-0820 / Fax. 082-426-0674

Business operator

Hiroshima Chuo Environmental Sanitation Association

10759-2 Kamiminaga, Saijo-cho, Higashi Hiroshima, Hiroshima 739-0022
Tel. 082-426-0820 / Fax. 082-426-0674

Design/construction administration

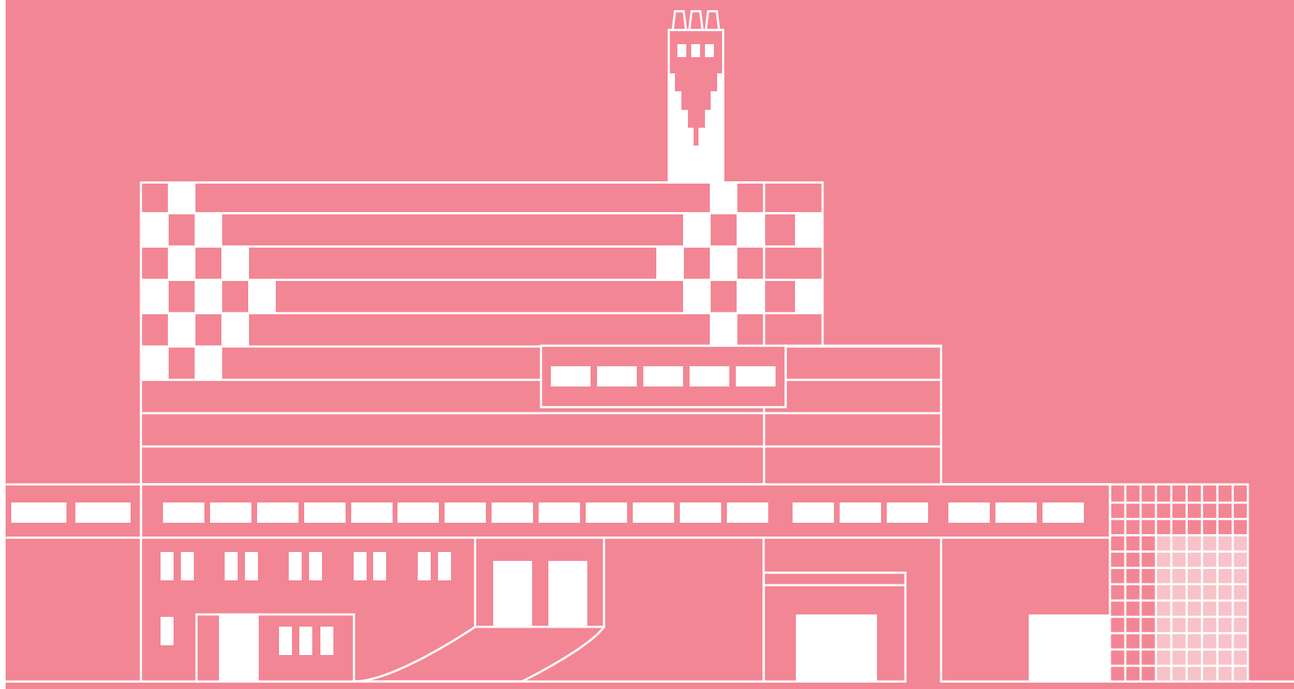
Eight-Japan Engineering Consultants Inc., Hiroshima Branch

Design/construction

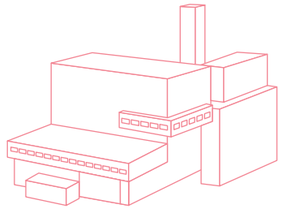
**NIPPON STEEL & SUMIKIN ENGINEERING CO., LTD.
Penta-Ocean Construction/Hagio Industries
Designated Construction Work Consortium**

HIROSHIMA CHUO ECO PARK

High-Efficiency Garbage Power Generation Facility



Hiroshima Chuo Environmental Sanitation Association



Realizing Towns that Can be Lived in Comfortably: Welcome to Hiroshima Chuo Ecopark

Hiroshima Chuo Ecopark's High-Efficiency Garbage Power Generation Facility treats waste from Higashi Hiroshima, Takehara, and Osakikamijima. We strive to be a base for an advanced material-cycle society by building a zero reclamation system.

A facility with excellent resource circulation/ energy use

A facility to be a base for environmental study

A facility combining nature with the local community

A facility serving as a base for disaster response/prevention

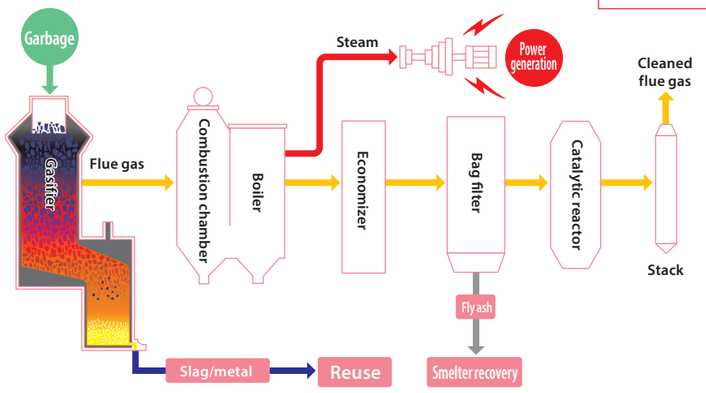
A facility with excellent resource circulation/energy use

We use energy generated in the melting process effectively for power generation, selling surplus electric power and utilizing it efficiently.
We have also achieved a final disposal amount of zero by recycling treated materials.

Thermal energy use

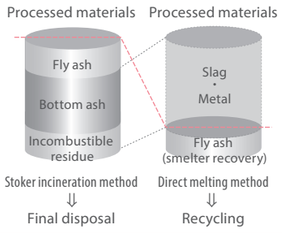
We use thermal energy generated by waste treatment to generate power. This leads to reduction of the fossil fuels needed for thermal power generation and a decreased burden on the environment.

Melting process flow



Zero Reclamation

We make our final disposal amount zero by melting and reusing bottom ash and incombustible residue generated by our stoker incineration method.



Reuse of molten materials (slag/metals)

Melting waste at a high temperature decomposes dioxins and removes heavy metals, so all materials are reused as harmless, safe molten slag in a sand form and metal.

Slag

Backfill material

Metal

Counterweights for construction machinery

Smelter recovery (valuable metals)

Smelter recovery is a technology for extracting and recovering lead, zinc, copper, and other valuable metals from molten fly ash discharged from the waste treatment facilities of nonferrous metal manufacturers' smelters.

Zinc materials

Zinc ingots

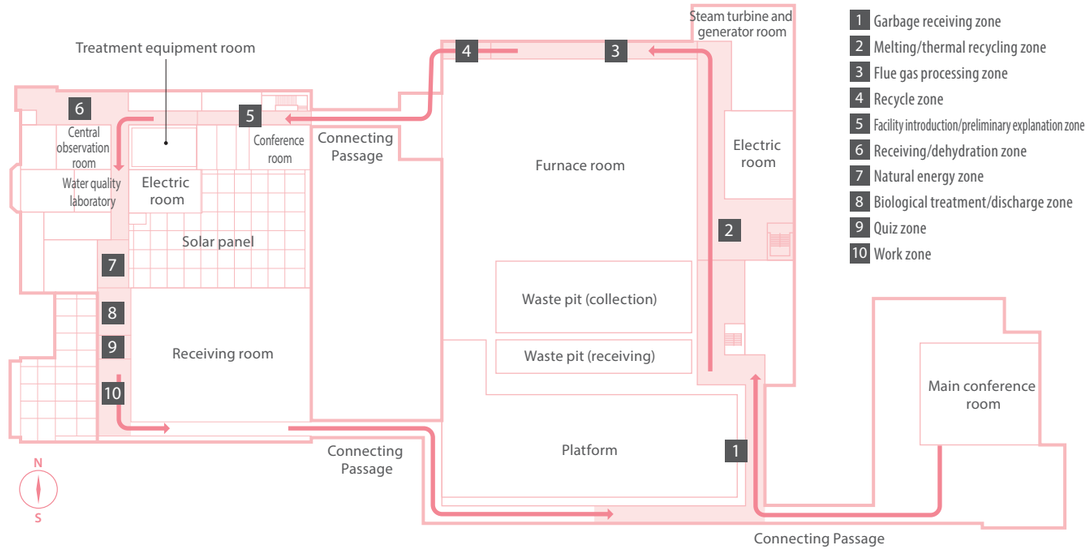
Copper mats

Copper ingots

A facility to be a base for environmental study

This is the visitors' passage circling from the High-Efficiency Garbage Power Generation Facility to the Sludge Recycling Processing Center.
We provide plenty of hands-on study and tour programs for visitors to understand energy made from waste and the mechanisms that create combustion aids from night soil.

Sludge Recycling Processing Center | **High-Efficiency Garbage Power Generation Facility** | **Administration Building**

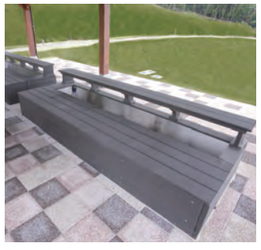


1 Garbage receiving zone
2 Melting/thermal recycling zone
3 Flue gas processing zone
4 Recycle zone
5 Facility introduction/preliminary explanation zone
6 Receiving/dehydration zone
7 Natural energy zone
8 Biological treatment/discharge zone
9 Quiz zone
10 Work zone

A facility combining nature with the local community

A design that connects facilities on one horizontal line creates a sense of unity throughout all of Ecopark. As a place to relax and be in touch with nature, Ecopark allows visitors to experience a footbath in Eco Square or go on a nature walk of the Saigoku Kaido.

Nature walking trail



Foot Bath

A facility serving as a base for disaster response/prevention

Use of high-temperature melting technology makes prompt treatment of disaster waste possible. Sturdy construction also ensures the facility is earthquake-proof. We accept evacuees in the event of a disaster and use Eco Square as a temporary repository for disaster waste.

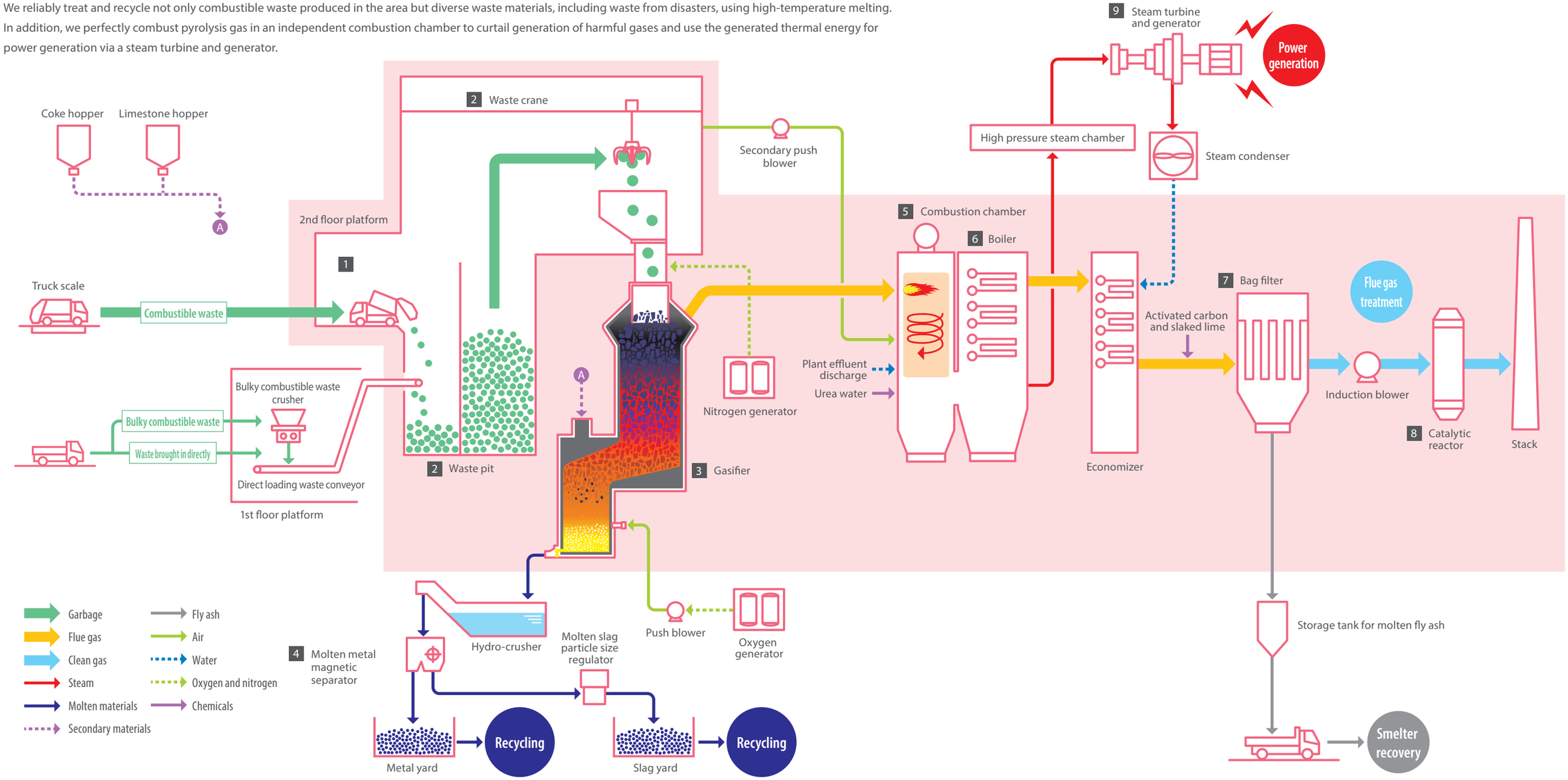
Eco Square

Facility Outline

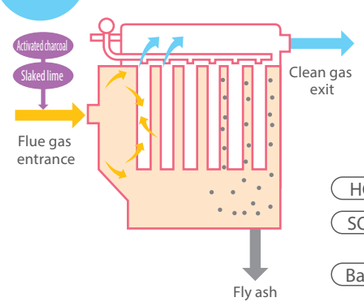
Business operator	Hiroshima Chuo Environmental Sanitation Association
Consisting cities and towns	Higashi Hiroshima/Takehara/Osakikamijima
Facility name	High-Efficiency Garbage Power Generation Facility, Hiroshima Chuo Ecopark
Location	10759-2 Kamiminaga, Saijo-cho, Higashi Hiroshima, Hiroshima
Business type	DBO (design, build, and operate/public-private) system
Materials processed	Combustible waste, etc.
Processing capacity	Maximum 285t/day (95t/day × 3 furnaces)
Processing method	Gasification melting, shaft furnace type
Power output	6,500kW (maximum)
Lot size	191,993.70m²
Total floor space	21,891.07m²
Design/construction	March 30, 2017-September 30, 2021
Operations/maintenance management	October 1, 2021-March 31, 2042

Waste Treatment Procedure

We reliably treat and recycle not only combustible waste produced in the area but diverse waste materials, including waste from disasters, using high-temperature melting. In addition, we perfectly combust pyrolysis gas in an independent combustion chamber to curtail generation of harmful gases and use the generated thermal energy for power generation via a steam turbine and generator.



Flue gas treatment — Emission reduction of toxic substances



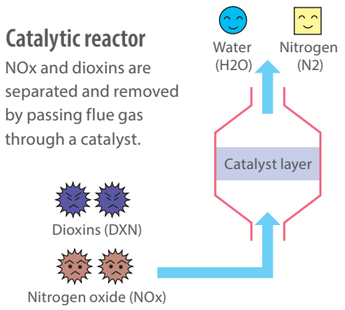
Bag filter

Activated charcoal and slaked lime are blown into the flue gas before it reaches the filter dust collector. These materials adhere to HCl, SOx, and dioxins to collect them, along with dust and soot, in a bag filter and remove them.

- HCl : Hydrogen chloride
- SOx : Sulfur monoxide, sulfur dioxide, and other general terms for sulfur oxides
- Bag filter : Filter cloth with heat-resisting properties

Catalytic reactor

NOx and dioxins are separated and removed by passing flue gas through a catalyst.

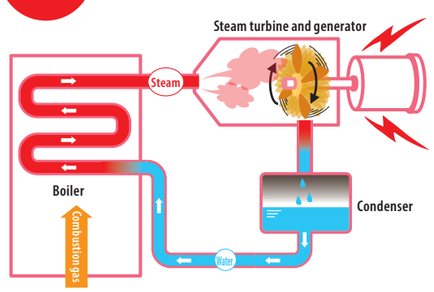


Flue gas treatment — Planned values for environmental conservation (flue gas)

We install the latest flue gas treatment equipment and reduce the burden on the environment to conform with pollution control standards such as the Air Pollution Control Act.

Main items measured		Ecopark reference values	Pollution-control standards
Dust and soot	(g/m³N)	0.01 or less	0.04 or less
Sulphur oxide (SOx)	(ppm)	50 or less	Approximately 1,500 or less
Nitrogen oxide (NOx)	(ppm)	80 or less	250 or less
Hydrogen chloride (HCℓ)	(ppm)	50 or less	430 or less
Dioxins	(ng-TEQ/m³N)	0.1 or less	0.1 or less
Mercury	(μg/m³N)	30 or less	30 or less

Power generation — High-performance energy from waste



Steam turbine and generator

Thermal energy generated when waste is treated is collected in the boiler to create high-temperature, high-pressure steam. This steam is sent to a turbine to turn a power generator and generate power. The generated electricity is used within the facility, and any surplus electricity is sold.

Main Facilities

1 Platform

After a waste collection vehicle measures the weight of the waste using a waste truck scale, the waste enters the platform and is deposited in the waste pit.

2 Waste pit/waste crane

Transported waste is deposited in a nearby waste pit, moved to the interior waste pit by a waste crane, and mixed to make it easy to burn. About 10 days' worth of waste can be retained in the waste pit.

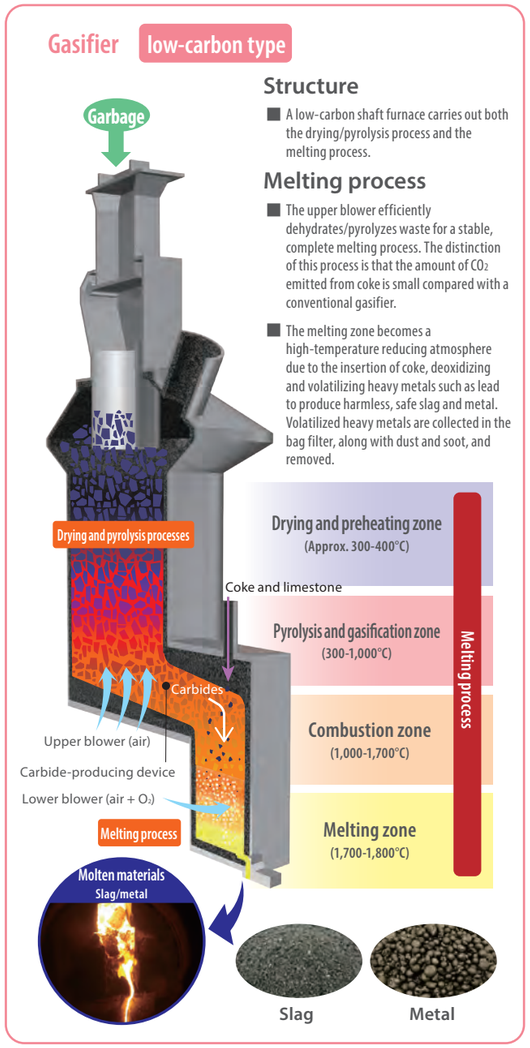
3 Gasifier

Waste deposited in the gasifier is melted at a high temperature from 1,700°C-1,800°C and recycled into slag and metal. Hiroshima Chuo Ecopark can treat a maximum of 285 tons of waste a day.

4 Molten metal magnetic separator

Molten materials transported from a slag/metal cooling device are separated into slag and metal using a magnetic separator. Each material is sent to and stored in the yard.

Gasifier low-carbon type



Structure

- A low-carbon shaft furnace carries out both the drying/pyrolysis process and the melting process.

Melting process

- The upper blower efficiently dehydrates/pyrolyzes waste for a stable, complete melting process. The distinction of this process is that the amount of CO_2 emitted from coke is small compared with a conventional gasifier.
- The melting zone becomes a high-temperature reducing atmosphere due to the insertion of coke, deoxidizing and volatilizing heavy metals such as lead to produce harmless, safe slag and metal. Volatilized heavy metals are collected in the bag filter, along with dust and soot, and removed.

5 Combustion chamber

Gas generated by the gasifier is completely combusted in the combustion chamber and sent to the boiler at 850°C.

6 Boiler

Thermal energy generated when waste is treated is collected to make steam then sent to a steam turbine and generator.

7 Bag filter

Dust, soot, and toxic substances contained in flue gas are collected in a filter and removed.

8 Catalytic reactor

Catalyzing and stimulating a reaction in the toxic nitrogen oxide contained in the flue gas from the bag filter separates it into nitrogen gas and water as well as detoxifies the small amount of dioxins that remain.

9 Steam turbine and generator

A maximum of 6,500kW of power is generated using steam created by the boiler. The generated electricity is used within the facility, and any surplus electricity is sold.

Central control room/waste crane control room

The control room operates 24 hours continuously using a computerized automatic control system. The system collects all information necessary for operations to treat waste safely. In addition, the waste crane is operated from the waste crane control room, and waste is monitored while being stirred and deposited in the gasifier.