JFE TECHNICAL REPORT
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An Up-to-date Municipal Waste Treatment Facility, "Tokorozawa City Tobu Clean Center"†

1. Introduction

JFE Engineering was awarded a contract to construct the Tobu Clean Center by Tokorozawa City, Saitama Pref. in June 2000 and completed its construction at the end of Mar. 2003.

An up-to-date flue gas treatment system adopted in this facility satisfies extremely strict environmental standards. In particular, the emissions of dioxins are suppressed to a level below one-tenth of the legal requirement. In addition, the facility employs a highly efficient power generating system, ash melting system, and recycling system that can recover useful resources from waste. Thus, this is a comprehensive waste incinerating and recycling facility that aims at minimizing environmental loads.

2. Outline of the Plant

2.1 Major Specifications

Incineration Furnace:
JFE hyper grate furnace, 115 t/d × 2 units
Boiler: Single-drum, natural-circulation-type waste heat boiler, 2 units
Maximum evaporation volume 18.9 t/d (4.0 MPa, 400°C)
Steam Turbine: Condensing-type steam turbine
Power generating capacity 5 000 kW (2 500 kW × 2 units)
Flue Gas Treatment System: Filtering dust collector
Wet-type flue gas treatment unit
Activated-carbon adsorption tower
Catalytic denitrification unit
Ash Melting System:
Electric-type, melting capacity 30 t/d × 2 units
Recycling System: Treatment capacity 88 t/d
(Noncombustible, bulky waste treatment 43 t/d
Resource-recovering waste treatment 30 t/d
Waste plastics treatment 15 t/d)

2.2 Voluntary Environmental Standard of Tokorozawa City (Waste Gas)

Dust:	0.010 g/Nm^3 or less
Hydrogen chloride:	20 ppm or less
Sulfur oxide:	20 ppm or less
Nitrogen oxide:	50 ppm or less
Carbon monoxide:	30 ppm or less
Dioxins:	0.01 ng-TEQ/Nm^3 or less

3. Features of the Facility

3.1 Flue Gas Treatment System

The incineration furnaces at the Tobu Clean Center are ultra-modern stoker furnaces that further enhance the characteristics of JFE's furnace with two-way flue gas flow. The furnace can simultaneously suppress the emissions of dioxins and NOx.

Flue gas discharged from the incineration furnaces is treated by the filtering dust collector, wet-type flue gas treatment unit, activated-carbon adsorption tower, and catalytic denitrification unit. In particular, the moving-floor-type activated-carbon adsorption tower contributes to the suppression of dioxin emissions to a level that satisfies the extremely strict standard.

Fly ash captured by the filtering dust collector is subjected to melting treatment and rendered harmless along with bottom ash of the incineration furnaces and fly ash generated at the Seibu Clean Center in the same city.

3.2 Waste Heat Utilization System

Waste heat generated from waste incineration is recovered by the high-temperature, high-pressure boiler (4.0 MPa, 400°C at the superheater exit). Part of the steam generated by the boiler is directly used in-plant and the remainder is sent to the steam turbine for power generation, actively contributing to the enhancement of thermal recycling. Part of the electric power thus generated is used in-plant and the surplus power is sold to the Tokyo Electric Power Company, Inc.

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Photo 1 A view of Tobu Clean Center

4. Closing Remark

In the future, waste treatment facilities will be required to be more harmonious with the local community, larger in scale for improving the recycling efficiency, and better at meeting the environmental standards that will inevitably become even more strict.

The Tobu Clean Center shown in **Photo 1** is an example of a modern urban-type waste incinerating and recycling facility.

We express our gratitude to related personnel of Tokorozawa City for the cooperation and guidance extended to us during the course of constructing this facility.

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