



JFE

JFE's Waste to Energy Technology

10, March 2016

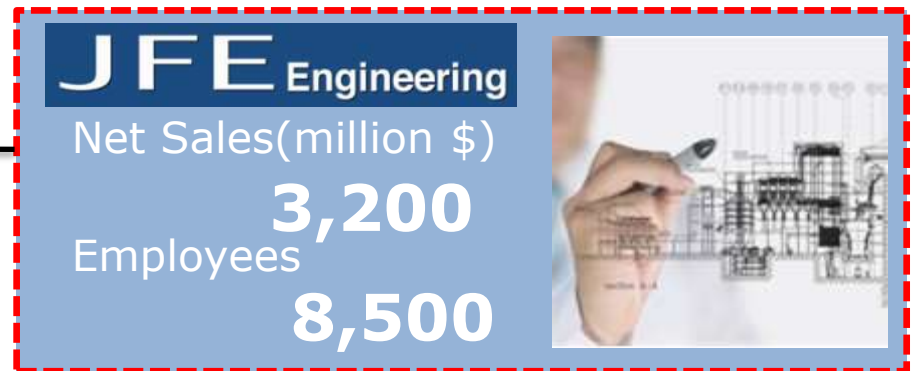
JFE Engineering Corporation

▶ **About JFE**

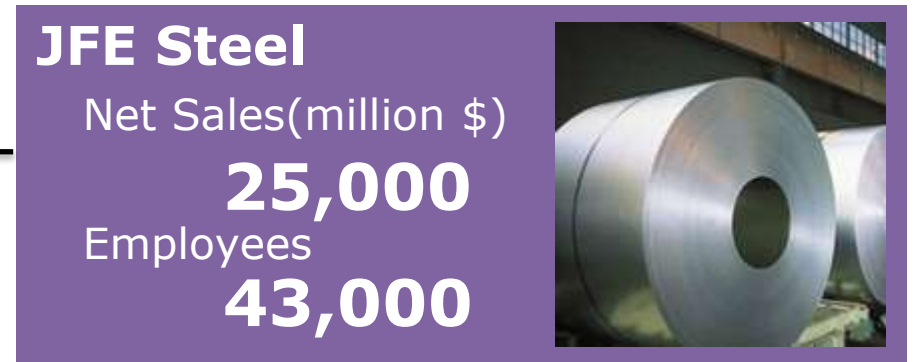
▶ **JFE's WTE Technology**



Group Structure



JFE Engineering
Net Sales(million \$)
3,200
Employees
8,500



JFE Steel
Net Sales(million \$)
25,000
Employees
43,000



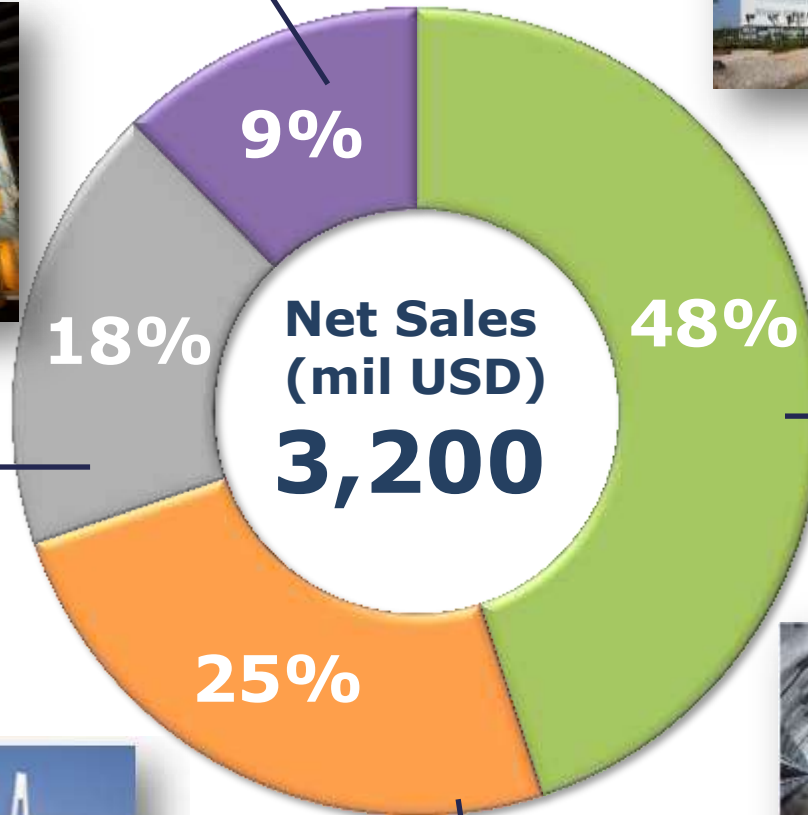
Japan Marine United
Net Sales(million \$)
2,300
Employees
6,500



JFE Shoji Trade
Net Sales(million \$)
16,800
Employees
1,300

Business Field

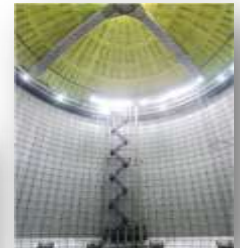
Industrial Machinery



Steel Structure



Environment



Energy

JFE's Environmental Solutions



Municipal Solid Waste



Waste to Energy Plant



RDF Production Plant



RDF Power Plant

Sewage Treatment



Sewage Sludge Incinerator



Power Generation using Digestion Gas

Biomass



Biomass Power Plant

Recycling



Home appliances



PET Plastic bottles



Florescent lamps

JFE's Track Record in Japan



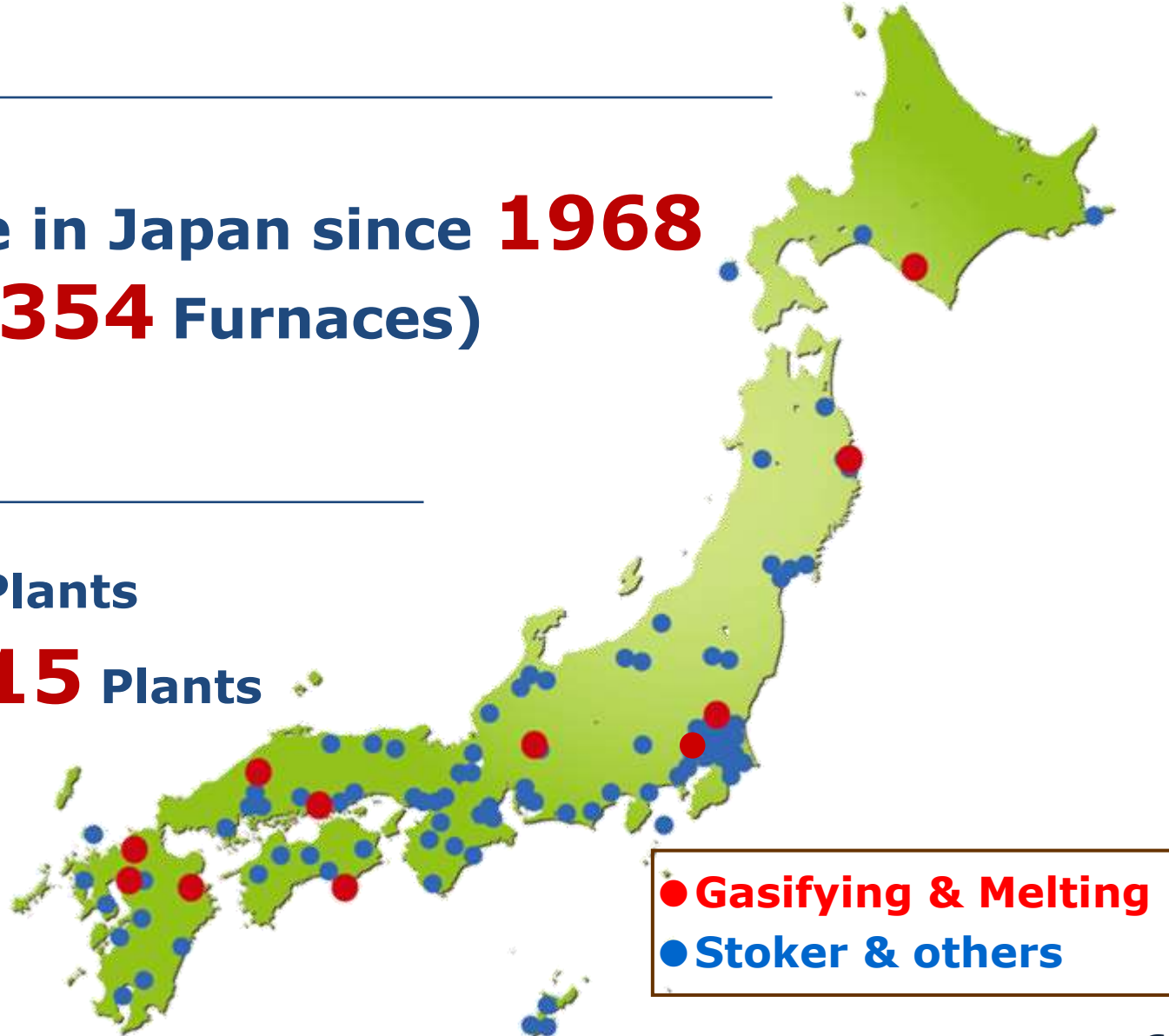
EPC

WTE presence in Japan since **1968**
171 plants (**354** Furnaces)

O & M

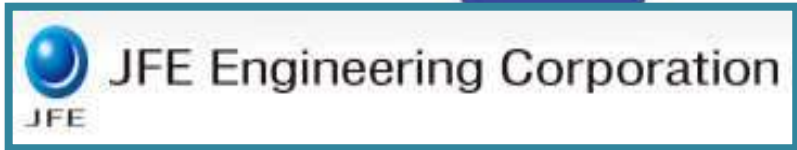
Operation **68** Plants

Maintenance **115** Plants





230 Projects



▶ About JFE

▶ JFE's WTE Technology

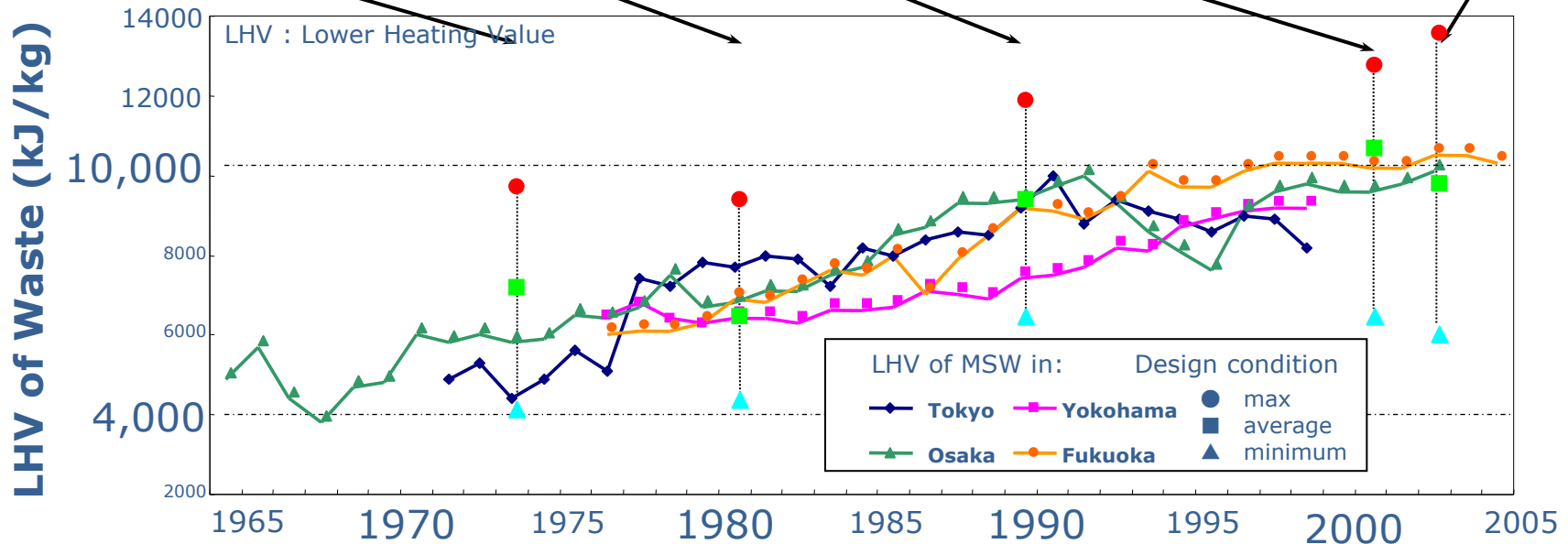


Waste in Japan & JFE's Experience

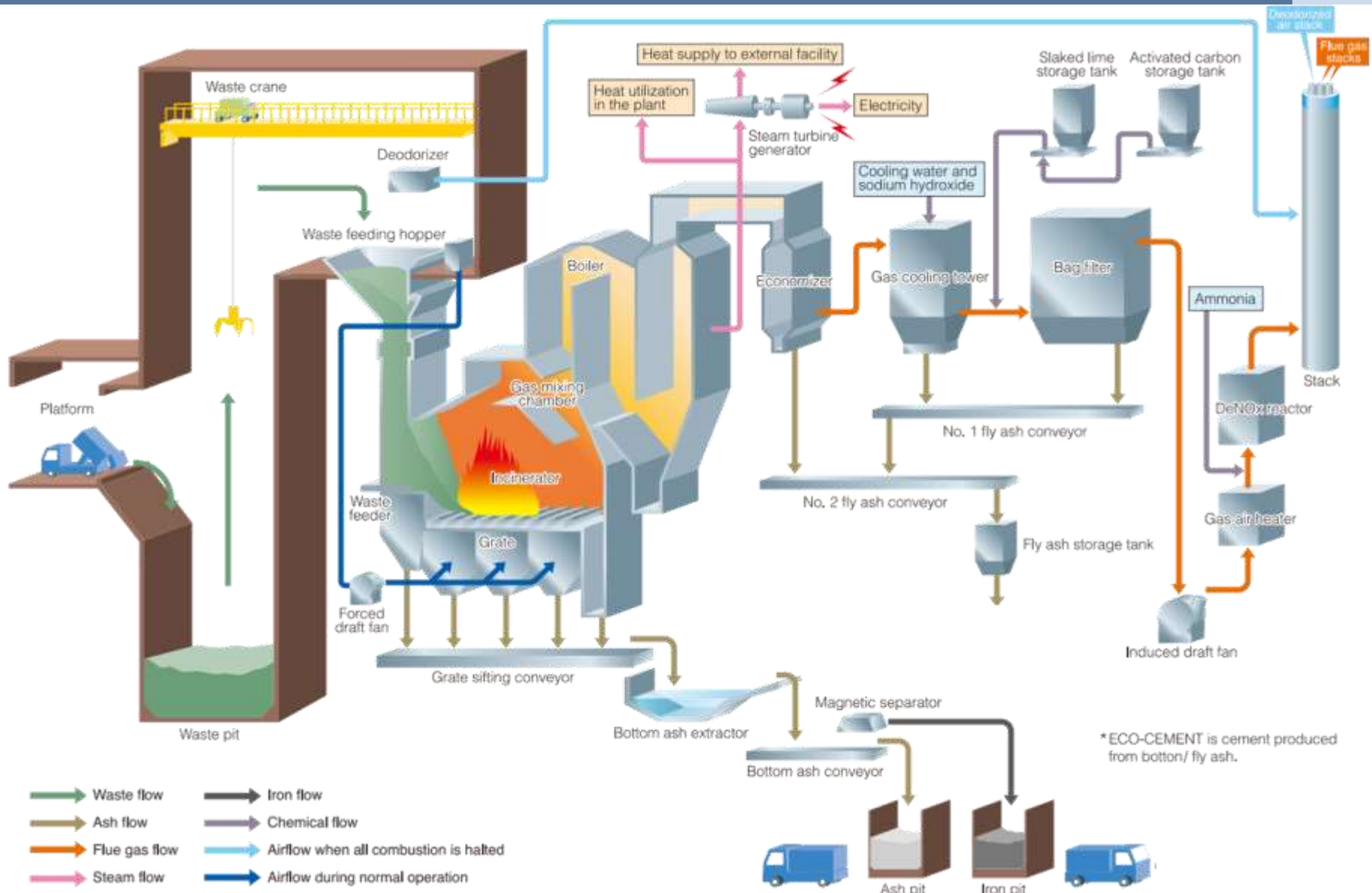


JFE has kept developing its technology as the waste characteristics changed.

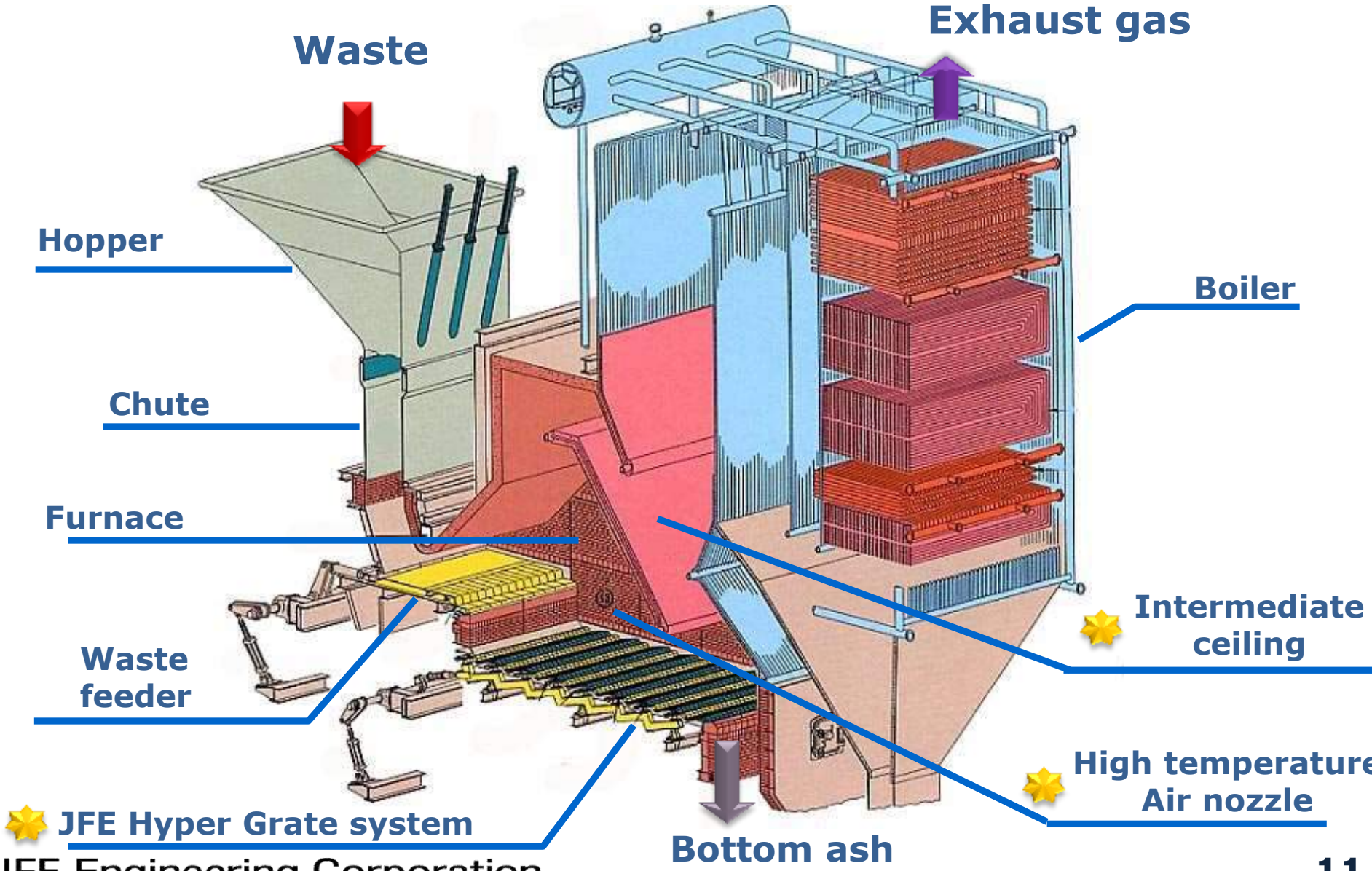
Yokohama (900tpd) Fukuoka (600tpd) Tokyo (600tpd) Yokohama (1,200tpd) Osaka (900tpd)



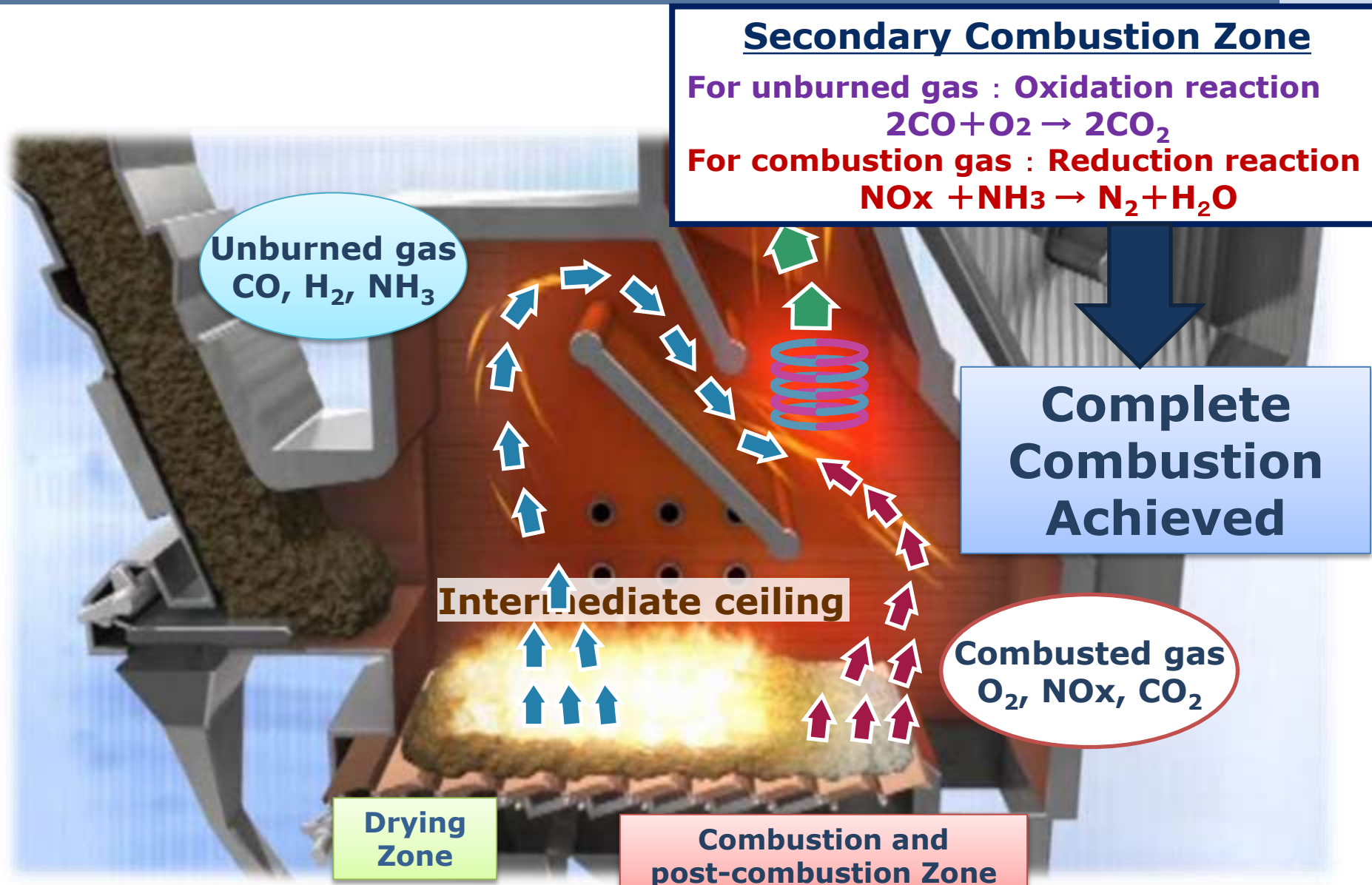
Typical Process Flow of WtE Plant



Furnace Profile



2-Way Flue Gas Furnace



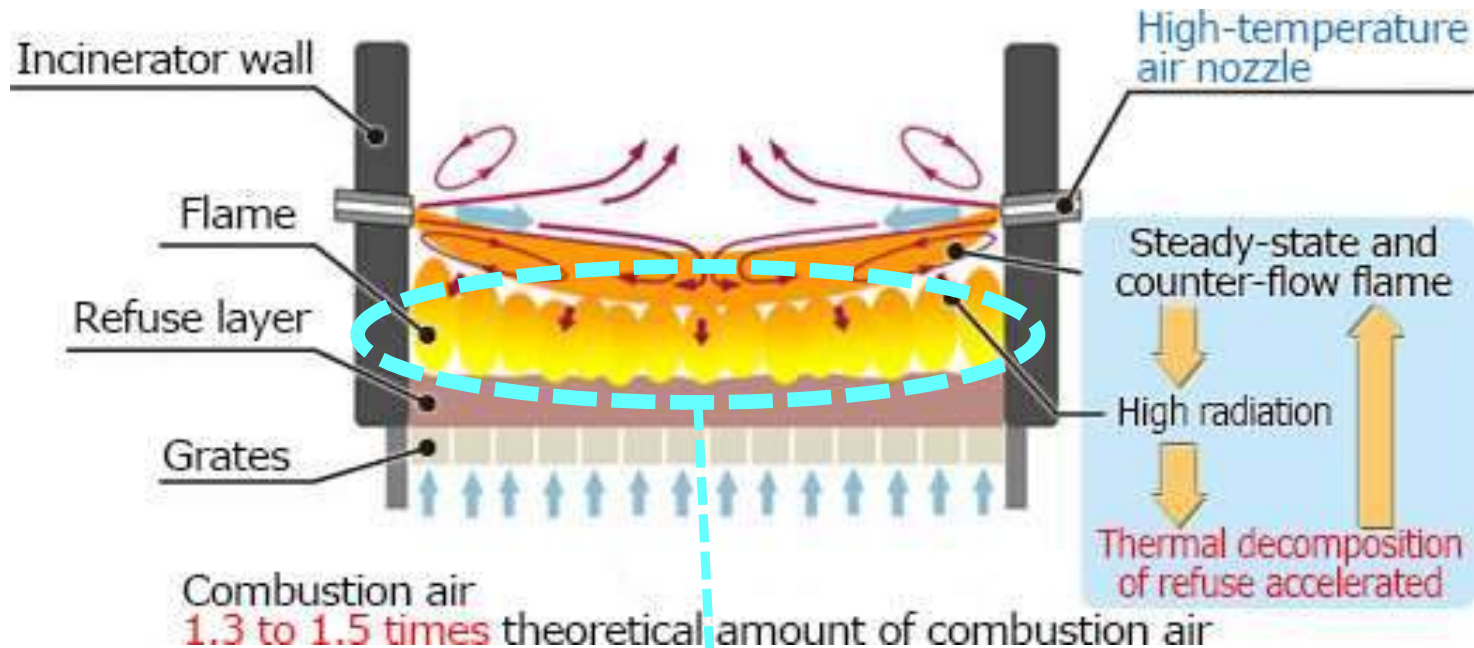
Stable Combustion with Low Excess Air

Blowing high-temperature air forms **stable combustion region**.

Thermal decomposition is accelerated.

Stable combustion is achieved even with low excess air ratio.

Low NO_x, CO, DXN



Stable Combustion Region

JFE Hyper Grate System

Minimized ash drop between grates

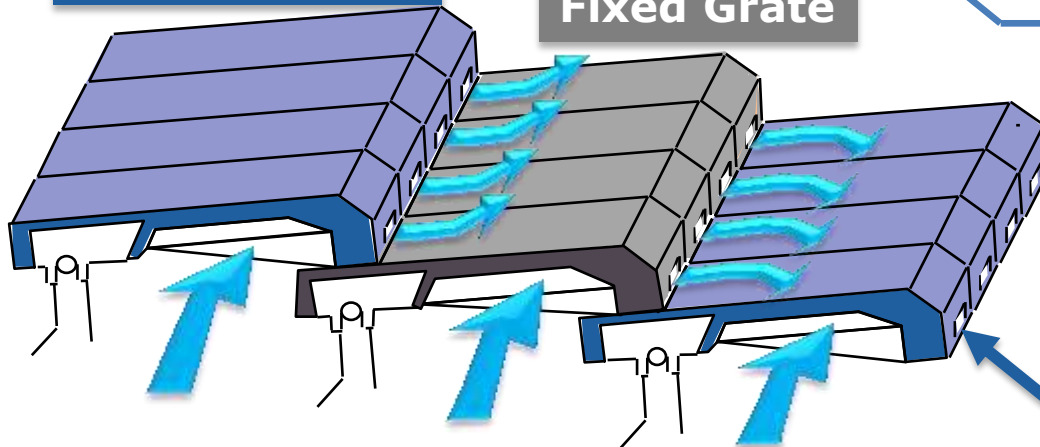
High-Speed Air Flow minimizes dropping of molten aluminum.

High pressure drop at grate enables uniform air flow throughout the entire grate



Movable Grate

Fixed Grate



Air Injection Port

Combustion Air

Water-cooling Grate

Stoker Furnace (Fujimi, TOKYO)



Completion	March 2013
Capacity	288 ton/day (144TPD× 2 lines)
Power Gen.	9.7MW
Flue gas treat.	Gas cooling tower, NaOH injection system, dry-type flue gas treatment system, bag filter, deNOx reactor
Ignition Loss of Bottom Ash	≤3%

Design calorific value of waste		
Min. LHV 5,850kJ/kg 1,400kcal/kg	Ave. LHV 9,610kJ/kg 2,300kcal/kg	Max. LHV 13,380kJ/kg 3,200kcal/kg

	Emission Performance	Regulatory Standards
Dust & Fly Ash	<0.001g/Nm³	0.04g/Nm³
SOx	Ave. 2.25ppm	46ppm
NOx	Ave. 21ppm	250ppm
HCl	Ave. 1.4ppm	430ppm
DXN	0.00000014ng- 0.00014ng- TEQ/Nm³	0.1ng-TEQ/Nm³
Hg	<0.005mg/Nm³	Unregulated



Entrance Weighing Bridge



Waste Crane Control Room



Waste Pit

Thank you for your kind attention.



JFE