

Incinerates and disposes of various kinds of waste economically with no supplementary fuel required.

# Vertical Combustor

PLANTEC Inc.

## Features

- Stably performs the combustion of various kinds of waste together or the combustion of medical waste isolated from other kinds of waste.
- Incinerates low-calorific waste with no drying facilities or supplementary fuel required, thus contributing to the reduction of CO<sub>2</sub> emissions.
- Ideal for the recovery of energy with little emission of carbon monoxide, dioxins, and dust.



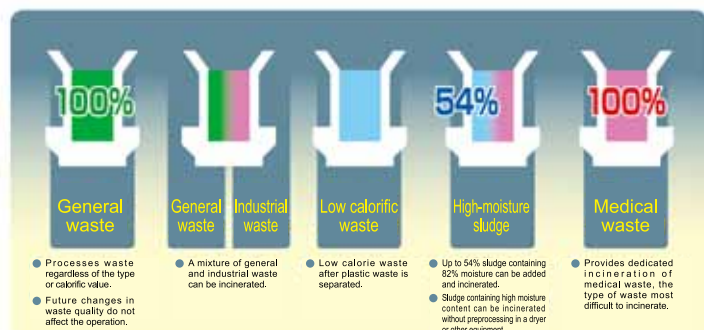
Incineration plant

## Overview

(Technical principles, actions, etc.)

Our own thick-layer firing method realizes highly efficient combustion. The vertical furnace is a completely new design in which drying, combustion and the post-combustion processes of a stoker furnace – the most popular type of furnace in Japan – are arranged in a vertical position. This simple structure does not require supplemental fuel. It realizes economical thermal disposal through multi-fuel combustion of general waste and industrial waste, as well as single-fuel combustion of medical waste, which is considered to be the most difficult type of thermal disposal.

Applicable for various types of waste.



Waste is deposited in a thick vertical layer inside the furnace. The furnace treats the waste through inhibited combustion by sending a small amount of heated combustion air from the bottom. The pyrolysis gas generated by the combustion air and inhibited combustion rises up like a capillary phenomena inside the layer of waste while evaporating and drying moisture inside the waste and increasing the number of calories.

The waste descends under its own weight as it dries, carbonizes and burns. Since it takes six hours or more to pass through a high-temperature zone of about 900°C, even combustion-resistant waste is completely incinerated, leaving no unburned matter.

## Introductory Track Record

Installation site	Capacity	Completion	Type of waste
Kyoto University Hospital (Japan)	4t/8h x2unit	1994	Medical & general wastes
Company N (Japan)	26.25t/15h x1unit	1998	Medical & industrial wastes
Company N (Japan)	26.25t/15h x1unit	2000	Medical & industrial wastes
Association K (Japan)	10 t /8h x2unit	2001	General wastes
Village N (Japan)	30t/24h x1unit	2002	Medical & industrial wastes
Company S (Japan)	14 t /14h x1unit	2002	Medical & industrial wastes
Company C (Japan)	4t/8h x1unit	2003	General wastes
Company D (Japan)	30t/24h x1unit	2005	Medical & industrial wastes
Tokyo Waterfront Recycle Power Co., Ltd.	50 t /24h x2unit	2007	Medical wastes
Company S (Japan)	24 t /24h x1unit	2008	Medical & industrial wastes
Dubai (UAE)	19.2t/24h x1unit	2009	Medical wastes
Company K (Japan)	25t/24h x1unit	2009	Medical & industrial wastes
Company S (Japan)	30t/24h x1unit	2010	Medical & industrial wastes
Tanegashima Regional Affairs Association (Japan)	22t/24h x1unit	2012*	General wastes
Nishinonbetsu Region Environmental Facilities Association (Japan)	13t/24h x2unit	2012*	General wastes
Company T (Japan)	34t/24h x1unit	2012*	Medical & industrial wastes
Company R (Japan)	80t/24h x1unit	2014*	Medical & industrial wastes
Company M (Japan)	30t/24h x1unit	2014*	Medical & industrial wastes
Company O (Japan)	30t/24h x1unit	2014*	Medical & industrial wastes
Ito City (Japan)	71t/24h x2unit	2015*	General wastes

(Note) "\*" in the completion column shows the scheduled year of completion.

## Effects

- No supplemental fuel is required for even low-calorie waste, reducing running cost and CO<sub>2</sub> emissions.
- It is capable of multi-fuel combustion of any waste, because it carbonizes waste in a thick waste layer (ash layer) and homogenizes waste characteristics.
- It does not cause blow-by phenomena of combustion air, rapid fluctuation of in-furnace temperature, uneven combustion or fluctuation of the amount of combustion gas. Thus, the concentrations of dioxin and other gases inside the waste gas and incinerated ash are extremely low.
- It emits clean exhaust gas, because it is capable of complete incineration using the two-level incineration method that carbonizes and incinerates waste through inhibited combustion and re-burns thermal decomposition gases.
- Single-fuel incineration of medical waste is considered the most difficult disposal method. This unit economically performs complete combustion and sterilization.
- It is capable of incinerating highly moist sludge with 80% moisture content by mixing it with other waste without a drying process (A mixed fuel combustion ratio of highly moist sludge of up to about 60% has been confirmed through tests).

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※Note: This publication introduces examples of technologies and products believed useful towards solving environmental and energy issues. In no way does it constitute guarantees concerning their transfer or sale.

Applicable field  
Waste incineration facilities and waste power generation facilities

Water

Energy saving/Energy recovery

Energy storage/Energy creation

New energy

Waste disposal/Recycling/Resource saving

Air

Soil

Other