

INCINERATOR SYSTEM

Thermal Waste Destruction & Air Pollution Control Technical Specification

This technical specification document outlines the engineering parameters for a **Controlled-Air Dual-Chamber Incinerator System** with integrated Air Pollution Control Systems (APCS). It covers thermal destruction components, flue gas scrubbing, residual ash disposal, and key industrial/institutional applications.

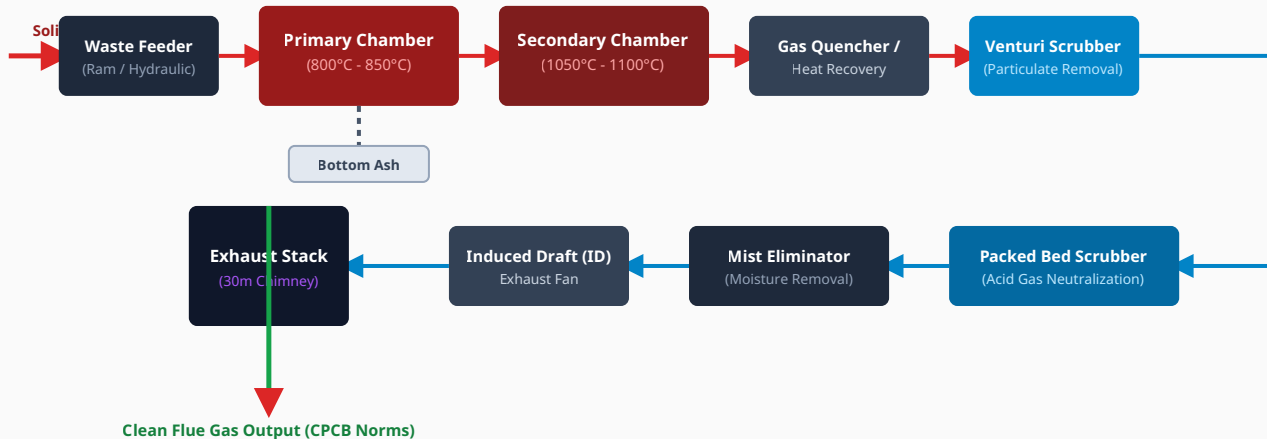


FIGURE 1: INCINERATOR SYSTEM THERMAL PROCESS & AIR POLLUTION CONTROL FLOW DIAGRAM

1. MAJOR APPLICATIONS & USAGE AREAS (कहाँ-कहाँ उपयोग होता है)

1. Biomedical & Hospital Waste Management

Destruction of bio-infectious clinical waste, surgical items, human anatomical waste, sharps, expired medications, and laboratory culture strains to prevent pathogen contamination.

2. Industrial & Chemical Hazardous Waste

Safe disposal of toxic organic sludges, spent solvents, pharmaceutical residues, agrochemical waste, paint sludge, and chemical processing effluents.

3. Municipal Solid Waste (MSW / Waste-to-Energy)

Volume reduction (up to 90%) of non-recyclable municipal waste in urban centers, generating high-pressure steam for electrical energy generation.

4. Animal Waste & Veterinary Facilities

Hygienic cremation and thermal elimination of animal carcasses, infected livestock waste, slaughterhouse refuse, and quarantine waste.

5. Marine, Ports & Airports Refuse

Thermal disposal of international catering waste, ship-board refuse (MARPOL Annex V compliance), and customs seized contraband or biosecurity items.

6. Defense & High-Security Document Destruction

Complete thermal destruction of sensitive classified records, currency notes, seized narcotics, explosives residues, and military base waste.

2. THERMAL COMBUSTION ZONE SPECIFICATIONS

SYSTEM COMPONENT	FUNCTION & TECHNICAL SPECIFICATIONS
Primary Chamber (Volatilization)	Function: Pyrolytic combustion and solid waste gasification under controlled oxygen deficiency. Operating Temp: 800°C to 850°C; High-alumina refractory lining (IS 8 grade, 115mm thick) + insulation bricks.
Secondary Chamber (Reburn)	Function: Complete thermal destruction of unburnt hydrocarbons, volatile gases, and dioxins/furans. Operating Temp: 1050°C to 1100°C; Retention Time: Minimum 2.0 seconds with excess air combustion.
Burner System	Function: Provides required thermal power for ignition and precise temperature maintenance. Specifications: Fully automatic dual-fuel (Diesel / Natural Gas / LPG) burners with flame safeguard & auto-ignition.

3. AIR POLLUTION CONTROL SYSTEM (APCS) SPECIFICATIONS

EQUIPMENT / UNIT	FUNCTION & TECHNICAL SPECIFICATIONS
Venturi Scrubber	Function: Rapidly quenches flue gas temperature and traps sub-micron particulate matter (PM). Specifications: Stainless Steel (SS-316L / Hastelloy lined) high-energy throat design with atomized water spray nozzles.
Packed Bed Alkaline Scrubber	Function: Neutralizes acidic gases (\$SO_x\$, \$HCl\$, \$HF\$) using recirculated caustic (\$NaOH\$) liquid spray. Specifications: Polypropylene / FRP vessel packed with Pall rings; includes automated pH dosing pump control.
Induced Draft (ID) Fan & Stack	Function: Maintains negative suction pressure across chambers and safely disperses treated flue gases. Specifications: SS-316 impeller ID fan; Stack Height: 30 meters above ground level per CPCB emission standards.

Compliance: Standard engineered to meet CPCB (Central Pollution Control Board) & EPA emission standards (\$PM < 50 \text{ mg/Nm}^3\$, \$BOD/COD\$ safe scrubber discharge, \$Dioxins/Furans < 0.1 \text{ ng TEQ/Nm}^3\$).