

Incinerate Boiler for Medical Waste

(KR-HTB200 Type)

1. INCINERATION CAPACITY : 200 kg/hr
2. WASTE HEAT BOILER : 1,000kg/hr
3. OPERATION CONDITION : 8 -24hr/day
4. VOLUM OF TREATMENT : 1,600 -4,800kg/day

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1. General Specifications

1. General Specifications

1. Project name (Model)

Manufacturing and Installation of Medical Waste Incinerate Boiler
(KR-HTB200)

2. Size of Incinerator Boiler

8,500W × 10,000L × 3,450H mm

3. Capacity of Incineration

Medical waste 200 kg/hr

4. Quantity of Heat Recovery in Boiler

1,000kg/hr

5. Features of Incinerator

- Batch feeding(Max one batch:400– 500 kg)
- Pyrolysis gasification combustion
- Smokeless & odorless perfect combustion
- Automatic control function
- Economically excellent equipment with minimum fuel consumption
- Highly safe equipment as excellently insulated from external heat inputs
- Minimization of installation space
- High efficiency heat recovery steam boiler

6. Manufacturing and Shipment

- Manufacturing of the Incinerate Boiler shall be started within 10 days after receipt of L/C from the customer and shipped on board the vessel within 90 days after receipt of L/C.

7. Installation, Pre-commissioning and Training

- The installation, pre-commissioning works of the facilities and training of the operators shall be done by the contractor after the facilities arrive at the job site.

8. Scope of Business

- 1) Production and supply of incineration facilities
 - General waste incinerator(1st chamber): 2 Set
 - Mixture gas combustion device: 1 Set
 - Secondary combustion chamber: 1 Set
 - Heat recovery system Boiler : 1 Set
 - Centrifugal dust collection facilities(Cyclone): 1Set
 - Combustion Air supply facilities: 1Set
 - Electricity and instrumentation facilities: 1Set
 - Noxious gas reduction facilities: 1Set
 - Secondary wiring work and piping work: 1Set

9. Design Standard

- 1) Target waste composition ratio

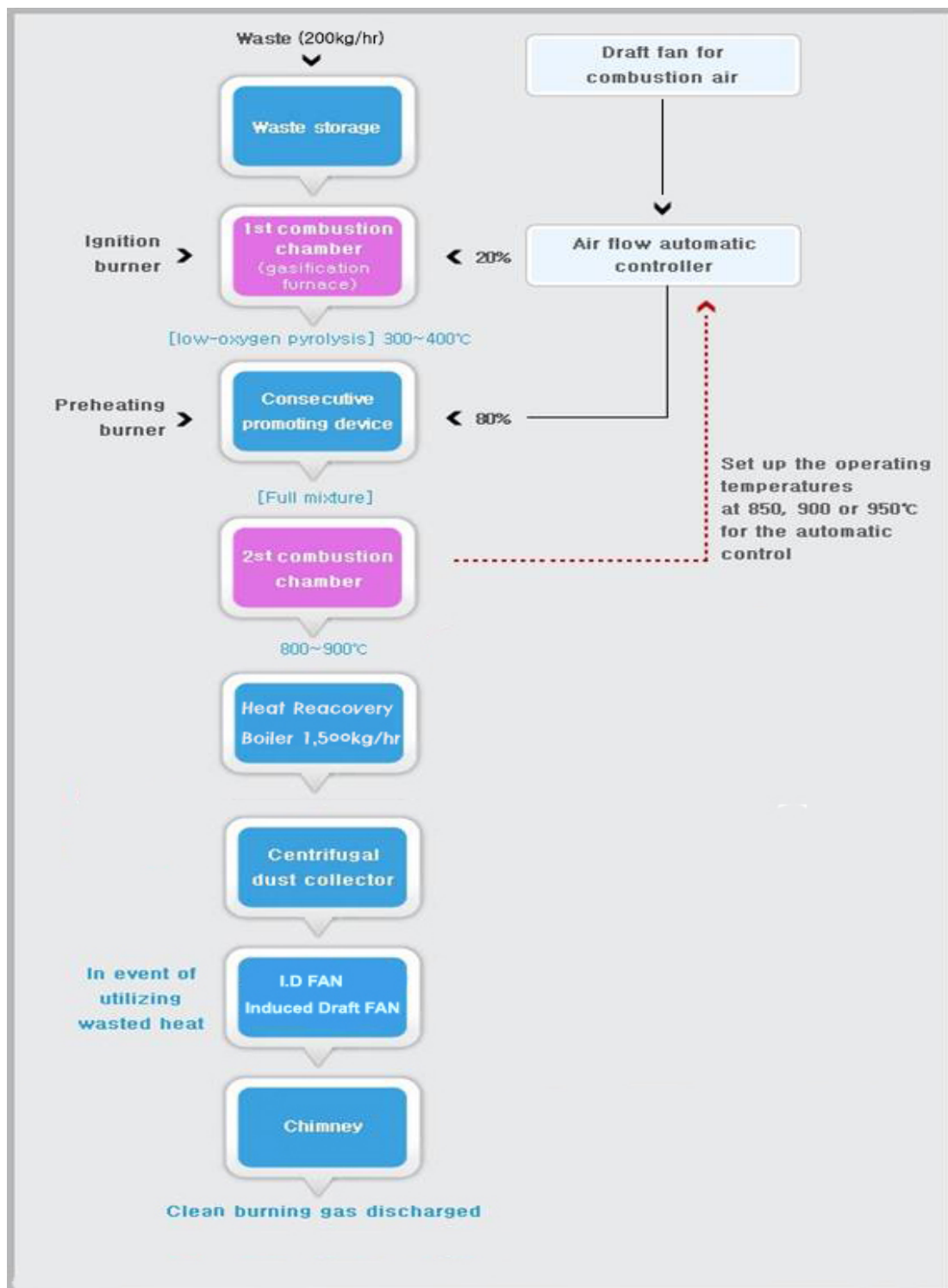
Division Name of waste	Amount of waste (kg/hr)	Ratio (%)	Remark
Human anatomical waste	20.0	10.0	
Microbiological infectious waste	70	35	
Non-anatomical infectious waste	40	20	
General hospital waste	70	35	
Total	200	100	

- 2) Target waste material composition ratio

Waste	Ratio(%)	C	H	O	N	S	Cl	ASH	Moisture
Paper	10	43.41	5.82	44.32	0.25	0.20		6.00	
Anatomical waste	8	59.59	9.47	24.65	1.02	0.19		5.08	

Glass	5							100.00	
Cotton wool	15	46.19	6.41	41.85	2.18	0.20		3.17	
PVC	5	45.14	5.61	1.56	0.08	0.14	45.41	2.06	
Synthetic resins	57	67.21	9.72	15.82	0.56	0.07		6.72	
Mixed waste(dried)	100%	56.54	8.12	21.78	0.76	0.11	2.27	10.42	
Wet mixed waste	100%	48.06	6.90	18.51	0.65	0.09	1.93	8.86	15.00
Flammable material ratio	100%	63.13	9.06	24.31	0.85	0.12	2.53		

3) Treatment Flow Chart



2. Equipment Specifications

2. Equipment Specifications

1. Combustion Facilities

(1) Main combustion furnace

- A. Type: Bulk input dry distillation type
- B. Quantity: 2 sets
- C. Incineration capacity: 200kg/Hr
- D. Size: $\varnothing 1,912 \times 2,962H$ mm
- E. Furnace volume: $5m^3$ /set
- F. Material: External- Steel Plate 6t, Channel
Internal- Fireproof castable CT-180
Ceramic wool 25T, Insulation 50T
- G. Key features: Main combustion furnace exit temperature $500 \sim 1000^\circ C$
Casing surface temperature- Less than $120^\circ C$ (continuous operation)
- H. Parts: Access hole, Burner tile

(2) Combustion acceleration

- A. Type: Air mixing
- B. Quantity: 1 set
- C. Size: $\varnothing 900 \times 1,500L$ mm
- D. Material: Stainless steel 304 -8t
Fireproof castable, Ceramic wool 25T,
Insulation 50T
- E. Auxiliary facilities: Door locking device, Access hole

(3) Re-combustion furnace(Secondary combustion chamber)

- A. Type: Uptrend combustion type
- B. Quantity: 1 SET
- C. Size: $\varnothing 1,500 \times 2,800H$ mm
- D. Material: External – Steel Plate and Channel
Internal – Fireproof castable, Ceramic wool 25T
Others – Burner tile, Fireproof castable
- E. Key feature: Re-combustion furnace exit temperature $850 \sim 1000^{\circ}\text{C}$
Casing surface temperature– Less than 120°C

2. Combustion device

(1) Ignition burner

- A. Type: LT-10U (1 stage burner)
- B. Quantity: 1 set
- C. Capacity: 80,000Kcal/Hr
- D. Ignition method: Electric automatic ignition

- E. Range of flame: Front and rear
- F. Operation method: ON-OFF method
- G. Auxiliary device: Flame detection device, Fuel cutoff device
- H. Fuel: Diesel

(2) Re-combustion burner

- A. Type: LT-30U (2 stage burner)
- B. Quantity: 1 set
- C. Capacity: 300,000Kcal/Hr
- D. Ignition method: Electric automatic ignition
- E. Operation method: LOW-HIGH-LOW method
- F. Auxiliary device: Flame detection device, Fuel cutoff device
- G. Fuel: Diesel

(3) Combustion air fan (Primary)

- A. Type: Turbo blower
- B. Quantity: 1 set
- C. Capacity: Air volume 50m³/min
Air pressure 400mmAq
Electric power 10HP

(4) Induced draft fan

- A. Type: Turbo blower

- B. Quantity: 1 SET
- C. Capacity: Air volume 80m³/min
Air pressure 350mmAq
Electric power 15HP

3. Waste heat recovery boiler system

3.1. Waste heat recovery boiler (Steam generator)

- 1) Capacity : 1 ton/hr
- 2) Quantity : 1 set
- 3) Type : Overhead fire tube Type
- 4) Design Pressure : 10kg/cm²·G
- 5) Working Pressure : 7kg/cm²·G
- 6) Water temperature : 20°C ↓
- 7) Waste gas volume : 2344 Nm³/hr
- 8) Material : STBH 340E
- 9) Auxiliary device : Valve, Water softening apparatus
- 10) Size : 4,500 x 1,524 x 2,200

3.2. Steam distributor

- 1) Quantity : 1 SET
- 2) Type : Horizontal cylinder
- 3) Capacity : 1 Ton/hr × 7 kg/cm².G Saturation Steam
- 4) Material : SPPS 38E, GLASSWOOL
- 5) Size : 250∅ × 1,200L

3.3 Water storage tank

- 1) Type : CONE ROOF TYPE
- 2) Quantity : 1 SET
- 3) Capacity : 2 m³
- 4) Size : 1.42mΦ x 1.82mH
- 5) Material : SS400
- 6) Auxiliary device : Water level gauge

3.4 Water Feeder Pump

- 1) Type : multistage centrifugal pump
- 2) Quantity : 1SET
- 3) Capacity : 1.5 m³/Hr x 110mH x 1.5kW
- 4) Material : SUS304

3.5 booster pump water purifier

- 1) Type : multistage turbine
- 2) Range of water supply : 1.5m³ /Hr
- 3) Lift : 50Mh
- 4) Quantity : 2 SET

3.6 Dosing device

A. Drugs Tank

- 1) Type : Cylinder
- 2) Capacity : 50Lit
- 3) Material : PE x 5t
- 4) Quantity : 1 SET

B. Drugs Pump

- 1) Type : Hose

2) Capacity : 25CC/min

3) Max Working Pressure : 15kg/cm²

4) Quantity : 1 SET

3.7 Ion exchange resin water purifier

1) Type : Ion exchange resin (Auto fasting)

2) Capacity : 1m³/Hr

3) Total hardness : 90 PPM ↓

4) Quantity : 1 SET

3.8 Control panel

1) Type : Double door

2) Material : SS400 – refractory paint

3) control : Pressure alarm, Water level control,
Drugs Pump, water softening apparatus

4) Power connection : panel – motor

5) Quantity : 1 SET

4. Dust collection device (Cyclone)

A. Type: Centrifugal force Cyclone

B. Size: Φ 809 X 3,454H

C. Material: castable CT-140 + Steel Plate

5. Chimney (STACK)

A. Type: Circular type

B. Size: Φ 430 × 6,000H

C. Material: Fireproof castable INCT-140 + Stainless steel 41

6. Compressed air supply equipment

6.1 Air compressor

- 1) Type :Oil-flooded, Piston type
- 2) Quantity :1 set
- 3) Piston displacement:1.272 m³/min
- 4) Max operating pressure:9.9 kg/cm²·G
- 5) Load-unloading set pressure :7.5 ~ 9.9 kg/cm²·G
- 5) Power :380V x 3P x 50Hz x 7.5kW
- 6) Injection diameter :25A
- 7) Component : Auto drain

6.2 Air dryer + after cooler + filter (2 sets)

- 1) Type :Air cooled
- 2) Treatment air volume:1.4 Nm³/min
- 3) Treatment pressure :7 kg/cm²
- 4) Quantity :1 set
- 5) Diameter :25A
- 6) Power :230V x 0.41kw x 50Hz

7. Piping and wiring work

Each drive motor → Panel board

Primary & secondary burner → Oil feeding tank

8. Oil tank : 800L

9. Electric installation

9.1. Panel composition

a) Motor Operating Method

- 1) Below 15 ~ 110kW :Y- Δ Operation
- 2) Below 15kW :Direct Operation
- 3) Mov :Matural Operation

9.2. Central control & monitoring system

1) Type : Cabinet type(Indoor type)

2) Size : 600 × 750

3) Quantity: 1 unit

4) Built-in device

a) Various indicating instruments: Internal temperature of furnace,
Re-combustion temperature

b) Lamp indication: Exhaust gas temperature of each combustion
furnace

5) Special feature

In order to achieve perfect combustion under optimum combustion conditions, it controls the operation of the incinerator automatically or, if necessary, manually.

6) Equipment : Push button

Each color lamp

N.F.B

M/G, S/W etc.

Automatic temperature control device

7) Inter lock

– F.D fan power cutoff

– Primary & secondary burner automatic cutoff

8) Cable

- Electric power facilities: CV cable
- Instrumentation facilities: CVV cable
- Connecting cable inside the panel: IV cable

9) Scope of wiring work

- Control panel ↔ Each device and motor

10) Thermocouple

- Name: Ceramic thermocouple($\Phi 20 \times 300L$)
- Size: 0 ~ 1,200°C
- Quantity: 2pieces

11) Function:

- Power: ON – OFF
- Primary F.D fan: ON – OFF
- Primary burner: ON – OFF
- Secondary burner: LOW–HIGH–LOW
- Temperature indicator, Automatic temperature recorder