



Specification Of Electrical Crematorium Furnace

Part A: General Specification for Electric Cremation Furnace

1. The capacity of Crematorium should be able to handle two bodies at a time with two separate furnaces systems with common Air pollution control systems.
2. The cremator furnace should have design with multiple chambers so that complete combustion takes place before exhaustion to ambient air. The design of Chambers should be based on the recommendations stipulated in air pollution control engineer's manual and prevailing law and rules of Nepal.
3. Cremation must be carried out solely by super-heated air and not by introducing burning gases or fuel into the furnace.
4. Quality of emitted smoke should meet or not exceed Environmental regulation of Nepal. The color of emitted smoke should not be black in any case.
5. No smell nuisance should feel during or after combustion in any primary, secondary or other chambers.
6. Pollution control devices such as gas cooler, scrubber and I.D fan for collecting and cleaning the outgoing gases should be provided. The necessary mist eliminator should also be provided in order to prevent plume and condensation of water at vicinity.
7. The furnace should cover with steel plate not less than 4 mm thick with proper welding on joints and should be painted with good quality heat resistance paint and good aesthetic look.
8. The furnace door should be lightweight of mild or stainless steel with adequate insulator. This can be operated both electrically and manually.
9. The Body Charging Trolley can be manually operated with handle, rails and rollers so that operation will be smooth, light and trouble free.
10. Different chambers, slopes, various shapes for air passage ducts and the flue passage and internal refractory works to be done by high alumina IS 8 (or higher) refractory shapes and the best quality insulation bricks. The refractory wall thickness must be designed optimally so as to save the heating energy and to effective storage of heat. The skin temperature should be maintained not more than 45 Deg. C above the ambient.
11. Best quality 80/20 Ni-Cr wire in the form of coil to be used as heating elements.
12. The furnace should have separate fresh air supply system for combustion at different stages.
13. The control panel should be fabricated out of metal sheets and it must be totally enclosed and self-supported, cubical conforming to IS8623 or higher standard. All controls, such as digital temperature indicator/controller, vacuum gauge, voltmeters, ammeters, watt meters, various switches are to be neatly fixed and wired from inside.
14. The crematory system must have Mist Eliminator system to cool down the flue gases, arrest the ash particles and to remove the odor during cremation.
15. The chimney should be self supported and height not less than 30 m from ground level . It should be manufactured as per IS 6533 or higher standard . The chimney shall be provided with lightning arrestor with copper earthing strip.
16. The furnace operation temperature must be higher than 650 Deg C with maximum temperature of 1100 Deg C or more.

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17. All written and unwritten laws of ethics and hygiene must strictly adhere from start to finish of the cremation process.
18. Factors of low power consumption and maintenance technology should be considered so far for its durability and reliability.
19. Suppliers should provide the detail design and drawings of civil works, mechanical and electrical parts with actual dimensions. Design should consider the factors like quality, economy, pollution control, outer finishing, effective time saving, space requirement, and above all complete cremation and satisfaction to the mourners with least energy consumption.
20. The Supplier shall incorporate latest technology for every particular mentioned.

Part B: Technical Specification for Electric Cremation Furnace

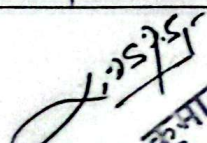
SN	DESCRIPTION S	REQUIREMENT	OFFERED SPECIFICATION
4	Description	Electrically heated (Resistance type) double chambered batch type cremation furnace along with pollution control system for Human body cremation.	
5	Technology:	The coils must heat up when electricity pass through the coils due to resistance. That heat must be utilized to increase the temperature inside the furnace which must be responsible for the disposal of dead body. The pollutants shall be collected in wet scrubber and filter gases shall leave to environment through a chimney.	
6	Power rating	60- 75 kW	
7	Temperature	Working: Primary chamber: Minimum 650°C Secondary Chamber: Minimum 1100°C	
8	Ash	Max 5 %	
9	Material of Construction	Cremation Furnace: Mild steel [IS 2062] & insulated with refractory bricks.	
10	Heating Element /Radiant tubes	Power Metallurgy wire, 80:20 Ni- Cr wire in spiral form designed to work at low watt density. Heating Element must be fixed in closed Groove Refractory thus avoiding Direct contact with the emission for better life of the elements. Quantity: Primary Chamber Minimum 12 Nos. Materials: Ni- Cr wire. Form: Coil Formation. Distribution: Must be Inserted within side within heat Chamber through coil Bricks.	
11	Auxiliary Load	12 kW	
12	Cremation Furnace	It must be design to bear a high temperature and properly insulated and a reflector to conserve heat loss, must be provided with baffles to collect heavy particles in smoke. The shell of the furnace casing	

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		shall be fabricated from heavy gauge (3.5 mm and 5 mm) mild steel sheets. Dimension: Approx. depth: 3070mm Approx. width :1900 mm Approx. height: 3070mm	
13	Cremation Trolley	Trolley and stretcher shall be provided for easy loading of Dead body. Stretcher type, manually operated, moving on Rails with lowering & lifting mechanism.	
14	Furnace Door	Rise and fall type door lifting by Manually and Automatic. Electrical motor, reduction-gear box, chain, sprocket, limit switch etc. Power door Motor: minimum 0.5 H.P. Door close/open operation from control panel.	
15	Ash Door	Ash door to be provided.	
16	Capacity of Machine	Duration: 40-50 minutes/ 1 average size Body Max Load: 155Kg Max. lift Height: 200mm Mode of Operation: Manual	
17	Brick Lining	The casing of the Furnace must have lining of heavy-duty fire bricks (min.42% Alumina content) minimum thickness of 90 mm. In the areas of high wear (main heat) 63 % alumina tile shall be used to get high resistance to abrasion and thermal shock. Moderate heat duty firebricks of suitable sizes shall be used for min. loss of heat	
18	Ash Collection	The burnt ash for "Asthi Puja" shall be removed with the help of a scrapper from the ash chamber provided beneath the primary Combustion Chamber.	
20	Control & Instrumentation Panel :	The scope of supply shall include 1 No. switching-cum-instrument panel of sheet metal construction, dust & vermin proof, floor mounting, free standing, non-draw out and non-compartmentalized type. The panel will be housed with various electrical components like incoming isolator with fuses. 1 No. each voltmeter and ammeter with selector switch, required number of fuses, overload relays, contactors, indicating lamps etc. required for outgoing feeders. The panel will be internally wired up to terminals and will have cut outs for mounting the instruments at side. All electrical cables from Purchaser's main to switching panel and from switching panel to	

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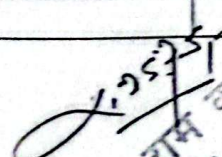
		<p>electrical feeders are included in this scope including the compensating cable required from the thermocouples.</p> <p>Overall : 1400 mm</p> <p>Overall Height : 1600 mm</p> <p>Overall Width : 800 mm</p> <p>Thickness of Steel : 2 mm Thk. CRC sheet.</p> <p>Used</p> <p>Cable Entry : Bottom</p> <p>Busbar : Aluminium</p> <p>Paint Shade : Powder Coated Siemens Gray.</p> <p>Qty. : 1 (One)</p>	
21	Wet Scrubber (Venture Type)	<p>There shall be three steps of wet scrubber as given below:</p> <p>1. Condenses the smoke through high-pressure cold air so the heavy ash particles get settle down in the chamber and gases pass through second stage</p> <p>2. Washes the smoke through high pressure water sprinkled over it and goes to third stage.</p> <p>3. Excess carbon particles mix with water and hot gases released through chimney.</p> <p>Specification:</p> <p>Material of construction: S.S. AISI – 304 Position of water spray: from top of system Water circuit: closed.</p> <p>Efficiency: Minimum 93-95%</p> <p>Nozzle: specially designed Brass made nozzle.</p> <p>Concentration of particles: 150 mg/Ng (nominal cu. meter.) in exhaust air.</p> <p>Velocity of exhaust air: 1m/ sec.</p> <p>Fume discharge: 1500 cu.m. per hour.</p> <p>Rating of re-circulation: 2.0 H.P. pump</p>	
22	ID Fan	<p>Type: Centrifugal</p> <p>Capacity: 2800 rpm</p> <p>Pressure: 350 mm WG</p> <p>Motor rating: 5 H.P.</p> <p>Qty.: 1 No.</p>	
23	Chimney	<p>Height of Chimney shall be 30 meters.</p> <p>Base dia. of Chimney shall be 900 mm.</p>	


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		Top dia. of Chimney shall be 324 mm.	
		16 mm Dia. Half Thread High Tension Nut/Bolts with one spring washer and two plain washers.	
		Foundation Bolts/Nuts 32mm Dia. X 1200mm Long	
		Steel Core Wire Rope 8 mm Dia.	
24	Earth Protection System	Maintenance free 3 m copper rod earth electrode of 20 mm diameter, back-fill chemical compound of minimum 2*25 kg, wire minimum 25 sq. mm. Earth resistance value must be less than 10 ohms round the year. The earthing must have earthing pits whose terminal shall be clearly visible for measurement purpose (minimum 3 earthing in a set)	
25	Lighting Protection System	Copper conductor Air Terminal set and down conductor. The down conductor should be at least 25x3mm copper strip of at least 20m length)	
26	Warranty	Minimum 3 years onsite warranty	

TECHNICAL SPECIFICATION OF MORTUARY CHAMBER/FREEZER

SN	DESCRIPTIONS	REQUIREMENT	Offered Specification
1	Description	Horizontal mortuary chamber/freezer system comprising four independently controlled chambers	
2	Material	SS 304	
3	Thickness of Stainless steel	Minimum Outer 1mm, Body Tray 1.0mm, Inner 0.6 mm	
4	Compress Place	Top of the Freezer	
5	External Size	2060*1580*1475 mm	
6	Inner chamber size	1950*630*440 mm	
7	Body Tray Size	1940*580 mm	
8	Body Tray	4 Nos	
9	Body tray load capacity	Minimum 150 Kg	
10	Compressor	4 independent controls of each chamber	
11	Refrigerant	R404a	
12	Temperature inside	Adjustable +5 to -18°C	
13	Foamed urethane thickness	100 mm	
14	Chamber height	440 mm	


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15	Door	4	
16	Power supply	220V/50Hz	
17	Weight	Approx. 480 Kg	
18	Warranty	Minimum 2 Years	

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