

**SPECIFICATIONS OF CREMATOR (FURNACE AND CHIMNEY) FOR
LPG CREMATORIUM**

The Furnace System comprises of:

1. Primary Combustion Chamber
2. Body Loading Trolley
3. Hot Duct
4. Secondary Combustion Chamber
5. Venturi Wet Scrubber,
6. Cyclone Separator
7. Mist Eliminator
8. Dilution System
9. Activated carbon adsorption unit
10. Stack/Chimney
11. Control Panel
12. Ash Chamber/Ash removal

1. Technical Specifications

1	Primary Chamber	Minimum 3.2 m x 2.1 m x 1.5 m (interior dimensions) Made with MS of minimum plate thickness of 5 mm.
2	Secondary Chamber	Separate secondary chamber with adequate size and provision to achieve a minimum residence time of one second at 1100°C for the oxidation of exit gases from the primary chamber to get exposed to the flame of the after burner.
3	Door of primary chamber	Front opening, vertical sliding, counter weight balanced with view port.
4	Furnace bed & Structure	Stainless steel with high quality IS 8 refractory bricks as insulation.
5	Thermal insulation for primary and secondary chambers and connecting pipes.	
	Internal	IS 8 refractory brick lining with min. thickness = 230 mm to withstand 1500°C with high quality castable fire clay and mortars with specific type of curing to the furnace.
	External	Outer skin temperature of the furnace wall to be maintained below 50°C.

		Rock wool and as per TS 6701 and ASTM C-680
6	Fuel	Liquefied Petroleum Gas/Natural gas
7	LP Gas cylinders	Minimum 8 numbers
8	Gas pipe line from gas cylinder storage room	Copper piping with pressure gauge
9	Burner System	<p>Fuel: LPG/Natural gas</p> <p>4 Nos. for primary chamber and 2 Nos. for secondary chamber each having 250-300 kW.</p> <p>High pressure, full length burners on either side of primary and secondary chambers</p> <p>Features:</p> <ul style="list-style-type: none"> • Fully automatic burners with fan, motor, pump, ignition transformer & electrode, flame sensor, sequence controller, gas solenoid valve, air/gas pressure switches. • Stepless fully modulating operation • Allows air gas fine tuning • Ability to obtain optimum combustion values by regulating combustion air and gas • Integrated with PLC control for burner trip alarm/hooter and other specified safety features.
10	Dilution system with ID fan	Atleast 5 HP blower to bring down the concentration of pollutants.
11	Combustion Air Supply	With atleast 1HP blower for the supply of air for incineration of the body in the primary chamber and for supply of excess air to the secondary chamber.
12	Motors	All motors should conform to IE-2 specifications.
13	Venturi scrubber, cyclone separator and mist eliminator	Integrated or separate units shall be provided to remove particulate matter and harmful emissions before letting it out to the atmosphere.
14	Activated carbon adsorption unit.	The unit should be packed with activated carbon adsorbents to limit odorous emissions.
15	Chimney	Height = 30m as per CPCB norms and State PCB norms. Made of MS bottom dia. 1000 mm, Top dia : 325 mm with specified thickness as per the drawing. From bottom to 18m, MS sheet with thickness varying from 8 mm to 6 mm with inner lining lagged with high alumina refractory in the conical area. From 18m-24m, MS cylinder 400 mm dia. And 5 mm thick. From 24 m -30 m, MS cylinder 325 mm dia. Support for chimney and ladder: Full length ladder type support in MS, coated with epoxy paint. Upto

		11m with platform and remaining 19m ladder to be provided.
16	Chimney connection	30 mm dia. MS refractory lagged pipe with ID blower to chimney/manifold.
17	Foundation for chimney	As per detailed drawing attached
18	Sampling port	At 11m from the chimney bottom.
19	Lightning arrestor	At the top of the chimney and to be connected to the ground
20	Earthing pit	Upto 3m as per requirement.
21	Temperature Sensor	Adequate nos. of k-type thermocouples/RTD in primary and secondary chambers.
22	Temperature control and indication	Solid State digital type temperature indicator controller 0-1200°C in each chamber.
23	Safety controller	PLC based control. Safety features: <ul style="list-style-type: none"> • Able to prevent the charging door from being opened unless the temperature in the primary chamber is below the set point or when the burners are in ignited mode. • Automatically shut down the fuel flow to the burner at the end of cremation cycle.
24	Ash removal facility	At rear side of primary chamber, scraping by manual operation, with hinged type door manually operated.
25	Painting	Steel items other than SS to be painted with high temperature resistant paints.
26	Trolley	Stretcher type trolley fully SS with SS bed and provision for easy sliding of the body into the primary chamber with min. size of 11ft x 3 ft x 2ft
27	Temperature	
	Primary chamber	850 ± 50°C
	Secondary chamber	1100 ± 50°C
	Chimney/stack	Min. 200 °C
28	Cremation time/body	60-90 minutes
29	LPG consumption	12 ± 2 kg (max.)
30	Emissions	As per KSPCB standards
31	Operation and maintenance	The agency authorized should provide 12 months free O&M for the entire system. During this period one personnel of the local body shall be trained by the

		agency. After the free service of 12 months the provider should be ready to undertake the O&M for a period of 10-15 years, if required by the LSGIs.
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