Annexure-4

Technical Compliance Statement:

Party shall fill up the following compliance matrix with due care and submit it along with the tender.

S.No.	Scope of Work / Technical Description	Remarks
	Scope of Work	
1.	Engineering, Design, Fabrication, Supply, Erection, Installation & Commissioning a Solid waste Incinerator, APCDs and ETP at VKC (near to existing Incinerator) on a turn-key basis including civil works & associated electrical works. Onsite training for operation and maintenance of Incinerator shall be imparted by the successful bidder.	
2.	Incinerator shall be designed and capable of incinerating of waste materials like Carbon and silica prepregs along with overwrapped plastic papers, fiber glass, silica and carbon cloth, Poly urethane foam, thermocol, PF Resin mixed with saw dust, plastic paper, curing waste of resin mixed Jutes and Coir, domestic dry waste from canteen and dry waste generated as part of day to day office functioning, cardboards, wooden boxes etc.).	
3.	Equipment related design drawings (Mechanical, Electrical and Civil) shall be submitted by the successful bidder for prior approval from VSSC before the commencement of fabrication/ construction. Party shall present the design details for review by VSSC through online meeting.	
4.	All Equipment and related accessories shall comply to relevant Indian/international standards. All statutory approvals/licenses for the installation and operation of incinerator are under the scope of VSSC. However, relevant design details shall be provided by successful bidder for the submission to statutory bodies.	

5.	All civil works related to proposed incinerator is under the scope of successful bidder. Civil works includes building, foundation for the equipment including chimney and any other structural work required. However detailed civil drawing shall be provided by the successful bidder for the approval of VSSC. Providing necessary lightings, power supply boards, ventilation fans etc in the incinerator shed is under the scope of bidder.	
6.	The equipment shall conform in all respect to high standards of engineering, design and workmanship and be capable of performing in continuous operation	
7.	VSSC is entitled to reject any work or material which in their judgment is not in full accordance with the specification. Successful bidder responsibility also includes works & services which are not explicitly mentioned in these documents but are necessary to complete the system in all respect.	
8.	Bidder may visit / inspect the VSSC premises at their own cost with prior permission of VSSC, if required, before submitting the offer. Bidder shall understand the complete scope of work before submitting offer by visiting VSSC if required. The submission of the tender by the bidder will be construed as evidence that such an examination was made and any claims/disputes in regard to price quoted shall not be entertained or considered.	
9.	The successful bidder has to supply panel board components and lay the necessary cables for the incinerator. Location for single point power supply shall be intimated later to successful bidder.	
10.	Total design of the incinerator and its associated systems shall comply to all relevant latest CPCB/KSPCB norms of air/water w.r.t incinerator if any.	

1.	**General Specification(Technical Description)** **Type of waste**:-Carbon and silica prepregs along with overwrapped plastic papers, fibre glass, silica and carbon cloth soaked with resin, Polyurethane foam, thermocol ,PF resin mixed with saw dust, plastic paper ,Curing waste of resin mixed Jutes and Coir ,domestic dry waste from canteen and dry waste generated as part of day to day office functioning Etc. This type of waste contains 10% moisture,5% incombustible solids and has a heating value of about 4725kcal/Kg as fired.	
2.	**Capacity**:-125Kg/hr.	
3	**Design temperature**:- 1500°C	
4	**Operating temperature**:- 1100°C (±50°C)	
5	**Waste Loading**:- Should have automatic waste feeding & dishing system so that there is no direct exposure of furnace atmosphere to the incinerator operator while charging.	
6	**Ash door**:- Minimum Two Nos.	
7	**Motors**:- shall be of continuous duty S1 type of IS: 325 standard	
8	**Primary Chamber:-** MOC- MS IS 2062 – 6 mm thick, Design temperature-1500°C, Operating temperature-850°C (±50°C), Ash door- Minimum one, Refractory+ insulation - IS-8 refractory brick with high alumina content 115mm thick + IS-2042 insulation brick 115mm thick +Ceramic Blanket 100 mm., Insulation- Ceramic blanket, Burner- Fully automatic with Burner retracting mechanism, View Port- Projected type of observation or view ports (high-temperature glass with a metal closure provision) should be provided to observe visual condition of the burning process, Emergency vent-The incineration system must have an automatic emergency vent designed with a provision of electric/pneumatic operated valves. The emergency vent shall remain closed and such	

	provision it shall not emit flue gases or leakages during normal operation of the incinerator, Painting- externally with heat resistant aluminium paint.	
9	**Secondary Chamber:-** MOC- MS IS 2062 – 6 mm thick, Design temperature-1500°C, Operating temperature-1050°C (±50°C), Ash door- Minimum one, Refractory+ insulation- IS-8 refractory brick with high alumina content 115mm thick + IS-2042 insulation brick 115mm thick +Ceramic Blanket 100 mm., Burner- Fully automatic with Burner retracting mechanism, View Port- Projected type of observation or view ports (high-temperature glass with a metal closure provision) should be provided to observe visual condition of the burning process, Painting- externally with heat resistant aluminium paint.	
10	**Burner:-** Type- Fully automatic pressure jet mono block, No of burners-Two, Fuel- High Speed Diesel (H.S.D)	
11.	**Fuel Tank:-** MOC- IS 2062 – 5mm thick, Capacity-900 Litres, Accessories- Pipeline, Drain, Valves, Level Gauges, pump for fuel filling.	
12.	**F.D Fan:-** MOC- MS IS-2062, Motor rating- As per design, Driven type- Centrifugal Direct Drive Type Air Blower with electric motor	
13.	**Cyclone Separator:-** MOC- Outer Body made up of 5 mm SS 316 should have refractory and insulation castable lining inside. Outer cover in IS 2062 with air insulation in between, Dust Collection- Suitable provision for removal of the waste/Ash shall be provided.	
14.	**Quench Column:-**MOC- *Outer Body made up of minimum 5mm IS 2062 should have refractory and insulation castable lining inside.*	

15.	**Recirculation Pump With Motor:-** Type- As per process design with standby, MOC- Wetted parts should be Stainless Steel (SS-316), Pipe MOC- Piping should be chemical resistant PPR	
16.	**Venturi Scrubber** Should be High Pressure JetType, Material of Construction should be Stainless Steel(SS-316L).Scrubbing medium should be Water with 5% caustic and Temperature at the outlet 78 ºC to 80ºC.	
17.	**Recirculation Pump With Motor:-** Type- As per process design with standby, MOC- Wetted parts should be Stainless Steel (SS-316), Pipe MOC- Piping should be chemical resistant PPR	
18.	**Packed Bed Scrubber:-**MOC- Outer Body made up of minimum 5mm IS 2062 should have acid proof tiles lining inside, Packing & Packing Holders- Scrubber should have FRP Lined Packing holders and ceramic packings with spray distributor with nozzles in SS 304	
19.	**Recirculation Pump With Motor:-** Type- As per process design with standby, MOC- Wetted parts should be Stainless Steel (SS-316), Pipe MOC- Piping should be chemical resistant PPR	
20.	**Alkali Dosing System:-**MOC- wetted parts should be PP (polypropylene),Pump- Diaphragm metering type pump	
21.	**Mist Eliminator/ Moisture separator:-**MOC- IS 2062 inside Rubber Lined (MSRL) of 5mm thickness, Type- Cyclonic	
22.	**Emergency Vent:-**MOC- IS 2062 inside refractory lining.	
23.	**Flue Gas Ducts:-** MOC-Should be of Cylindrical type and Material of Construction should be Partly MS and partly Mild Steel Rubber Lined.	
24.	**I.D Fan:-** MOC-IS 2062 with inside FRP coating, Impeller- SS 316 with dynamic balanced, Drive- In-direct, V-belt, No. of fan-2 Nos. (1No. Standby)	
25.	**Chimney:-**MOC- IS 2062. Construction and thickness etc. as per IS 6533 (Latest).The Chimney should be protected from inside by	

	providing 3mm thick rubber lining or with FRP, Height- Minimum 30 meters from ground level self-supported, Working Platform- Two nos. with railings Accessories- Cage Ladder, Safety ring, Platform, Sampling point, Earthing GI, Lightning arrestor, Canopy, inspection window at bottom side, aviation light etc., Painting- Painted externally with at least two coats of heat resistance aluminium paint, Drain- Suitable provision shall be provided to drain condensate and same shall be connected to effluent treatment plant.	
26.	**Painting:-** Painting- All the equipments& components should be coated with 2 coats of epoxy heat resistance paint	
27.	**Panel Board:-** MOC-CRCA, Safety- MCB fuses,Voltage-440 V – 3 Phase, Instruments- Temp controllers, thermo well, Alarm- Buzzer audio type	
28.	**Safety interlocks:-** Essential Safety interlock control should be incorporated with the incinerator system.	
29.	**Effluent treatment plant with sludge drying bed:-** Effluent treatment plant- Appropriate treatment to the waste waters generated from a.Cleaning of waste storage areas and the facility; b.Cleaning of exhaust gases shall be provided. Also, the treated waste water shall conform to the waste water effluent discharge standards prescribed under the CPCB/SPCB norms. Design basis shall be provided along with the technical bid. The capacity of ETP shall be designed by the party appropriately to treat the entire quantity of effluents generated, on a daily basis. The effluent treatment plant shall be Zero Liquid Discharge (ZLD). The treated water shall be reused for the incinerator system. Elements required: Basic elements shall include a clarifier to collect and settle the effluent water, a	

	bed for collecting slurry of sludge. Clear water from the clarifier shall be filtered through a battery of pressurised sand filter and activated carbon filter .Treated water out let shall be collected in a Sintax tank and with a 1 HP pump for reuse. The capacity of ETP shall be designed by the party appropriately to treat the entire quantity of effluents generated, on a daily basis. The design shall also consider necessary storage tanks for the collection/recirculation of treated effluent and also necessary pumps and its plumping accessories for reuse of the treated effluents for the operation of the incinerator. The overall responsibility of installing the ETP, including the minor civil works involved fully vests with the party. The party shall suggest any alternate method of effluent treatment other than mentioned above if applicable. The proposed method by the bidder shall comply to latest CPCB/ KSPCB effluent norms and shall be a proven approved method by CPCB. Party may also arrange a site visit to assess the functioning of the proposed effluent treatment method if commissioned elsewhere with in India. The final design approval of effluent treatment method shall be under purview of VSSC. Sludge drying bed with solar evaporator system- Shall be provided with chemical resistant liner and top cover to avoid rain water entry, Accessories- All the accessories like effluent storage tanks, pumps, treatment tanks & treated effluent storage tanks, flow meters shall be chemical resistant.	
30.	**Online Continuous Stack Emission Monitoring System:-** Following parameters shall be continuously monitored SPM, SOx, NOx, CO.	

	Emission standards:	
1.	All the parameters should be within the limits prescribed in KSPCB/CPCB emission norms. Emission test by NABL accredited lab shall be carried out by the party after full commissioning of the incinerator. Test certificate shall be submitted.	
	Effluent standards	
1.	All the parameters should be within the limits prescribed in KSPCB/CPCB effluent discharge norms. Proposed effluent treatment details along with schematic layout shall be provided by the bidder	
	Performance Test:	
1.	The system shall run for at least 3 days for 8 hours (each day) with rated output i.e. complete combustion of minimum 100kg/hr of mixed waste leaving no un burnt things in the system to mark the successful commissioning of the system. Emission standards as per KSPCB/CPCB norms shall also form part of performance test.	
	Warranty and Services:	
1.	2 year warranty for the total system shall be provided by the party. Replacement of spares, periodic maintenance once in three months and services shall be included in the warranty period. Any trouble shooting support whenever needed shall be attended within 2 working days from the date of complaint.	
2.	List of Essential Spares shall be provided by the party for trouble free operation after the completion of warranty period. List of essential spares along with cost shall be quoted separately. The cost of essential spares shall not be considered for L1 Determination.	
3.	Party shall give an undertaking on their company letter head that spares support for the system for which bid has been submitted shall be provided for minimum period of 5 years.	

4.	Party shall impart training relating to the operation and maintenance of the equipment to staff nominated by VSSC.	
	Annual Maintenance Contract: Party need to mandatory undertake non-comprehensive AMC after the expiry of the warranty period. The Party shall quote separately the charges for non-comprehensive AMC for Incinerator, APCDs and ETP for a period of 5 years beyond the warranty period. AMC shall have two periodical maintenance visits per year and breakdown visits as and when required. The cost of AMC shall not be considered for L1 Determination.	
	Guidelines for temperory power supply at site:	
1.	Electrical power supply at medium voltage (415 volt, 3phase, 4wire) for constructional purpose and general lightings will be made available at site or near site of work as per the direction of EIC at the point. The distance will not however exceed 50 mtrs from the building site. The contractor should lay down the power lines from this point at his own cost in an approved manner.	
2.	The contractor should pay the charges based on his power demands at current tariff rates prevailing at site as charged by supply authorities.	
3.	Suitable rated KWH meter will be supplied and installed by contractor and test certificate as per ISS from authorized test lab or manufacture is to be submitted.	
4.	The installation shall conform to Indian Electricity Rules, Indian Electricity Act 1910 and IEE Regulations as per the latest revisions and got executed by licensed electrical contractors only.	
	Documentation:	
1.	Post completion of work, successful bidder shall submit 2 sets of soft copies (on DVDs) along with three (3) sets of original prints in folders, of all the	

	"AS- BUILT" drawings incorporating all changes that might have taken place during execution, Test certificates, datasheets. As-Built drawings shall be first copy and shall be properly arranged in suitable folders. Successful bidder shall also submit operation, maintenance, repair, testing and inspection manuals for the complete system in three (3) copies.	
	Delivery Schedule:	
1.	Compliance to the delivery schedule given under scope of work.	
	Delivery Terms:	
1.	F.O.R (Freight on Road) – VSSC(CMSE, VKC), Thiruvananthapuram, Kerala inclusive of P&F, Freight, Transit Insurance and any other charges to deliver, install &commission the system at VSSC, Thiruvananthapuram.	
	Qualification/ Eligibility Criteria	
1.	Bidder shall be Individual/ firm/ company/ corporate / limited company intending to bid should be bona fide, experienced, technically competent, resourceful and financially sound to carry out the assigned order. Copy of Company's registration/Certificate of incorporation/Partnership Deed/Any other registration certificate	
2.	Bidder should have successfully supplied, installed & commissioned at-least 1 no of 100 Kg/hr (or)higher capacity incinerator in any 1(One) year of last 5 (Five) years ending 31.12.2023.Copy of Purchase order / Work order / Agreement / Contract shall be provided. Party should also provide the list of such Installations with contact details to verify their performance if needed.	
3.	Bidder should have valid GST registration certificate. Copy of certificate shall be enclosed.	
4.	Bidder should have valid PAN card. Copy shall be enclosed.	
5.	Audited balance sheet and profit & loss statement for FY 2021-22, 2022-23 and 2023-24.	

	LIST OF STANDARD MAKES	
1.	Burners – Oroflam / F.B.R / Ecoflam (Italian makes) / Equivalent	
2.	Motors –Kirloskar / NGEF / Siemens / ABB / GEC /Crompton Greaves make	
3.	Pumps: Kirolslar, beacon,mather & platt , KSB	
4.	Temperature controllers - Delta/Selec/Equivalent	
5.	Refractory – Calderys / Equivalent	
6.	Wiring cables: RR Kabel / Havells / Finolex / Polycab	
7.	Pipes: From reputed manufacturers.	
8.	Tanks: From reputed manufacturers.	
9.	Starter : L&T, Siemens & Scheinder	
10.	Light fittings: Philiphs/Crompton/Wipro.	
11.	DB, ELCB, MCB,S/S:Legrand.	
12.	Casing capping, Mini trunking, PVC conduit: Precision/Legrand /Balco	
	TERMS AND CONDITIONS FOR CIVIL WORKS	
1.	The design of the building shall be as per latest NBC and relevant IS codes.	
2.	Detailed Architectural/Structural drawings for the building, chimney and associated civil structures shall be submitted. All materials considered for flooring, side walls, roofing, piping, electrical installations should be of approved brand and the details to be submitted for approval from VSSC.	
3.	Grade of Reinforced concrete shall be of minimum **M30**. Design mix to be submitted for approval. If Ready mix concrete is used, it shall be procured from automatic batching plant conforming to IS 4925.	
4.	Steel reinforcement bars shall conforming to relevant BIS codes. The steel bars shall be in full	

	length. Samples from the consignment shall be tested.	
	CIVILWORKS - LIST OF APPROVED MAKE	
1.	**CEMENT:** ACC, L&T- ULTRA TECH, PRIYA, RAJASHREE, GRASIM, J.P., REWA, VIKRAM, SHREE CEMENT, CHETTINADU, BIRLA, INDIA CEMENTS, RAMCO, JSW, DALMIA	
2.	**REINFORCEMET STEEL:** VIZAG,SAIL,TATA,JSPL,RINL,KAMATCHI	
3.	**STRUCTURAL STEEL:** VIZAG,SAIL,TATA,JSPL	
4.	**CONSTRUCTION CHEMICALS:** FOSROC,CICO,ACCOPROOF,ROFFEE,BASF,SIKA, Dr.FIXIT	
5.	**FLOORING MATERIALS:** **a)** CERAMIC / VITRIFIED TILES: JOHNSONS, NITCO, KAJARIA, SPARTEK, REGENCY, NAVIN, BELL, SOMANY, RAK, SIMPOLO **b)** EXTERIORTILES: ULTRA,SPARTEK,EUROCON,JOHNSON **c)** EXTERIOR INTERLOCKING PAVER BLOCKS: ULTRA, SPARTEK, EUROCON, UNITED, GREEN PAVERS, HEERALAL **d)** PVCFLOORING: TUSKER VYNYL, KRISHNA, RESPONSIVE, BIRLA, POLYFLOOR OF M/S PREMIER POLYFILM **e)** TILEADHESIVES&GROUTS: ARDEXENDURA,MYKLATICRETE **f)** EPOXYFLOORING: CIPY,FOSROC,BASF	
6.	**ROOFING:** TATA, LLYOD, JSPL, HINDALCO EVERLAST, JMBS, ORALIUM	
7.	**JOINERY MATERIALS:** **a)** ALUMINIUMSECTIONS: JINDAL,INDAL **b)** PVC/FIBREDOORS&WINDOWS: RAJASHREE,SINTEX,FIMEN,NAVRANG **c)** UPVCJOINERIES: FENESTA,KOMMERLING,ENCRAFT	
8.	**UNDER DECK/FALSE CEILING:** ROCKWOOL, LLYOD, INDIA GYPSUM, GYPROC, EVEREST, ARMSTRONG, HUNTER DOUGLAS INDIA PVT. LTD, SAINT GOBAIN	
9.	**PLYWOOD/PARTICLE BOARDS/VENEERS:** NOVOPAN, BHUTAN BOARDS, ARCHIDPLY, CENTURYPLY, KIT PLY, FORMICA, GREEN PLY	

10.	**GLASS:** SAINTGOBAIN,MODIGUARD	
11.	**SUNCONTROLFILM:** 3M,GARWARE	
12.	**BUILDERS HARDWARE:** GODREJ,EVERRITE,DORMA,OZONE	
13.	**PAINTS:** ASIANPAINTS,BERGER,MRF,ICI(DULUX),JOTUN, INDIGO	

To be signed & stamped and submitted along with Techno-commercial Bid. Incomplete compliance statement and unfilled compliance statement will not be acceptable and the bid will be disqualified.