IDMC®
LIMITED

124-128, GIDC Estate, Vithal Udyognagar- 388121,
Anand District, Gujarat, India,
Tel: +91-2692-220521
Website: http://www.idmc.com

Tender Document

for
Design, Engineering, Manufacturing, Supply,
Installation, Testing, Commissioning & Acceptance of

Solid Fuel Fired Steam Generation Plant
at a minimum
Net steam output capacity of 21000 kg/hr (10500 kg/hr x 2)

for
MDFVPL Project, Kuppam, Andhra Pradesh, India

INDEX

1. Invitation for Bid

Enquiry Reference no.: IDMC/ Sourcing & VD/ 2026-27/ Enquiry/100 dated 29.04.2026

IDMC Limited invites sealed bids from original equipment manufacturers (OEMs) for Design, Engineering, Manufacturing, Supply, Installation, Testing, Commissioning, acceptance of Solid Fuel Fired Steam Generation Plant for the Multifruit processing plant to generate Steam at a minimum net output capacity of 21000 kg/hr (10500 kg/hr x2) for MDFVPL Project, Kuppam, Andhra Pradesh, India as per details given below:

Description of Tender	Design, Engineering, Manufacturing, Supply, Installation, Testing, Commissioning & Acceptance of Solid Fuel Fired Steam Generation Plant to generate Steam at a minimum net output capacity of 21000 kg/hr (10500 kg/hr x 2)
Qty	1 Pack
Estimated Cost	INR 11.1 CRORE
Completion period (For the complete plant (design, manufacturing, supply, installation, testing, and commissioning))	9 months from the date of the Letter of Intent (LOI)/Purchase Order (PO) whichever is earlier
Earnest Money Deposit (EMD)	Not applicable
Mode of Tender	eProcurement at NCDFI eMarket portal, considering restricted tender of IDMC with single stage two bid envelope system (Part I- Techno-commercial Bid and Part II- Price Bid) through www.idmc.com (click procurement) OR https://www.ncdfiemarket.com/index.php/idmc/ and can be downloaded and used as tender document for uploading the offer. The invited bidders are required to submit their offer electronically through NCDFI eMarket portal. No physical tender/email is acceptable.
Eligible bidders	This invitation for bid is restricted to original equipment manufacturers to the invited bidders only and written communication sent through email by purchaser/NCDFI e-Market.
Query/support related to online portal during submission of bid	Mr Sachin Chaudhary +91 99786 28169 Mr Parth Parikh +91 70435 31188
Warranty Period	12 months from the date of successful commissioning, product trial & acceptance of the plant

Date of uploading of enquiry on NCDFI eMarket portal	30.04.2026
Last date, time and place for receipt of bids/ offers	20.05.2026 (Up to 1700 hrs IST)
Bid submission currency	INR

1.1. The bid document can be downloaded by registration from the link:
www.idmc.com (click procurement) OR
https://www.ncdfiemarket.com/index.php/idmc

1.2. Enquiry document:

Instructions to bidders, General conditions of contract, Special conditions of contract, Form of agreement, Acceptable forms of bank guarantees, Schedule of Requirement and technical specifications for all the items of works are indicated in this enquiry document.

1.3. Clarification on the bids:

The bidders may submit their queries / clarification if any through email by 08.05.2026 on email id – tenders_mech@idmc.com for consideration of the purchaser.

1.4. Opening of offers:

Bids will be opened by the tender opening committee of IDMC based on the offer received on the NCDFI Portal, bidders' presence is not required.

1.5. Offer validity:

The bid shall remain valid for a period of 120 (One hundred twenty) days from the date of bid closing.

1.6. Drawings:

Bidders to submit preliminary GA /dimensional drawing along with the offer.

1.7. Rights reserved by IDMC Limited:

IDMC may evaluate & consider bids both technical as well as financially beneficial to the project. It reserves the right to accept and or reject any or all the bids.

2. Instructions to bidders

(a)	Tender/Event Ref. No.:	IDMC/ Sourcing & VD/ 2026-27/ Enquiry/ 100 dated 29.04.2026
(b)	Transaction Fee Payment of transaction fee by NEFT/ RTGS in favor of IDMC Limited	Not Applicable
(c)	Incidental charges (in land) in case documents are to be sent by courier/post	Not Applicable
(d)	Event Start Date	30.04.2026
(e)	Event Close Date & time	20.05.2026, 17.00 Hours
(f)	Last Date and time for bid submission	20.05.2026, 17.00 Hours
(g)	Time and date of opening of bids	
	Part I – Techno-commercial bid	Bids will be opened by the tender opening committee of IDMC based on the offer received on the NCDFI Portal, bidders' presence is not required.
	Part II – Price bid	May be communicated later to responsive /technically qualified bidders who have accepted all techno commercial terms and conditions
(h)	Opening of bid	ONLINE at web portal (in presence of tender opening committee of IDMC)
(i)	Address for communication	IDMC Tender committee 124-128 GIDC Estate Vithal Udyognagar- 388121 Dist.- Anand (Gujarat) Tel: +91 2692 -220521 Email: tenders_mech@idmc.com
(j)	Time of completion	9 (Nine) Months for overall completion (from the date of notification of award of Contract (LOI)/ Purchase Order) whichever earlier
(k)	Amount of EMD	Not Applicable
(l)	Date and time for receipt of EMD. The EMD in original to be submitted to communication address as stated above in clause (i)	Not Applicable
(m)	Price Basis (Incoterm)	FOR MDFVPL Project, Kuppam, Andhra Pradesh, India
(n)	Packing & forwarding	In Bidder scope
(o)	Freight	FOR MDFVPL Project, Kuppam, Andhra Pradesh,

		India
(p)	Transit Insurance (Warehouse to warehouse)	FOR MDFVPL Project Kuppam, Andhra Pradesh, India (Unloading at project site in IDMC Scope, however bidder shall be arranged their representative for supervision of unloading)
(q)	All applicable duties & Taxes in India	In IDMC scope

2.1. Eligible bidders:

This invitation for bid is restricted to original equipment manufacturers to the invited bidders only and written communication sent through email by purchaser/NCDFI e-Market.

2.2. Cost of bidding:

The Bidder shall bear all costs associated with the preparation and submission of its bid, and IDMC Limited, also hereinafter based on the context referred to as "the Purchaser", will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

2.3. Bidders to check the contents of enquiry documents:

The Bidder is requested to carefully examine all instructions, conditions, forms, terms, specifications, and drawings in the bidding documents. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Bids which are not substantially responsive to the requirements of the bidding document will be rejected.

2.4. Documents to be submitted along with the offer/ bid:

The offer to be submitted by the bidder/ vendor shall comprise the following:

a. The Form of bid duly filled and signed.

b. Bidders: self-attested copies of documents defining the constitution, place of Registration and principal place of business.

c. Details of experience and past performance of the bidder on the executed contracts of similar nature within the last 5 years. The bidder shall also provide details of similar machines provided in last five consecutive years to the following geographies:

   i. Globally (excluding Asia)

ii. Asia (excluding India)
iii. India

d. List of customers and their contact details for reference.

e. All details as specified in the section technical details as per the format provided.

f. The complete enquiry document with filled in offer, has to be submitted duly signed & stamped by the bidder/ vendor.

g. The bidder should furnish a brief write-up, backed with adequate data, explaining his available capability (both technical and commercial) for manufacturing and design, engineering, manufacturing, supply, installation, testing and commissioning of the required equipment within the specified time of completion, after meeting all their current commitments.

h. Service setup of the bidder in India (if any).

i. The bidder shall submit a detailed technical offer including the layout, GA drawings, Process Flow Diagram (showing flow, temperature, pressure, and other relevant parameters), P&ID, equipment/instrument/electrical datasheets, automation architecture, detailed electrical panel and cable specifications, and a tentative schedule/Gantt chart (L1 schedule).

j. Additionally, the bidder shall provide a detailed list of all equipment with quantities proposed under import, the list of indigenous equipment with quantities, and a complete list of spare parts and special tools required for two years of continuous operation.

All pages of the offer documents shall be signed by person(s) duly authorized. Proof of authorization shall be in the form of a written Power of Attorney/ Authority letter which shall accompany the bid. All pages of the offer documents, where entries and amendments have been made, shall additionally be initiated by the person(s) signing the offer/ bid.

The complete offer/ bid shall be without alterations, interlineations, or erasures except those in accordance with instructions issued by IDMC Limited, or as necessary to correct errors made by the bidder in which case such corrections shall be initialed by the person(s) signing the offer. No overwriting shall be permitted.

2.5. Clarification of bidding documents:

As specified above at clause no. 1.3

2.6. Mode and manner of submission:

2.6.1. Submission of bid shall be through NCDFI eMarket portal only. No physical/email bids shall be accepted

2.7. Currency of offer & payment:

The prices shall be quoted by the bidder as under:

2.7.1. Bidders shall quote in INR. All payments will be made in the currency in which the PO/contract will be awarded.

The payment will be only through an authorized bank, subject to forex and other regulations, including withholding taxes, if any, in force. The bank charges within India shall be borne by the purchaser.

2.8. The price schedule:

Steam Generation Plant

Sr. No	Technical Details Serial No.	Description	Quantity	UOM
	1	**Fuel Preparation & Conveying**		
	1.1	**Fuel Receiving**		
1	1.1.1	Fuel Receiving System	1	EA
	1.2	**Fuel Conveying**		
2	1.2.1	Fuel Conveying System	1	EA
	1.3	**Crushing or Screening**		
3	1.3.1	Crusher	1	EA
4	1.3.2	Vibrating Screen	1	EA
5	1.3.3	Transfer Conveyor	1	EA
`	**1.4**	**Elevating**		
6	1.4.1	Bucket Elevator	1	EA
7	1.4.2	Transfer Conveyor	1	EA
	1.5	**Storage**		
8	1.5.1	Storage Unit	2	EA
9	1.5.2	Transfer Conveyor	2	EA
	1.6	**Fuel Feeding**		

10	1.6.1	Fuel Feeding System	2	EA
	2	**Fuel Combustion & Steam Generation**		
	2.1	**Boiler**		
11	2.1.1	Hybrid water-cum-smoke tube Boiler	2	EA
	3	**Heat Recovery and Energy Conservation**		
	3.1	**Heat Recovery System**		
12	3.1.1	Pressurized Economizer	2	EA
13	3.1.2	Air Preheater	2	EA
	3.2	**Energy Conservation System**		
14	3.2.1	Blow–Down Heat Recovery System	2	EA
	4	**Air Pollution Control and Monitoring**		
	4.1	**Air Pollution Control System**		
15	4.1.1	Electrostatic Precipitator (ESP)	2	EA
16	4.1.2	Mechanical Dust Collector (MDC)	2	EA
17	4.1.3	Bag Filter (Pulse-Jet Type)	2	EA
18	4.1.4	Wet Scrubber	2	EA
19	4.1.5	Chimney	1	Lot
	4.2	**Monitoring System**		
20	4.2.1	Continuous Emission Monitoring System	1	EA
	5	**Auxiliaries**		
	5.1	**Draft System**		
21	5.1.1	Forced Draft (FD) Fan	2	EA
22	5.1.2	Induced Draft (ID) Fan	2	EA
23	5.1.3	Secondary Air (SA) Fan	2	EA
	5.2	**Feedwater System**		
24	5.2.1	Pressurized de-aerator cum feedwater storage System	1	EA
25	5.2.2	Low Pressure (LP) Dosing System	1	EA
	5.3	**Accessories / Spares**		
26	5.3.1	Platforms, Frames, Supports, Stacks, Rails	1	EA
27	5.3.2	Instruments/controls/accessories	1	EA
28	5.3.3	Spare for 2-year operation	1	EA
	5.4	**Electrical**		
29	5.4.1	Electrical Control Equipment	1	EA
	6	**Service**		
	6.1	**ITC, acceptance, Training & AMC**		
30	6.1.1	Installation, Testing, Commissioning, acceptance & Training	1	Job
31	6.1.2	Service Cover (continuous 5 working days in quarter	4	Job

		applicable for one year (4 visits per annum). The no. of skilled technical engineer deployed for the service cover shall be decided by the bidder.		
32	6.1.3	Non-Comprehensive AMC (minimum 4 Visits per annum & unlimited breakdown after warranty period) for 2 year	8	Job
33	6.1.4	Comprehensive AMC (minimum 4 Visits per annum & unlimited breakdown after warranty period) for 2 year	8	Job

2.8.1. The bidder shall quote the price in figures and words clearly specifying the currency. The said price shall be a comprehensive all-inclusive price for the design, engineering, manufacturing, supply, installation, testing, and commissioning including the obligations of any services and supplies as specified in the technical details or elsewhere in the bidding document.

2.8.2. The price will include the cost/ fee of any Technician/ Supervisor/ Expert to be deputed by the vendor at the site for installation, testing, commissioning and handing over, or any other related activity.

2.9. Offer validity & extension of validity if required:

Bids submitted shall remain valid for acceptance for a period of 120 days from the date of bid closing.

2.10. Submitted offer to be complete in all respect:

The bidder shall submit an offer which complies fully with the requirements of the bidding documents, including the basic technical design as indicated in the specifications.

2.11. Date of submission of offer/ bid:

The offer must be received by IDMC Limited on or before the date and time of submission as stated in the Invitation for Enquiry/ Tender. IDMC Limited may, at its discretion, extend the deadline for the submission of offer/ bid by issuing necessary instructions on email to all registered bidders, in which case, all rights and obligations of IDMC Limited and the bidders previously subject to the original deadline shall thereafter be subject to the new deadline as extended.

2.12. Late bids:

Any offer/ bid received by IDMC Limited later than the deadline for the submission of offers/ bids as prescribed by IDMC Limited will be subject to rejection.

2.13. Opening of bids:

The bids will be opened, scrutinized, and evaluated as per the qualification, scope and specification mentioned in tender and award the contract accordingly.

After the opening of offers IDMC Limited shall evaluate and process the same for finalizing the issuance of the Purchase order. The process shall be kept confidential - not disclosed to bidders/ any vendor or other persons not officially concerned with such process.

2.14. Undue influence by the bidder:

Any action to influence the procurement process or contract execution for undue advantage will be improper and may result in the rejection of the bidder's bid/ offer.

2.15. Clarification on offers/ bids:

To assist in the evaluation of offers/ bids, IDMC Limited may request the bidders/ vendors for clarification of their bids, including breakdown of unit rates. The request for clarification and the response shall generally be in writing but no change in the price or substance of the bid shall be sought, offered or permitted. The Purchaser may, depending on the nature of the query, contact the concerned bidder on the telephone number provided in the bid document only for the purpose of understanding and/ or resolving the query. For this purpose, the bidder is requested to provide the name and contact details of its designated officer.

2.16. Correction of errors:

2.16.1. The offers will be checked by IDMC Limited for any arithmetic errors in computation and summation. Errors will be corrected as follows:

2.16.2. “Where there is a difference between rates in figures and in words, the rates that correspond to the amounts worked out by the bidders, shall be taken as correct. However, when the amount of an item is not worked out or it does not correspond with the rates written either in figures or words, then the rates quoted by the bidder in words shall be taken as

correct. When the rates quoted by the bidder in figures and words tallies but the amount is not worked out correctly, the price quoted by the bidder shall be taken as correct and not the amount."

2.16.3. The amount stated in the form of bid will be adjusted by IDMC Limited in accordance with the above procedures for the correction of errors, and with the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the quoted rates (Price) of bid then his bid shall be rejected.

2.16.4. IDMC Limited reserves the right to accept or reject any variation, deviation, or alternative offers.

2.17. IDMC Limited's right to accept any offer/ bid and to reject any or all offers/ bids:

As mentioned above in clause no. 1.7

2.18. Notification of award and issuance of Purchase order:

Prior to the expiry of the period of offer/ bid validity prescribed in the enquiry/ bid documents, IDMC Limited will notify the finalized bidder/ vendor here in after referred to as the "/ Successful bidder/ Bidder", in writing on acceptance of their offer/ bid and issue a Letter of Intent/ Award, followed by a detailed Purchase order mentioning all the required terms and conditions and (hereinafter and in the Conditions of the Contract referred to as the "Contract price").

2.19. License and permit for goods/ services:

No license or permit shall be provided by Purchaser/ Owner/ IDMC Limited for the exports of goods and services being provided by the Successful bidder against this enquiry or work order.

2.20. Amendment to the bidding document:

At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by amendment. The amendment will be notified in writing by mail to all registered Bidders.

2.21. Modification in the bid:

2.21.1. The Bidder may modify or withdraw its bid after the bid submission, provided that written notice of the modification or withdrawal is received by the Purchaser prior to the deadline prescribed for submission of bids.

2.21.2. No bid may be modified after the deadline for submission of bids.

2.22. Language of bid:

The Bid prepared by the Bidder and all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in the English language, provided that any printed literature furnished by the Bidder may be written in another language so long as accompanied by an English translation of its pertinent passages in which case, for purposes of interpretation of the bid, the English translation shall govern.

2.23. Personal discussion:

If required, IDMC Limited may desire to hold personal discussions with shortlisted vendors. The discussions, if required, are likely to be held at IDMC Limited's office in Anand or through the Online Teams meeting. Date shall be intimated through e mail by designated person of IDMC.

3.General conditions of contract

3.1. Definitions and Interpretation:

3.1.1. In the Contract, as hereinafter defined, the following words and expressions shall have the meanings hereby assigned to them, except where the context otherwise requires.

3.1.2. OWNER/ PURCHASER/ IDMC shall mean IDMC Limited and shall include its successors and assignees, as well as its authorized representatives.

3.1.3. IDMCL shall mean IDMC Limited.

3.1.4. The bidder/ Vendor shall be the firm/party/individual who submits the offer/ bid against this enquiry.

3.1.5. Contractor/ Successful bidder/ Bidder shall mean the successful vendor/ bidder whose Offer/ Bid has been accepted by the Owner/ IDMC Limited and on whom a work order/ PO has been placed and shall include his heirs, legal representatives, and assignees.

3.1.6. Contract price/rate shall mean the prices/ rates of the accepted Offer/Bid

3.1.7. Contract shall mean the work order or Purchase order along-with articles of agreement, the conditions, the Annexure, the schedule of quantities, and/ or specifications attached herewith.

3.1.8. "Notice in writing" shall mean a notice in written, typed or printed characters sent (unless delivered personally or otherwise proved to have been received) by courier/ registered to the last known address or the registered office of the addressee and shall be deemed to have been received when in the ordinary course of post, it would have been delivered.

3.1.9. Site shall mean the actual place where the machine being purchased will be installed and commissioned as specified in technical specifications.

3.1.10. Month shall mean from the beginning of a given date of a calendar month to the end of the preceding date of the next calendar month.

3.1.11. Week shall mean seven consecutive days.

3.1.12. Day shall mean a day from midnight to midnight.

3.1.13. Award shall mean the written acceptance of the Offer/ Bid by IDMC Limited/owner given to the successful bidder/ Vendor/ Bidder.

3.1.14. Constructional Plant shall mean all appliances or things of whatsoever nature required in or about the execution and maintenance of the Works but does not include the materials or other things required/intended to form or forming part of the Works.

3.1.15. Specifications shall mean the specification referred to in the Enquiry Document/ Bid Document and any modification thereof or addition thereto as may from time to time be furnished or approved in writing by IDMC Limited.

3.1.16. Drawings shall mean drawings referred to in the specifications and any modification of such drawings approved in writing by IDMC Limited and such other drawings as may from time to time be furnished or approved in writing by IDMC Limited.

3.1.17. Approved/ Approval shall mean approval in writing, including subsequent written confirmation of previous verbal or written approval.

3.1.18. I.S.S. shall mean Indian Standard Specifications as published by Bureau of Indian Standards, India.

3.1.19. Government shall mean the Government of India or the Government in state of Andhra Pradesh.

3.1.20. Enquiry document shall mean the Bid document.

3.1.21. Headings and marginal note: All headings of and notes to the clauses of these Conditions of Contract or of and to the Specifications or any other bid document are solely for the purpose of giving concise indication and not a summary of the contents thereof, and they shall never be deemed to be the part of or be used in the interpretation or construction thereof or of the Contract.

3.1.22. Singular and plural: In this Contract document unless otherwise stated specifically the singular shall include the plural and vice-versa wherever the context so requires.

3.1.23. Cost: The cost shall be deemed to include all the overhead costs whether on or off the site.

3.1.24. Purchaser: IDMC Limited.

3.1.25. Installation: Something (such as a piece of equipment) that is put together and made ready for use.

3.1.26. Testing, commissioning and handover : It is the process of assuring that all systems and components of an industrial plant are designed, installed, tested, operated, and maintained according to the operational requirements and the Purchase Order specifications of the owner or final client.

3.2. Application:

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

3.3. Documents mutually explanatory:

Except if and to the extent otherwise provided by the Contract, the provisions of the General Conditions and Special Conditions of the Contract shall prevail over those of any other documents forming part of the Contract. Several documents forming the Contract are to be taken as mutually explanatory.

3.4. Program to be furnished:

3.4.1. The successful bidder shall, after the receipt of the PO, submit to the Purchaser a program showing the schedule of various activities weekly as well as monthly in which he proposes to carry out the supply, installation, testing and commissioning within the timelines agreed for inclusion in the contract.

3.4.2. If at any time it should appear to IDMC that the actual progress of the Works does not conform to the approved program, as referred above, the successful bidder shall produce, at the request of IDMC, a revised program showing the modifications to the approved program necessary to ensure completion of the Works within the time for completion as defined in the contract.

3.5. Standards:

The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' country of origin and such standards shall be the latest issued by the concerned institution.

3.6. Use of contract documents and information:

3.6.1. The Bidder shall not, without the Purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Bidder in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

3.6.2. The Bidder shall not, without the Purchaser's prior written consent, make use of any document or information enumerated in clause 3.6.1 except for purposes of performing the Contract.

3.7. Patent rights and royalties:

The Bidder shall indemnify IDMC Limited from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any constructional plant, machine work, or material and for in connection with the supply of the machine or any of them and from and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

3.8. Inspection and tests:

3.8.1. The Purchaser or its representative shall have the right to inspect and/ or test the Goods to confirm their conformity to the Contract. The technical specifications shall specify what inspections and tests the Purchaser requires.

3.8.2. The inspections and tests may be conducted on the premises of the Bidder, at point of delivery and/or at the Good's final destination. Where conducted on the premises of the Bidder, all reasonable facilities and assistance including access to drawings and production data-shall be furnished to the inspectors at no charge to the Purchaser. In case of any defects or deficiency notified by the Purchaser's inspection authority, the Bidder will rectify and make good the same without delay and not proceed with further processing of such item(s) of Goods without obtaining approval from the inspection authority.

3.8.3. Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject them and the Bidder shall either

replace the rejected Goods or make all alterations necessary to meet specification requirements free of cost to the Purchaser.

3.8.4. The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at the destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested, and passed by the Purchaser or its representative prior to the Goods shipment from the country of origin.

3.9. Packing and marking:

3.9.1. The Bidder shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to temperature, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit. The Bidder will be responsible for internal damage if any, even if outwardly there is no damage to the package.

3.9.2. The packing, marking and documents within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract and, subject to Clause 3.18 and any subsequent instructions given by the Purchaser.

3.9.3. Each package shall be marked to indicate:

Name of the Bidder

Purchase Order number

Details of items in the package

Gross, net, and tare weights on the item

Name of the consignee Destination

Country of origin

3.9.4. The cost of the individual cases aggregating to the total machine cost shall have to be submitted to IDMC prior to dispatch. The Bidder will have to replace the respective item of the individual cases at the cost declared, in case of damage/loss etc. IDMC Limited shall not permit

deviation from this clause. The Bidder finally executing the contract would be deemed to have accepted this clause.

3.10. Delivery and documents:

Upon shipment/ dispatch, the Bidder shall notify to the purchaser the full details of dispatch including purchaser order no., description of the goods, quantity, mode of transport, place of loading, date of dispatch, packing details with the individual costs etc. The Bidder will mail the following documents to the purchaser with a copy to the Insurance Company:

Original and two copies of:

The Bidder's invoice showing purchase order no. description of goods, quantity, unit price, total amount;

a. Delivery note/case-wise detailed packing list identifying contents of each package/ lorry Receipt/Bill of landing, individual case values (for replacement purposes, in case of damage) etc.

b. Manufacturer's/Bidder's warranty certificate;

c. Inspection Certificate issued by the nominated inspection agency, and the Bidder's Factory inspection report;

d. Certificate of origin;

e. Any other document evidencing payment of statutory levies;

f. The Bidder's certificate certifying that the defects pointed out during inspection have been rectified;

Note: The nomenclature used for the item description in the invoice/s, packing list/s and delivery note/s etc. should be identical to that used in the purchase order. The dispatch particulars including name of transporter, LR/BL no. and date should also be mentioned in the invoices.

3.11. Insurance

Bidders (Price basis shall be applicable as per Incoterm mentioned in clause no. 2 (m) - Instructions to bidders)

3.12. Transportation:

3.12.1. Transportation and insurance upto the site shall be in the scope of bidder.

3.13. Incidental services:

As specified in the Special Conditions of Contract, the Bidder will be required to provide any or all of the following services:

a. The bidder shall provide all the details/load for safe unloading of materials at project site.

b. Furnishing list of tools and tackles required for assembly and/or maintenance of the supplied goods; Any special tools required for assembly and installation shall be provided by the bidder

c. Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods; and manuals covering the operation and maintenance of automation software and control systems. The soft copy of manuals shall also be provided.

d. Performance or supervision or maintenance and/or repair of the supplied Goods, for a period agreed by the parties, provided that this service shall not relieve the Bidder of any warranty obligations under this Contract; and

e. Conduct 15 working days onsite /offsite training during installation and commissioning as per the requirement of the purchaser.

3.14. Spare parts: - Applicable as per technical specifications

Bidder shall also provide costing & breakup quantity of spares.

3.15. Warranty:

3.15.1. The Bidder warrants that the Goods and equipment, supplied, installed, and commissioned under the Contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Bidder further warrants that the Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except insofar as the design or material is required by the Purchaser's Specifications) or from any act or omission of the Bidder, that may develop under normal use of the supplied Goods in the conditions obtaining in the country of final destination. The Bidder also guarantees that the Goods supplied shall perform satisfactorily as per the signed/rated/-installed capacity as provided for in the Contract.

3.15.2. The warranty period is 12 months after the date of successful commissioning, product trial & acceptance, and completion certificate duly signed by both parties or handover of the plant.

3.15.3. The Purchaser shall promptly notify the Bidder in writing of any claims arising under this warranty.

3.15.4. Upon receipt of such notice, the Bidder shall promptly respond and resolve the issue maximum within 7 working days from the date of notice by way of repair or replace the defective Goods or parts thereof, without costs to the Purchaser.

3.15.5. If the Bidder, having been notified, fails to remedy the defect(s) within a reasonable period mentioned in clause no 3.15.4, the Purchaser may proceed to take such remedial action as may be necessary, at the Bidder's risk and expense and without prejudice to any other rights which the Purchaser may have against the Bidder under the Contract.

3.16. Payment:

Payment for supply component:

3.16.1. 20% advance against submission of equivalent security in the form of Bank guarantee from a reputed bank with banker confirmation and shall valid till receipt of last consignment at purchaser site in acceptable condition.

3.16.2. 60% will be payable in 60 days against receipt of materials at site in acceptable condition.

3.16.3. The 10% will be payable in 30 days after successful installation of machine/equipment by acceptance of purchaser in writing.

3.16.4. Balance 10% will be payable in 30 days against final acceptance of satisfactory performance of the complete plant for uninterrupted running of 15 days continuously, on completion of other contracted services including training and acceptance by the purchaser in writing, within the scope of this contract and on submission of an equivalent amount of performance bank guarantee (PBG) valid for a period of 12 months from the date of successful commissioning, product trial & acceptance by the purchaser.

Payment for Installation, Testing, Commissioning, acceptance & Training:

3.16.5. 90% of the contract price against successful installation and commissioning shall be paid in 30 days on actual completion of installation/erection and approval by the purchaser (against detailed break up cost to be furnished by the Bidder in advance and accepted by the Purchaser)

3.16.6. On final acceptance:
The balance 10% shall be paid on continuous satisfactory running of the complete plant/equipment for one month, on completion of other contracted services and accepted by the purchaser's representative, within the scope of this contract.

Payment for Non-Comprehensive AMC & Comprehensive AMC:

3.16.7. 100 % shall be paid in 15 days against submission of visit report accepted by the purchaser's representative, within the scope of this contract.

Note:

1) All bank guarantees should be issued by a Nationalized/ class- I Indian/ Foreign Bank in the format provided in the bid.

3.16.8. The Bidder's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and Services performed, and by shipping documents, submitted pursuant to Clause 3.10, and fulfillment of other obligations stipulated in the Contract.

3.16.9. All payments under this contract shall be made in the currency in which the bid price was quoted.

3.17. Change orders:

3.17.1. The Purchaser may, at any time, by a written order given to the Bidder make changes within the general scope of the Contract in any one or more of the following:

a. Drawings, designs, or specifications, where Goods to be furnished under the Contract is to be specifically manufactured for the Purchaser:

b. The method of shipment or packing;

c. The Services to be provided by the Bidder.

3.17.2. If any such change causes a substantial increase or decrease in the cost of, or the time required for, the Bidder's performance of any part of the work under the Contract, whether changed or not changed by the order, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Bidder for adjustment under this clause must be asserted within sixty (60) days from the date of the Bidder's receipt of the Purchaser's change order.

3.18. Contract amendment:

Subject to Clause 3.17, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

3.19. Assignment:

The Bidder shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

3.20. Liquidated damages:

If the Bidder fails to deliver any or all the goods or perform the services within the times period (s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the contract prices, as liquidated damages, a sum equivalent to:

(1) 0.5% of the full contract value for every completed week (week comprising of 7 days including holidays and any incomplete week shall be ignored for the calculations of liquidated damages) of delay in the supplies/commissioning.

(2) The total amount so deducted shall not exceed 7.5% of the Contract value. Once the maximum is reached, the Purchaser may consider termination of the contract pursuant to Force Majeure.

Any incremental taxes and levies on account of delay in performance of the Contract by the Bidder shall be to the Bidder's account.

3.21. Termination for default:

The contract can be terminated on the following grounds:

3.21.1. Bidders default:

3.21.1.1. If the Bidder shall assign the Contract, without the consent in writing of the Purchaser first obtained, or if in the opinion of the Purchaser, the Bidder:

a. Has abandoned the Contract, or

b. Without reasonable excuse has failed to commence the Works or has suspended the progress of the works for twenty-eight days after receiving from the purchaser written notice to proceed, or Despite previous warnings by the Purchaser, in writing, is not executing the works in accordance with the Contract or neglecting to carry out his obligations under the contract.

3.21.1.2. Consequent to such termination of Contract, the Purchaser shall also be entitled to recover the advance paid, if any, to the Bidder along with interest @ 18% per annum compounded quarterly on the last day of March, June, September and December on the advance paid for the entire period for which the advance was retained by the Bidder.

3.21.2. Default of the Purchaser

3.21.2.1. In the event of the Purchaser:

a. Becoming bankrupt or (being a company) going into liquidation other than for the purpose of a scheme of reconstruction or amalgamation, or

b. Being unable to continue to meet his contractual obligations for unforeseen reasons due to economic dislocation.

3.21.2.2. Nothing in this clause contained shall prejudice the right of the Bidder to exercise, either in lieu of or in addition to the rights and remedies in this Clause specified any other rights or remedies to which the Bidder may be entitled.

3.22. Force majeure:

3.22.1. Notwithstanding the provisions of Clauses 3.20, 3.21 the Bidder shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force majeure.

3.22.2. For purposes of this clause, "Force majeure" means an event beyond the control of the Bidder and not involving the Bidder's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

3.22.3. If a Force Majeure situation arises, the Bidder shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Bidder shall continue to perform its obligations under the Contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force majeure event.

3.23. Inspection of goods during manufacturing at Bidder works/ operations:

The Purchaser and any person authorized by him shall have the right to inspect the physical progress at the site of the successful bidder, after providing reasonable and not less than three days' notice.

3.24. Time for completion shall mean the completion of performance of contract:

As given in clause 4.3 in the special conditions of contract.

3.25. Certification of completion of works:

The successful bidder shall obtain a certificate of completion from IDMC Limited at the time of complete plant hand over for the commercial production after successful commissioning and performance trial of the supplied plant and machinery and fulfilment of other obligations stipulated in the contract.

3.26. Resolution of disputes:

3.26.1. The Purchaser and the Bidder shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

If, after thirty (30) days from the commencement of such informal negotiations, the Purchaser and the Bidder have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms as specified in the special conditions of contract. These mechanisms may include but are not restricted to, conciliation mediated by a third party, adjudication in an agreed national or international forum, and/or

international arbitration. The mechanism shall be specified in the Special conditions of the contract.

Applicable law:

The Contract shall be interpreted in accordance with the laws of the Union of India.

3.27. Notices:

3.27.1. Any notice given by one party to the other pursuant to the Contract shall be sent in writing to the address specified for that purpose in the Special Conditions of Contract.

3.27.2. A notice shall be effective when delivered or on the notice's effective date, whichever is later.

3.28. Right to use defective goods:

If after delivery, acceptance and installation and within the warranty period, the operation or use of the Goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such Goods until rectifications of defects, errors, or omissions by repair or by partial or complete replacement are made without interfering with the Purchasers' operation.

3.29. Jurisdiction:

This invitation for bids is issued by IDMC Limited and on behalf of its head office situated at Anand (Gujarat). For the settlement of any dispute arising out of the contract against this bid, only the Courts at Anand, Gujarat, India shall have jurisdiction.

4. Special conditions of contract

4.1. General:

The following Special conditions of Contract shall supplement the General conditions of Contract, given in chapter 3. Wherever there is a conflict, the provisions herein shall prevail over those in the General conditions of Contract.

4.2. Taxes:

For bidders

The offer rates being as per price basis (Incoterm) mentioned in Instruction to Bidder. All the taxes and duties will be paid by the Purchaser. All payments will be made in the currency in which the Purchase order will be placed.

4.3. Time of completion:

The expected total time of completion of the Design, Engineering, Manufacturing, Supply, Installation, Testing, Commissioning, acceptance of Solid Fuel Fired Steam Generation Plant for the Multifruit pulp processing plant to generate Steam at a minimum net output capacity of 21000 kg/hr (10500 kg/hr x 2) is a period of 9 (Nine) months from the issue of the purchase order to successful commissioning and handover to purchaser.

4.4. Drawings/ specification:

The bidder shall furnish a standard Plant layout drawing along with the bid.

4.5. Safety regulations & compliance:

The successful bidder has to follow all the safety requirements during the unloading, erection, testing and commissioning as per the standard safety laws, compliances and as per the guideline of IDMC.

4.6. Office space at site:

IDMC Limited shall provide office space at the site location to the personnel of the Bidder during erection and commissioning period.

4.7. Installation, start up, commissioning and trial runs:

As per attached technical specifications.

4.8. Rating:

As per attached technical specifications

4.9. Instruction Manual:

As per attached technical specifications

4.10. Resolution of Disputes (Clause 3.26 of General Conditions of Contract):

In the event of any dispute in the interpretation of the terms of the order/contract or difference of opinion between the parties on any point in the order/contract arising out of or in connection with the agreement accepted order/contract or with regard to the performance of any obligation hereunder by either party, the parties hereto shall use their best efforts to settle such disputes or difference of opinion amicably by mutual negotiations. In case no agreement is reached, either party may forthwith give to the other, a notice in writing of the existence of such question, dispute, or difference of opinion, and the same shall be referred to the adjudication of a sole arbitrator to be appointed by IDMC whose decision in the matter shall be final and binding on the parties.

The arbitration proceedings shall be governed under the provisions of the Indian Arbitration and Conciliation act, 1996, and the rules there under or any statutory modifications thereof for the time being in force. In the order/contract, the venue of such Arbitration shall be Anand, Gujarat and the Courts of Anand alone shall have jurisdiction regarding any matter arising out of the order/contract.

4.11. Rights reserved by IDMC Limited:

IDMC Limited at its sole discretion and without assigning any reason thereof reserves the right to accept and/ or reject any or all the bids. Further it shall be the prerogative of IDMC Limited to revise/ modify the qualifying criteria specified in the invitation to bid without assigning any reasons whatsoever.

4.12. Limitation of Liability:

Notwithstanding anything to the contrary herein, Bidders' s entire liability for claim, whether based on contract, warranty (except warranty of title), tort (including negligence), strict liability, or otherwise for any loss arising out of its performance or failure to perform this contract shall:

(A) not exceed the contract price of the equivalent supplied plant and machinery hereunder which was the cause of such claim:

(B) in no case extend to direct, indirect special incidental, or consequential damages, of any nature or kind, including, without limitation, lost profits, lost production, lost revenues, or lost business opportunities; and

(C) termination upon expiration of the warranty period.

5. Form of Bid

Enquiry Reference No	:	IDMC/ Sourcing & VD/ 2026-27/ Enquiry/ 100 dated 29.04.2026
Name and address of Purchaser	:	IDMC Limited, 124-128, GIDC Estate, Vithal Udyognagar- 388121, Anand District, Gujarat, India, Tel: +91-2692-220521

Gentlemen:

Having examined the Conditions of Contract, Technical Specifications and the Drawings included in or referred to in the Bidding Documents including Addenda Nos. (Insert Numbers), the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and deliver Goods and Services including installation and commissioning as detailed in the price bid, in conformity with technical specifications and drawings (except to the extent of deviation statement furnished in our bid) and the Conditions of Contract as mentioned in or referred to in the said Bidding Document for the sum as may be ascertained in accordance with the Bid Prices and made part of this bid and the said conditions.

Our acceptance to all the conditions of the Bidding Document in this bid form shall persist over any other terms and conditions, if any, given in our bid.

We undertake, if our bid is accepted, to commence and complete delivery of all the goods and Services including installation and commissioning as specified in the Schedule of Quantities of the Bid Document, from the date of receipt of your Purchase Order.

If our bid is accepted, we will obtain the bank guarantees as per the conditions of the Contract for the due performance of the Contract.

We agree to abide by this bid for the period of 120 days from the date fixed for bid opening as per the Instruction to Bidders and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and your Purchase Order/notification of award, shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this _____ day of _____ 2026.

_____

Signature

_____
(In the Capacity of)
Duly authorized to sign bid for and on behalf of

(Name & Address of Bidder): _____
_____

Name of Witness: _____

Signature: _____ Address: _____

BIDDING TERMS DEVIATION STATEMENT FORM

The following are the particulars of deviations from the requirements of the bidding conditions/ terms:

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

The terms and conditions prescribed in the bidding document shall prevail over those of any other document forming a part of our bid, except only to the extent of deviations furnished in this statement.

Dated: Signature and Seal of Bidder
Place:

Note :-

Where there is no deviation, the statement should be returned duly signed with an endorsement indicating “NO DEVIATIONS”.

TECHNICAL DEVIATION STATEMENT FORM

The following are the particulars of deviations from the requirements of the bidding conditions/ terms:

CLAUSE	DEVIATION	REMARKS (INCLUDING JUSTIFICATION)

All the bidders to submit their bids as per the scope of supply mentioned in the technical specifications in totality and no any deviation shall be considered in the scope of supply.

The terms and conditions prescribed in the bidding document shall prevail over those of any other document forming a part of our bid, except only to the extent of deviations furnished in this statement.

Dated: Signature and Seal of Bidder
Place:

Note :-

Where there is no deviation, the statement should be returned duly signed with an endorsement indicating “NO DEVIATIONS”.

6. Acceptable forms of Bank Guarantees

Bank Guarantee to secure performance

Currency: INR / EURO / USD / ETC..	Amount in figures		
Amount in words			
Date of execution		Date up to when in force/ Date of expiry	
Date of Claim/ Demand (up to 45 days beyond the date of expiry)			
Name and address of beneficiary	IDMC Limited, Plot no. 124-128, GIDC Estate, Vithal Udyognagar, District Anand, Gujarat -388121		
Name and address of the vendor and/ or service provider (i.e. purchaser of the bank guarantee from the bank)			

THIS deed of guarantee made on this_____day of_____, between _____(name of the bank issuing this guarantee), herein after called 'the bank', on the first part and_____ (hereinafter referred to as 'vendor and/ or service provider in relation to IDMC Limited' and 'purchaser in relation to the bank' respectively) on the second part.

WHEREAS, the purchaser of the bank guarantee has been engaged by IDMC Limited as a vendor and/ or service provider for_____(e.g. design, manufacture, and supply of equipment or installation/ testing/ commissioning/ job work/ preventive maintenance/ break-down maintenance/ consulting or advising services as envisaged in the purchase order(s)/ contract(s)_____dated _____) which is required to be performed in pursuance of the said purchase order(s)/ contract(s);

WHEREAS, the vendor and/ or service provider is required to submit this bank guarantee for a sum of Rs._____(Rupees_____only) as security for fulfilling its obligation to secure performance of the____(description of goods and/ or services) under the said purchase order(s)/ contract(s).

AND WHEREAS, at the request of the vendor and/ or service provider, the bank has agreed to guarantee the refund of the said amount in case the aforesaid goods and/ or services do not perform to the satisfaction of IDMC Limited as per the terms and conditions of the said purchase order(s)/ contract(s).

NOW THIS DEED OF GUARANTEE DOES WITNESSETH AS UNDER:

1. That in consideration of IDMC Limited having awarded the said purchase order(s)/ contract(s), the bank does hereby irrevocably guarantee and indemnify that if the vendor and/ or service provider has supplied and/ or provided___ _____(description of goods and/ or services), which is not to the satisfaction of IDMC Limited, as per the details, terms and conditions contained in the said purchase order(s)/ contract(s), *supra*, the Bank shall, without demur, repay and indemnify IDMC Limited within seven (7) working days as the bank may be called upon to pay subject to a ceiling of Rs._____(Rupees_____);

2. We,___(name of the bank), further agree that this performance guarantee will remain in full force and effect up to_____by which duration IDMC

   Limited believes it may be reasonable to certify that the defect liability period has been successfully completed as per the details contained in the purchase order(s)/ contract(s),supra.

3. That the bank shall not question any of the details, terms and conditions contained in the said purchase order(s)/ contract(s), *supra*, including but not limited to the amount of consideration agreed upon between IDMC Limited and the vendor and/ or service provider for the purposes of determining its acceptance of liabilities under this bank guarantee and forthwith accept the demand of IDMC Limited to determine this bank guarantee.

4. That at the written request of either IDMC Limited or the vendor and/ or service provider, the bank shall renew this bank guarantee before it's date of expiry.

5. The Bank agrees that the amount hereby guaranteed shall be immediately due and payable to IDMC upon serving the bank with a notice before the date of expiry or date of claim/ demand, whichever is earlier. The claim can be lodged by IDMC Limited up to 45 days beyond the date of expiry or extended date of expiry.

6. This Bank Guarantee shall be subject to the law as applicable in India.

7. "In the event of invocation, the details to be sent to the branch address with branch email id _____ Marking a copy to our back-office email id _____."

8. Notwithstanding anything stated herein before:

   (i) The Bank's liability under this guarantee is restricted to Rs. _____/-(Rupees_____only);

(ii) This guarantee shall remain in force till_____and;

(iii) The Bank is liable to pay the guaranteed amount or any part thereof under this bank guarantee only if IDMC Limited serves upon the Bank a written claim/ demand on or before_____(Date of Claim/ Demand) including 45 days of grace period from the date of expiry.

IN WITNESS WHEREOF, the bank has signed on this_____day of_____,2026.

Signature of Bank Manager

Bank Guarantee for advance payment

Currency: INR / EURO / USD / ETC..	Amount in figures		
Amount in words			
Date of execution		Date up to when in force/ Date of expiry	
Date of Claim/ Demand (up to 45 days beyond the date of expiry)			
Name and address of beneficiary	IDMC Limited, Plot no. 124-128, GIDC Estate, Vithal Udyognagar, District Anand, Gujarat -388121		
Name and address of the vendor and/ or service provider (i.e. purchaser of the bankguarantee from the bank)			

THIS deed of guarantee made on this_____ day of_____,between _____(name of the bank issuing this guarantee), herein after called 'the bank', on the first part and_____ (hereinafter referred to as 'vendor and/ or service provider in relation to IDMC Limited' and 'purchaser in relation to the bank' respectively) on the second part.

WHEREAS, the purchaser of the bank guarantee has been engaged by IDMC Limited as a vendor and/ or service provider for_____(e.g. design, manufacture and supply of equipment or installation/ testing/ commissioning/ job work/ preventive maintenance/ break-down maintenance/ consulting or advising services as envisaged in purchase order(s)/ contract(s)_ dated _____) which is required to be supplied/ provided latest by _____(dd/mm/yyyy) in pursuance of the said purchase order(s)/ contract(s)

WHEREAS, IDMC Limited is required to pay the vendor and/ or service provider a sum of Rs. _____ (Rupees_____only) against submission of this bank guarantee towards part value of_____(description of goods and/ or services) ordered to be manufactured/ supplied/ provided under the said purchase order(s)/ contract(s);

AND WHEREAS, at the request of the vendor and/ or service provider, the bank has agreed to guarantee the refund of the said amount, in case the aforesaid goods and/

or services do not deliver to the satisfaction of IDMC Limited as per the terms and conditions of the said purchase order(s)/ contract(s).

NOW THIS DEED OF GUARANTEE DOES WITNESSETH AS UNDER:

1. That in consideration of IDMC Limited having agreed to pay an advance of Rs. ___ (Rupees_____) to the vendor, the bank does hereby irrevocably guarantee and indemnify that if the vendor and/ or service provider fails to supply/provide to IDMC Limited the goods and/ or services as per the details, terms, and conditions contained in the said purchase order(s)/ contract(s), *supra*, the Bank shall, without demur, repay and indemnify IDMC Limited within seven (7) working days all such advances paid by IDMC Limited to the vendor and/ or service provider as the bank may be called upon to pay subject to a ceiling of Rs._____(Rupees_____);

2. That the guarantee furnished herein shall be realized and discharged the moment the vendor and/ or service provider supplies/ provides the equipment to the satisfaction of IDMC Limited, as per the details, terms and conditions contained in the said purchase order(s)/ contract(s);

3. That the bank shall not question any of the details, terms and conditions contained in the said purchase order(s)/ contract(s), *supra*, including but not limited to the amount of consideration agreed upon between IDMC Limited and the vendor and/ or service provider for the purposes of determining its acceptance of liabilities under this bank guarantee and forthwith accept the demand of IDMC Limited to determine this bank guarantee.

4. That at the written request of either IDMC Limited or the vendor and/ or service provider, the bank shall renew this bank guarantee before it's date of expiry.

5. That the Bank agrees that the amount hereby guaranteed shall be immediately due and payable to IDMC on serving the bank with a notice before the date of expiry or date of claim/ demand, whichever is earlier. The claim can be lodged by IDMC limited up to 45 days beyond the date of expiry or extended date of expiry.

6. This Bank Guarantee shall be subject to the law as applicable in India.

7. "In the event of invocation, the details to be sent to the branch address with branch email id _____ Marking a copy to our back-office email id _____."

8. Notwithstanding anything stated herein before:

   a. The Bank's liability under this guarantee is restricted to Rs.

_____/-(Rupees_____only);

b. This guarantee shall remain in force till_____and;

c. The Bank is liable to pay the guaranteed amount or any part thereof under this bank guarantee only if IDMC Limited serves upon the Bank a written claim/ demand on or before_____(Date of Claim/ Demand) including 45 days of grace period from date of expiry.

IN WITNESS WHEREOF, the bank has signed on this_____day of_____, 2026.

Signature of Bank Manager

7. Schedule Of Requirement

Design, Engineering, Manufacturing, Supply, Installation, Testing, Commissioning & Acceptance of

Solid Fuel Fired Steam Generation Plant
at a minimum
Net steam output capacity of 21000 kg/hr (10500 kg/hr x 2)

Schedule of Requirement:

Pack No.	Description	Quantity	Completion Period
1	Design, Engineering, Manufacturing, Supply, Installation, Testing, Commissioning & Acceptance of Solid Fuel Fired Steam Generation Plant for the multi-fruit processing lines, including all allied equipment, electrical systems, automation, structural works, and comprehensive services such as Project Engineering & Management, Training, and AMC, **specifically designed to generate Steam at a minimum net output capacity of 21000 kg/hr (10500 kg/hr x 2) as per the technical specifications & preliminary layout enclosed** on single source responsibility basis at MDFVPL Project, Kuppam, Andhra Pradesh, India	1 Pack	**9 Months**

Note: Bidders must quote their prices for each item as mentioned in the broad schedule of quantity.

Schedule of Quantity:

The steam generation plant shall be supplied completely with all standard mountings, accessories, and tools necessary for safe and efficient operation, fully complying with the latest applicable codes and statutory regulations. The steam generation plant shall include all components specified herein.

It shall be the sole responsibility of the successful bidder to supply any components or items not explicitly mentioned in this specification or in their offer, if such components are required for compliance with statutory or regulatory provisions and process smooth operation. These additional components/items shall be deemed included within the bidder's scope of work, and no additional cost shall be entertained for the same.

The bidder shall, however, clearly identify in their offer any components or items not listed in this specification but considered necessary for safe, reliable, and efficient operation in accordance with the latest regulations. Prices for such additional components/items, if applicable, shall be furnished separately on an item-wise basis

The general technical specifications of the major components and the ancillary items described in the technical section and the equipment, its capacities and quantity proposed by the Purchaser is furnished in the design requirement and schedule of quantities are for the guidance of the supplier only. However, the Bidder has to get themselves familiarized/acquainted about the nature and the quantum of work involved and submit their offer without deviation in the basic configuration of the plant.

Bidder must agree to undertake the complete work and there is no exclusion whatsoever of any PART. It shall be understood that any minor work, which may not have been explicitly detailed but is necessary for the proper functioning of individual equipment or the plant as a whole, is included in the scope of work without any additional cost.

Steam Generation Plant

Sr. No	Technical Details Serial No.	Description	Quantity	UOM
	1	**Fuel Preparation & Conveying**		
	1.1	**Fuel Receiving**		
1	1.1.1	Fuel Receiving System	1	EA
	1.2	**Fuel Conveying**		
2	1.2.1	Fuel Conveying System	1	EA
	1.3	**Crushing or Screening**		
3	1.3.1	Crusher	1	EA
4	1.3.2	Vibrating Screen	1	EA
5	1.3.3	Transfer Conveyor	1	EA
	1.4	**Elevating**		
6	1.4.1	Bucket Elevator	1	EA
7	1.4.2	Transfer Conveyor	1	EA
	1.5	**Storage**		
8	1.5.1	Storage Unit	2	EA
9	1.5.2	Transfer Conveyor	2	EA
	1.6	**Fuel Feeding**		
10	1.6.1	Fuel Feeding System	2	EA
	2	**Fuel Combustion & Steam Generation**		
	2.1	**Boiler**		
11	2.1.1	Hybrid water-cum-smoke tube Boiler	2	EA
	3	**Heat Recovery and Energy Conservation**		
	3.1	**Heat Recovery System**		
12	3.1.1	Pressurized Economizer	2	EA
13	3.1.2	Air Preheater	2	EA
	3.2	**Energy Conservation System**		
14	3.2.1	Blow–Down Heat Recovery System	2	EA
	4	**Air Pollution Control and Monitoring**		
	4.1	**Air Pollution Control System**		
15	4.1.1	Electrostatic Precipitator (ESP)	2	EA
16	4.1.2	Mechanical Dust Collector (MDC)	2	EA
17	4.1.3	Bag Filter (Pulse-Jet Type)	2	EA
18	4.1.4	Wet Scrubber	2	EA
19	4.1.5	Chimney	1	Lot

	4.2	**Monitoring System**		
20	4.2.1	Continuous Emission Monitoring System	1	EA
	5	**Auxiliaries**		
	5.1	**Draft System**		
21	5.1.1	Forced Draft (FD) Fan	2	EA
22	5.1.2	Induced Draft (ID) Fan	2	EA
23	5.1.3	Secondary Air (SA) Fan	2	EA
	5.2	**Feedwater System**		
24	5.2.1	Pressurized de-aerator cum feedwater storage System	1	EA
25	5.2.2	Low Pressure (LP) Dosing System	1	EA
	5.3	**Accessories / Spares**		
26	5.3.1	Platforms, Frames, Supports, Stacks, Rails	1	EA
27	5.3.2	Instruments/controls/accessories	1	EA
28	5.3.3	Spare for 2-year operation	1	EA
	5.4	**Electrical**		
29	5.4.1	Electrical Control Equipment	1	EA
	6	**Service**		
	6.1	**ITC, acceptance, Training**		
30	6.1.1	Installation, Testing, Commissioning, acceptance & Training	1	Job
31	6.1.2	Service Cover (continuous 5 working days in quarter applicable for one year (4 visits per annum). The no. of skilled technical engineer deployed for the service cover shall be decided by the bidder.	4	Job
32	6.1.3	Non-Comprehensive AMC (minimum 4 Visits per annum & unlimited breakdown after warranty period) for 2 year	8	Job
33	6.1.4	Comprehensive AMC (minimum 4 Visits per annum & unlimited breakdown after warranty period) for 2 year	8	Job

Note: The above-mentioned Quantities are tentative and subject to confirmation during the detailed process review and may vary from the final scope.

8. Technical Specifications

Design, Engineering, Manufacturing, Supply, Installation, Testing, Commissioning & Acceptance of

Solid Fuel Fired Steam Generation Plant at a minimum Net steam output capacity of 21000 kg/hr (10500 kg/hr x 2)

CONTENTS

A. INTRODUCTION

IDMC Limited is setting up a "Multi-fruit processing plant capable of converting fruits such as Banana, Mango, Papaya, Tomato, and Guava into their respective shelf-stable products including pulps, purees, pastes, and concentrates" on behalf of the MDFVPL (Mother Dairy Fruit & Vegetable Private Limited) for their Kuppam, Andhra Pradesh.

In order to cater the steam requirement, it is proposed to set up steam generation plants by installing new Solid fired boilers with ancillary items.

B. PROJECT SITE DETAILS

Site Location : MDFVPL Project, Kuppam
District : Chittoor
State : Andhra Pradesh, India
Nearest Airport : Bengaluru
Operation : 24 Hrs

	Summer	Monsoon	Winter
Ambient Dry Bulb Temperature in Deg.C	45	31.4	10.8
Ambient Wet Bulb Temperature in Deg.C	35	25.1	9.2

Tropicalization - All equipment / system / sub-system / instruments/ control system should be fully tropicalized in view of the hot and humid weather conditions prevailing at this site.

C. SCOPE OF WORK

It shall be understood that this is a complete job on single source responsibility basis. The scope of this contract shall include, but not limited to designing, manufacturing, supply, installation, testing and commissioning the complete System and allied equipment.

Schedule of major items and components of the proposed plant are broadly described under technical specification.

Any items not explicitly mentioned in the specifications/scope of the work but required for completion of supply, proper functioning and satisfactory performance of the system is included in the scope of work and shall be provided by the bidder without any extra claim.

The scope of work specifically includes the following:

- The scope of work shall be on a turnkey basis, covering design, supply, installation, testing, and commissioning of all related equipment, piping, electrical systems, instrumentation, automation, and structural works.
- The bidder must undertake the job in its entirety without exclusions. Any minor works not explicitly detailed but necessary for the proper functioning of the steam generation plant, or for achieving high-quality and efficient output, shall be deemed included at no additional cost.
- The bidder shall plan and execute the design, layout, selection of technology, and methodology of plant execution with full knowledge of efficient operations.
- Process flow diagrams, time schedules, mass flow diagrams, P&IDs, operating parameters, equipment details, and layouts shall be submitted by the bidder based on the offered system.
- The bidder shall furnish the complete requirement of utilities such as raw water, RO water, chilled water, hot water, ~~steam~~, refrigerant, compressed air, oil and electrical power.
- The raw product shall be provided by the purchaser.
- General specifications of major components and ancillary items are described in the technical section. Capacities and quantities provided by the purchaser are indicative for comparison.
- It shall be assumed that the bidder is fully familiar with the nature of the product and the scope of work, and therefore shall not deviate from the basic design, functional requirements, or configuration of the plant
- The bidder shall be responsible for the proper positioning of the system and associated equipment on foundations, as well as all connections for piping, electrical systems, and earthing.
- Fuel, water, and power will be made available at the battery limit by the purchaser.

- The final generated steam shall meet all applicable industrial steam purity and quality standards. All equipment shall be designed, engineered, supplied, and installed in accordance with prevailing national and international standards, including the Indian Boiler Act and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, ensuring compliance with applicable ISO standards and statutory Indian industrial safety and environmental regulations. Furthermore, all pressure parts and process equipment that have direct contact with the boiler feedwater or steam shall be fabricated using appropriate boiler-grade seamless carbon or alloy steel as per process, pressure, and design requirements, unless otherwise specified
- The bidder shall ensure satisfactory performance and provide after-sales service and support for all bought-out items.
- The bidder shall impart comprehensive training to plant personnel on the operation and maintenance of the equipment.
- After commissioning, the bidder shall submit Access to PLC program, Detailed BOQ and consumable list, dead load, Normal Load and catastrophic load, as-built P&IDs, equipment layout drawings, SOPs for operation and maintenance, safety instructions, and Do's & Don'ts.
- The bidder shall submit a detailed preventive maintenance schedule and complete operating manuals at least two weeks before the start of commissioning.
- The bidder shall submit the "layout, GA Drawings, Process Flow Diagram (with flow, temperature and other parameters), product drawing, P & ID, Equipment/ instrument/electrical Data sheet, Automation architecture, details of electrical panel and cable, and a tentative schedule/Gantt chart/ L1 Schedule and a comprehensive list of all spare parts and special tools required for two years of continuous functioning" at the time of submitting offer.
- Statutory approval from Boiler Inspectorate (IBR) for pressure parts, piping, equipment, instruments etc up to the Steam Test & Engraving as per IBR are included in the scope of bidder. Hydraulic test, steam test as required for IBR needs to be performed by the successful bidder. Compilation & submission of all necessary data/information, documentation, drawings etc to State Pollution Control Board (PCB), is included in the scope of work. Compliance of minimum Chimney height, Maximum SPM, SOx, Nox levels, as per PCB norms is required as per statutory requirement. For PCB approval, liasoning support from the successful bidder wherever required with state or local statutory authority, is included in the scope of work. Electrical works executed shall be as per IER and installed system with electrical items like IMCC, motors, Transformers etc shall be approved by Electrical inspector.
  Statutory fees for approval, if paid on behalf of purchaser, shall be reimbursed on submission of original receipt/online payment
- Submission of filled-in application and proformas furnishing all necessary details, drawings, test reports to the appropriate authorities shall be responsibility of the bidder

- Obtaining the boiler's registration no. and its engraving on shell in accordance with the code will also be carried out by the bidder.
- During warranty runs, all the parameters viz. steam generation capacity, boiler efficiency (on NCV & GCV basis), dryness fraction of steam, Fuel consumption, water consumption, power consumption, effectiveness of the heat tracing, insulation, meeting the emission norms etc. shall be established as per ASTM/other applicable standards. The performance tests will be carried out to the satisfaction of purchaser and documented. If any test kit is required during performance trial, same shall be arranged/supplied by the bidder.
- **The bidder shall be responsible for positioning of the boiler and associated equipment/system on foundation, connecting feed water, fuel and drain lines, steam line from main steam stop valve to suitable header with one inlet and two outlets including valves and steam trap for headers, safety valve vent line outside building and blow down lines up to blow down pit, connection to electric motors, earthing, fabrication/installation of ducting as per layout drawings, electric heat tracing system etc. complete.**
- The manuals shall include:
    - Procedures for system start-up, commissioning, normal operation, and emergency operation.
    - Troubleshooting charts indicating operational issues, possible causes, and corrective actions.
    - As-built equipment drawings, electrical schematics, control wiring diagrams, and executed P&IDs.
- Manuals and drawings are to be supplied as follows:
    - 1 Sets of drawings and manuals in hard copy
    - 1 Sets of drawings and manuals in Pen Drive (softcopy – PDF Format)
    - 1 Sets of drawings in Pen Drive (softcopy - AutoCAD Format)

D. DESIGN REQUIREMENT

The fully automatic Solid Fuel Fired Steam Generation Plant required to generate saturated steam for use in a variety of Fruit/Food processes. The demand for steam would fluctuate considerably depending upon processes

Product Specification:

- *Raw Material:*
    - Fuel:
        - Biomass Briquettes (Non-Mustard)
        - Mango Waste with moisture content upto 30-35%
        - Biomass Pellets
        - Imported Coal
        - Wood Chips
- *Product Output:*
    - Saturated Steam
        - Capacity: 21000 kg/hr (10500 kg/hr x 2) Net steam output
        - Output Pressure: 12 Kg/cm^2 (g) Net steam output
        - Operating Pressure: 12 to 14 Kg/cm^2 (g)
        - Designed Pressure: 16 Kg/cm^2 (g)
        - Dryness Fraction: >= 98 % + 5 Deg. C superheat
- *Other Parameters:*
    - Safety Valve Set Pressure: as per IBR norms
    - Feed Water Temperature: 35 Deg.C (calculated considering condensate return quantity and temperature)

Details of Equipments:

1. **Fuel Preparation & Conveying:**

1.1. **Fuel Receiving:**

1.1.1. **Fuel Receiving System:**

The Fuel Receiving System shall include the Grizzly Hopper, Vibro Feeder, interconnecting chute & accessories.

Grizzly Hopper shall serve as the primary fuel reception point where fuel is unloaded from loaders. It shall be distinguished by a heavy-duty Grizzly Grate (or bar grating) installed over the top opening to screen out oversized lumps, trash, and large wood pieces, preventing them from blocking or damaging downstream equipment. The hopper shall act as a funnel to direct fuel to the discharge point, which shall be typically equipped with a Vibro Feeder (Vibrating Feeder).

The Vibro feeder shall regulate the flow of fuel from the hopper, ensuring a consistent feed rate through an interconnecting chute onto the conveyor, which subsequently transports the material to further processing.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 1 EA

1.2. **Fuel Conveying:**

1.2.1. **Fuel Conveying System:**

This conveying system is for transporting fuel from the Vibro Feeder to the Crusher through belt conveyor.

This conveyor consists of an endless belt driven by a head pulley, supported by a tail pulley, and tensioned by a take-up unit, while a snub pulley increases the arc of contact to ensure proper grip. The belt runs on carrying and return idlers, utilizing impact idlers with rubber rings at loading zones to absorb shock and self-aligning idlers to correct misalignment. The drive system comprises an electric motor coupled via a V-belt arrangement to a hollow-shaft gearbox mounted on the pulley shaft, which may include a holdback device.

Material flow is guided by feed and discharge chutes fitted with skirting rubber, and the rollers feature bearings protected by circlips and labyrinth seals for maintenance. To ensure efficiency and safety, the system includes internal and external belt scrapers, a belt weigher for flow measurement, a magnetic separator to remove tramp iron, and safety interlocks such as pull-cord switches, belt sway switches, and zero-speed switches.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 1 EA

1.3. **Crushing or Screening:**

1.3.1. **Crusher:**

The Crusher shall be impact type and be able be to reduce the varying sizes of raw fuel into a uniform, coarse granular size suitable for the boiler's feeding system.

The Crusher shall consist of a high-speed crusher rotor assembly equipped with blow bars to strike the incoming fuel, propelling the material against adjustable breaker plates and impact wall liners to shatter it through impact energy rather than compression.

The impact wall brackets shall be adjustable to allow the operators to regulate the gap between the blow bars and the impact plates, thereby controlling the final product size.

The Liner shall be of heavy plates and replaceable and function as a critical sacrificial barrier designed to protect the internal structural surfaces of the ‘crusher upper and lower housings’ from the severe abrasion and high-velocity impact caused by the fuel during the size reduction process.

The machined shaft be supported by self-aligned spherical roller bearings protected by dust-proof labyrinth seals to ensure reliable rotation and shall prevent the intrusion of combustible fuel dust into the drive mechanism.

The crusher shall incorporate integral size-control mechanisms, such as adjustable breaker plate clearances or discharge sieve plates, designed to

positively retain and recirculate all oversize material within the crushing chamber until it is reduced to the specified granular size before discharging to downstream equipment.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 1 EA

1.3.2. **Vibrating Screen:**

Vibrating Screen shall designed to segregate and size fuel, ensuring that only particles meeting specific dimensional requirements are fed to the downstream equipment.

It shall drive by a motor coupled with unbalanced weights (eccentric), the unit generates controlled vibrations that stratify the fuel load across a screen cloth or knitted wire mesh, effectively filtering undersized, acceptable particles while transporting and diverting oversized lumps for crushing or rejection.

The structural suspension subsystems of the Vibrating Screen shall be designed to ensure mechanical integrity and operational safety during the vigorous sizing of fuel.

It consists of helical spring assembly that shall provide essential vibration isolation, decoupling the high-amplitude motion generated for screening from the static supporting chassis and motor bracket.

While the barrel-shaped convex supporting frame and plate anchorages ensure the unit maintains structural rigidity against the dynamic loads imposed by the eccentric weights.

Simultaneously, the dust cover shall mitigate the release of fugitive airborne particulates to prevent environmental contamination.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 1 EA

1.3.3. **Transfer Conveyor:**

The transfer conveyor shall functions as the intermediate transport link that conveys prepared fuel from the sizing stage to the vertical lifting equipment.

It shall include safety interlocks such as zero-speed switches.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 1 EA

1.4. **Elevating:**

1.4.1. **Bucket Elevator:**

Bucket Elevator functions as a vertical transport mechanism to elevate bulk fuel from a lower intake point to overhead storage.

It shall maintain the continuous lift by means of endless Elevator Belt with attached Elevator Buckets that scoop material from the Boot (Bottom) Pulley and discharge it at the top via the Head Pulley Assembly.

The entire assembly shall be enclosed within Casing (Boot, Middle, Head) featuring Inspection, Emergency and Expansion Doors.

It shall also consist of the Zero Speed Switches and Speed Monitoring Switches to detect belt slippage or breakage, and Overflow Limit Switch to prevent blockages.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 1 EA

1.4.2. **Transfer Conveyor:**

The transfer conveyor shall function as the intermediate transport link that conveys the fuel from both storage units to the boiler's feeding mechanism

It shall include safety interlocks such as zero-speed switches.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 1 EA

1.5. **Storage:**

1.5.1. **Storage Unit:**

The storage unit located after the bucket elevator and before the boiler commonly referred as a bunker / silo / bin and functions as an intermediate reservoir designed to ensure a continuous and uninterrupted supply of fuel to the boiler's feeding mechanism.

The unit shall incorporate automatic control features for the refilling process and for synchronize the rate of fuel extraction with the boiler's steam demand and pressure requirements.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Capacity: 25 m^3 Each

Feature: The live storage capacity shall be sufficient to hold 'Primary Fuel' for 10 to 12 hours of continuous operation, considering a total of two storage units, when a single boiler is in operation, and for 5 to 6 hours of continuous operation per boiler when both boilers are operating simultaneously.

Note: The system shall be designed to utilize both storage units regardless of whether a single boiler is in operation or both boilers are operating simultaneously.

Quantity: 2 EA

1.5.2. **Transfer Conveyor:**

The transfer conveyor shall function as the intermediate transport link that conveys the fuel from both storage units to the boiler's feeding mechanism

It shall include safety interlocks such as zero-speed switches.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 2 EA

1.6. **Fuel Feeding:**

1.6.1. **Fuel Feeding System:**

The function of the Fuel Feeding System shall be to ensure the continuous, regulated, and safe delivery of fuel from storage units to the furnace combustion zone, thereby controlling the steam generation rate in response to load demands.

This system includes the dosing bin which act as a local storage reservoir where level switches continuously monitor the fuel inventory to ensure availability. while integrated stirrers or agitators mechanically disrupt the fuel mass to prevent material bridging and blockage, thereby guaranteeing a consistent and uninterrupted flow to the discharge point.

This system includes multiple the screw feeders (or Archimedean screw assemblies) which receive the fuel from dosing bin and shall act as volumetric metering devices that utilize a rotating screw mechanism to move the fuel forward. Screw Feeders shall drive by variable speed drives, which regulate the precise rate of fuel delivery into the furnace based on the required volume to meet steam generation demands.

Upon reaching the furnace, the fuel shall be dispersed uniformly for efficient combustion via Fuel Spreader Nozzles or pneumatic distributors, while safety is maintained through integrated components like the Fire Protection Damper (Automatic) and Sprinkler Valve, which protect against back-burning and fire hazards within the fuel handling equipment.

The entire system shall be of a totally enclosed or dust-tight design to prevent fugitive dust emissions from entering the surrounding environment.

Quantity: 2 EA

2. Fuel Combustion & Steam Generation:

2.1. Boiler:

2.1.1. Hybrid water-cum-smoke tube Boiler (2 Nos both working):

The hybrid water-cum-smoke tube boiler design shall function to synergize the thermodynamic and structural advantages of two distinct boiler architectures by employing a water-cooled membrane wall furnace to maximize radiant heat absorption and contain the high-temperature combustion of solid fuels, thereby protecting the furnace enclosure and reducing flue gas temperatures. This radiant water-tube section shall be integrated with a cylindrical shell-and-tube vessel, functioning as a smoke-tube or fire-tube section, which serves as a compact convective evaporator facilitating efficient heat transfer from the hot flue gases flowing inside the tubes to the surrounding water inventory.

This configuration shall optimize the system by leveraging the effective furnace cooling of water-tube designs while retaining the compact footprint and load-damping water storage capacity characteristic of fire-tube shells. Consequently, the system shall utilize a combustor and furnace constructed of water-tube walls to handle the combustion of solid fuel, while the boiler drum serves as a horizontal steam convection drum containing fire-tube sections to maximize heat recovery and steam generation efficiency.

Reciprocating Moving Grate Assembly

The Process begin with the Inclined Reciprocating Moving Grate Assembly which functions as a robust, automated combustion platform designed to handle the diverse physical characteristics of solid fuel (*particularly high-moisture biomass and municipal waste*) by utilizing a stepped, stair-like arrangement of alternating stationary and moving grate bars (*high-chromium heat-resistant cast iron bars, mandating that the chromium percentage of the grate bars in all zones be greater than equal to 17%*) to transport fuel through the furnace. The certificate of chromium percentage shall be provided. The Grate should be able to handle fuel with moisture. The surface of Grate Element is preferred to plain.

Powered by independent **hydraulic** actuators, the reciprocating back-and-forth motion of the grate bars continuously pushes the fuel bed down the incline, imparting a distinct tumbling and mixing action that agitates the fuel mass. This mechanical agitation significantly enhances combustion efficiency by breaking up clinker formations to maintain bed

porosity, ensuring multi (4)-zone uniform distribution of under-grate primary air, and constantly exposing fresh fuel surfaces to radiant heat for effective drying and ignition, ultimately facilitating continuous ash discharge at the grate's terminus.

The Ash Removal Ports and Ash Settling Chamber within the Reciprocating Moving Grate Assembly shall function as the designated terminal interface for the continuous collection and controlled evacuation of non-combustible bottom ash residue, utilizing sealing mechanisms such as water seals or rotary air lock valves to quench the hot material and prevent uncontrolled air infiltration or furnace pressure loss while discharging waste to the downstream.

The inclined reciprocating grate moving assembly shall features a modular design where the area under the grates is divided into multiple airtight plenum zones, each equipped with independently adjustable control dampers to regulate the supply of under-grate primary air. This zoned airflow is critical for optimizing combustion stoichiometry to minimize carbon monoxide and nitrogen oxide emissions while simultaneously cooling the heat-resistant cast-iron grate bars to prolong their service life.

The entire operation shall be automated to match boiler load demand by modulating the fuel feed rate and the grate's movement; specifically, the reciprocating action, which tumbles and mixes the fuel for uniform combustion, is regulated by adjusting the speed of the drive mechanisms or the frequency and length of the grate and ram strokes. The Hydraulic Group, comprising the oil reservoir, plunger pump and filters, generates the motive force required to actuate the fuel pushing device and the grate carriage. Through directional valves with electronic regulation units, the system modulates the frequency and stroke length of the hydraulic actuators, thereby regulating the rate of fuel feed and the residence time of the fuel on the grate.

The inclusion of thermostats, level switches, manometers, and oil level gauges ensures the safe and stable operation of the hydraulic power pack, while the on-off valves allow for the isolation or specific operation of distinct grate sections or feed doors during maintenance or low-load conditions

The refractory concrete sidewalls confine the fuel bed and radiant heat within the combustion zone, protecting the steel frame and sectional casings from thermal damage and minimizing heat loss. A heat isolation mechanism is further employed to shield the critical drive systems from the furnace's conductive and radiant heat.

The System shall be designed to sustain a stable online turndown range of 30% to 100% of the rated capacity, with a performance guarantee that the combustion efficiency reduction will not exceed 3.5% under the lowest specified operating load conditions.

Furnace

The Furnace serving as the Radiation Part shall be enclosed by a multi-pass (*three-pass preferred*) enclosure constructed of Membrane Wall Panels. These panels consist of Water Wall Tubes joined by Connecting Fins/Strips to form a gas-tight seal.

Water shall circulate through these tubes via Top & Bottom Headers, Risers & Down-comers, and Header End Connections/Pads, absorbing radiant heat from the fire to generate steam.

The furnace walls shall be protected and insulated using Refractory Lining (Bricks & Castable) and External Insulation (Mineral/Rock Wool) covered by Al/SS Cladding Sheets to minimize heat loss and protect the structure. To ensure the furnace enclosure walls withstand internal and external forces while preventing tube deformation, a buckstay assembly consisting of external horizontal girders with hinged corners or slip connections shall be provided to stiffen the water wall panels and accommodate thermal expansion

To ensure safe operation and accessibility, the furnace shall be equipped with a front operating floor for managing fuel feeding mechanisms, observation ports and inspection doors with fire view glass to visually monitor combustion stability without disrupting furnace draft, and hinged rear access doors to facilitate ash removal and internal maintenance during shutdowns.

The furnace shall include a bio-gas burner provision, typically integrated into the water wall membrane, to structurally enable the installation of auxiliary burners necessary for preheating the furnace to ignition temperatures during startup, stabilizing combustion during low-load conditions, and supplementing the primary fuel with available waste gases such as digester gas to ensure continuous steam generation and operational flexibility.

Secondary Air Feeding System (*often implemented via high-pressure over-fire air injection nozzles*) shall introduce air into the combustion chamber above the fuel bed to supply the necessary oxygen for burning volatile gases, such as hydrocarbons and carbon monoxide, which are distilled

from the solid fuel. These high-pressure air jets penetrate the rising stream of combustion products to create intense turbulence, which eliminates gas stratification and ensures the thorough mixing of oxygen with the combustible gases and suspended fine particles. By fostering this turbulent mixing environment, the system ensures the complete combustion of volatiles before they exit the furnace, thereby maximizing thermal efficiency and reducing heat losses associated with unburned fuel.

Boiler Drum

The Boiler Drum features a Horizontal Steam Convection Drum acting as the Fire-Tube Section. Hot flue gases from the furnace enter the Smoke Box/Reversal Chamber and pass through Convection Smoke Tubes (grade BS 3059 PART 1 Gr. 320 ERW or seamless tubes) located within the drum. These tubes are submerged in water, allowing convective heat transfer to generate steam.

Stay Tube and Drum Shell Plate provide structural integrity to the pressure vessel. Internal Baffle Plates guide the water flow, while Demister Pads/Steam Dryers located near the Steam-Water Interface Area separate moisture from the steam before it exits the boiler to ensure high steam quality.

The system be monitored and controlled using Three-Element Level Controls (balancing steam flow, feedwater flow, and drum level) to maintain the water level within the drum. The System shall also feature safety valves (minimum of two independent) to automatically relieve excess pressure and prevent explosions, manholes to provide necessary access for the internal inspection and maintenance of drum internals and saddle mounting supports to sustain the weight of the drum while accommodating thermal expansion and contraction, Smoke box soot cleaning doors provide access to the interior of the smoke box and fire tubes to facilitate the removal of accumulated soot and ash deposits.

Continuous Surface Blowdown System

The Continuous Surface Blowdown system shall function to automatically maintain the boiler water Total Dissolved Solids (TDS) within permissible limits by discharging high-concentration water from just below the steam-water interface in the steam drum.

The system relies on an in-line stainless steel (SS 316) conductivity sensor with automatic temperature compensation to monitor boiler water quality; when the measured conductivity exceeds the set point, a panel-

mounted controller modulates a pneumatically operated control valve to purge water until the TDS level is restored.

The assembly shall be fully insulated to conserve heat and comprises essential isolation valves, a non-return valve, and a manual bypass loop to ensure continuous operation during maintenance.

All pressure parts, including upstream and downstream piping and flanges, must be IBR certified to meet safety codes.

Apart from the above there shall be bottom blow-down from drum, boiler bank, membrane wall panel etc.

Superheating

The system shall be featured a superheating mechanism be to impart sensible heat to the saturated steam generated in the boiler, thereby raising its temperature above the saturation point to ensure the delivery of completely dry steam with higher energy content.

By designing and positioning the superheater tube bundles, often within the reversing chamber or smoke-tube gas path, to achieve a minimum 5˚C superheat, the system establishes a critical margin that eliminates entrained moisture and prevents immediate condensation in downstream piping, which protects equipment from erosion and water hammer.

This specific degree of superheat acts as a necessary buffer to distinguish the steam condition from saturation, ensuring the fluid remains in a vapor phase for efficient transmission and utilization while minimizing the thermal stress and corrosion risks associated with wet steam.

Quantity: 2 EA (both working)

3. Heat Recovery and Energy Conservation:

3.1. Heat Recovery System:

3.1.1. Pressurized Economizer:

Pressurized Economizer shall serve as a heat exchanger located in the flue gas path that absorbs residual heat from the exhaust gases and transfers it to the feedwater before it enters the boiler drum. This assembly shall consist of continuous loop tubes connected to Inlet &

Outlet Headers, which distribute the high-pressure feedwater through the coils.

To contain the hot gases and minimize heat loss to the surroundings, the system utilizes a Casing (Integral Type). This casing provides a gas-tight, insulated enclosure that is often directly mounted or integrated with the boiler structure to ensure a compact and thermally efficient design.

Shield Plates (Inlet Protection) shall be installed to shield the economizer tubes, particularly at bends and inlet areas, from the erosive impact of high-velocity ash particles found in the flue gas stream.

The Automatic Soot Blower Unit shall be employed to periodically dislodge these deposits, preventing fouling that would otherwise retard heat transfer and increase draft loss.

A Rotary Air Lock Valve (RALV) shall be positioned at the hopper outlet to discharge the collected ash continuously or intermittently without breaking the pressure seal of the boiler, thereby preventing air infiltration or flue gas leakage.

Economizer Bypass Piping/Valves shall also be incorporated to provide operational flexibility and protection. These bypasses allow operators to control the flue gas exit temperature to prevent acid dew point corrosion during low loads, or to prevent steaming within the economizer coils. They also permit the isolation of the economizer for maintenance or emergency situations without necessarily shutting down the entire steam generation system.

Quantity: 2 EA

3.1.2. **Air Preheater:**

Air Preheater (APH) shall act as a heat-recovery component positioned in the flue-gas path, typically downstream of the economizer, to extract residual thermal energy from hot exhaust gases and transfer it to the incoming ambient combustion air supplied by forced draught (FD) fans.

The APH shall be designed as a recuperative shell-and-tube heat exchanger, comprising tubes expanded into tube sheets housed within a stiffened, insulated casing, often utilising carbon steel tubes with erosion protection measures, such as erosion shields or thicker tubes at the inlets, to withstand abrasive ash.

The design shall incorporate dampers for flow control and cold-end corrosion protection, necessary instrumentation for monitoring pressure and temperature, and soot-cleaning arrangement.

The unit shall be equipped with hoppers fitted with discharge devices, such as rotary airlock valves, to effectively manage and remove collected ash and soot deposits.

Air Preheater Bypass Piping/Valves shall also be incorporated to provide operational flexibility and protection.

Quantity: 2 EA

3.2. **Energy Conservation System:**

3.2.1. **Blow–Down Heat Recovery System:**

Blow–Down Heat Recovery System functions to reclaim significant thermal energy from the high-temperature water discharged during continuous blowdown, which is performed to control total dissolved solids (TDS) and prevent sludge accumulation.

This recovery is typically executed via a two-stage process: first, the high-pressure blowdown water is routed to a flash tank where the pressure drop causes a portion of the water to flash into low-pressure steam, which is then utilized for feedwater heating in the deaerator.

Second, the remaining hot liquid, passes through a heat exchanger to preheat the incoming makeup water, before being drained. Thereby recovering sensible heat, reducing the fuel demand on the grate firing system, and cooling the effluent to safe discharge temperatures

The remaining residual is discharged into the blow-down pit.

Quantity: 2 EA

Note : The inclusion of this item is subject to confirmation during the detailed process review and may be excluded from the final scope.

4. Air Pollution Control and Monitoring:

4.1. Air Pollution Control System:

4.1.1. Electrostatic Precipitator (ESP):

Electrostatic Precipitator (ESP) shall serve as a high-efficiency pollution control device designed to separate and collect particulate matter (fly ash) from the flue gas. The ESP shall operate on the principle of electrostatic attraction, utilizing a high-voltage electric field to ionize gas molecules and charge dust particles, which are then attracted to grounded collecting surfaces.

The ESP shall be housed in a gas-tight ESP Casing, including a Roof and Side Walls, typically constructed of steel to withstand operating stresses and prevent leakage, equipped with a dedicated bottom hopper system to ensure the separate collection and discharge of precipitated fly ash.

The Electrostatic Precipitator shall be designed with four independent electrical fields in series, providing sufficient specific collection area to guarantee that particulate emissions remain within specified local regulatory limits at the boiler's maximum continuous rating, even with one field out of service for maintenance or failure

The flue gas velocity shall be reduced at the inlet. Gas Distribution Plates (perforated diffuser plates) shall be employed to distribute the gas flow evenly across the ESP cross-section. The unit utilizes Inlet and Outlet Ducting to manage gas transport, often incorporating expansion joints to accommodate Thermal Accommodation (expansion) due to temperature changes.

Thermal Insulation and External Cladding shall be applied to the casing and hoppers to maintain gas temperature above the acid dew point, preventing corrosion and ash blockages.

The core particle collection mechanism shall involve Discharge Electrodes (wires or rigid frames) and Collecting Electrodes (plates).

A Power Supply System consisting of four independent rooftop-mounted Transformer Rectifier sets converts AC line voltage to high-voltage DC (typically 55–85 kV or more) to energize the discharge electrodes. This creates a corona discharge that ionizes the gas; charged particles migrate to the collecting electrodes where they are trapped.

The Transformer Rectifier Quantity and Mounting (often on the roof) shall be designed to power specific ESP Fields (electrical sections) independently, allowing for ESP Independence and operational flexibility even if one field fails.

For dry particle removal, a Rapping Mechanism (using tumbling hammers or magnetic impulses) shall be periodically strikes the collecting and discharge electrodes to dislodge accumulated ash. Micro-tapping control or specific rapping sequences shall be used to minimize re-entrainment of dust into the gas stream.

The dislodged ash falls into ESP Hoppers, which shall be equipped with Heating Elements to prevent hygroscopic ash from clogging. Hopper Level Monitoring and Ash Discharge systems (such as rotary valves or screw conveyors) shall ensure continuous or periodic removal of ash to the disposal system. Ash Isolation gates shall allow for maintenance of specific hoppers without shutting down the entire unit.

To protect high-voltage components and insulators from fly ash and moisture, the Pent House is often pressurized using a Pressurization Blower providing Purge Air. This Purge Air Function shall ensure a seal against flue gas leakage.

Pent House Access and Operating Platforms with appropriate Hand Railing and Staircases shall provide personnel access for inspection and maintenance. Electrical Safety systems and interlocks shall be include.

The Electrostatic Precipitator assembly shall be supported on a robust Mild Steel structural framework engineered to withstand dead, wind, and thermal loads, inclusive of the supply of foundation bolts and insert plates for the RCC interface and shall feature a weather-protective 0.5 mm thick precoated roof structure to cover the transformer-rectifier sets.

The supplier shall furnish an 800 mm wide Mild Steel (MS) grating platform accessed via a structural steel staircase extending from the RCC level, complete with continuous 32 NB double-rail handrailing installed from ground level to the top platform.

The ESP's Design Capacity and ESP Configuration (aspect ratio, specific collection area) shall be engineered to meet Governing Norms (PCB, SPCB, CPCB norms) and Stack Emission Limits (particulate matter less than equal 50 mg/Nm^3).

Temperature Monitoring shall be included to protect components and ensure the process operates within the resistivity range of the Flue Gas Handled.

Quantity: 2 EA

Note : The inclusion of this item is subject to confirmation during the detailed process review and may be excluded from the final scope.

4.1.2. **Mechanical Dust Collector (MDC):**

The Mechanical Dust Collector (MDC) shall serve as a heavy-duty mechanical separator to continuously extract fly ash, grit, and unburned carbon particles from the hot flue gas stream before the gas is vented to the atmosphere.

Its specific purpose of MDC is to operate during the Bag Filter's by-pass mode, or to act as a pre-collector that significantly reduces the heavy particulate dust loading (especially particles larger than 5 to 10 microns).

The Mechanical Dust Collector (MDC) shall be configured to install in parallel with the primary Bag Filter system and must be fully capable of operating effectively in the by-pass mode of the Bag Filter to manage particulate emissions when the primary filter is isolated.

The supplier shall provide an MDC comprising a robust steel structure housing a high-efficiency multi-clone or cyclone separator array. To prevent thermal losses and mitigate the risk of condensation inside the casing, the entire unit shall be thoroughly insulated.

The discharge mechanism at the bottom of the MDC shall be fitted with an air-tight rotary airlock valve, driven by a geared motor, and equipped with a manual operating handle. This rotary airlock is mandatory to ensure the continuous and efficient removal of collected fines from the hopper while strictly preventing any ingress of outside tramp air, which could otherwise re-entrain the dust or pose a fire hazard due to the high carbon content of the biomass fly ash.

The core separation internals of the MDC shall consist of the following specific components:

- Collection Tubes: To receive the incoming flue gases. These should be fabricated from highly abrasion-resistant materials (such as white cast iron or Ni-hard) to withstand the erosive nature of coal and biomass fly ash.

- Inlet Guide Vanes (Spinner Vanes): Stationary vanes positioned at the entry of the collection tubes to guide the path of the gases and induce the required swirl.
- Outlet or Discharge Tubes: Centrally located tubes to extract the cleaned flue gas.
- Dust Discharge Boot (Hopper): A collection zone where the separated ash falls and is channeled toward the rotary airlock.

The MDC design shall be reliably operate on the principle of centrifugal and inertial separation. The operating mechanism shall function as follows:

- Induction and Swirl: The dust-laden flue gases evacuated from the boiler enter the MDC housing and are directed into the collection tubes. At the entry point of these tubes, the stationary inlet guide vanes (spinner vanes) force the gas to change direction, imparting a rapid spinning or cyclonic vortex motion to the gas stream.

- Centrifugal Separation: As the gas spirals downward, the resulting centrifugal force, which is significantly greater than gravity, throws the heavier and coarser solid dust particles outward against the inner walls of the collection tube.

- Discharge and Exhaust: The separated particulate matter continues to slide down the walls due to gravity and the centrifugal action, ultimately falling through the bottom into the dust discharge boot (hopper). Meanwhile, the cleaned flue gas hits the bottom of the vortex, reverses its direction, and flows upward through the center of the cyclone to exit the unit via the central outlet or discharge tube.

The MDC's Design Capacity and Configuration shall be engineered to meet Governing Norms (PCB, SPCB, CPCB norms) and Stack Emission Limits by effectively capturing coarse particulate matter, specifically ensuring environmental compliance and managing heavy dust loads during the by-pass mode of the Bag Filter.

Quantity: 2 EA

4.1.3. **Bag Filter (Pulse-Jet Type):**

The Pulse-Jet Bag Filter (Fabric Separator) shall serve as a highly efficient pollution control device that separates fly ash and suspended particulate matter (SPM) from the boiler's exhaust flue gases. Bag filters shall highly efficient, capable of capturing more than 99% of particulate matter, including very fine particles.

The bag filter shall operate on the principle of fabric filtration, where dust-laden flue gas flows from the outside to the inside of the filter bags. The fabric provides a surface for dust to deposit via mechanisms such as gravity, inertial collection, interception, diffusion, and electrostatic attraction. This accumulated layer forms a "dust cake" that acts as the primary filtering medium,.

To prevent excessive pressure drop caused by the dust cake, the system shall utilize a "pulse-jet" cleaning mechanism. This allows for continuous online cleaning without interrupting the flue gas flow. A sequential timer or on-demand controller shall actuate air solenoid valves to inject short bursts of high-pressure compressed air into the open top of the bags. This blast acts as a shock wave, or rapidly moving air bubble, traveling down the length of the bag, causing the fabric to flex outward, which fractures the dust cake and forces the dislodged ash to fall into the collection hopper below.

The bag filter and Mechanical Dust Collector (MDC) shall be configured to provide a safe parallel bypass route.

The filter bags shall have strict continuous working temperature limits, such as up to 260°C for fibre glass fabrics. Because of these thermal limitations, an alternative parallel path shall be available for thermal emergencies. The supplier shall integrate an RTD-based pneumatically operated inlet cum by-pass damper. If flue gas temperatures rise above the pre-set safety value, or during boiler start-up, the controller shall automatically bypass the hot gases around the bag filter and route them entirely through the parallel MDC to protect the fabric media from thermal destruction.

The main casing of the bag filter shall be fabricated from 3 mm MS sheet steel. To minimize heat loss, the unit shall be insulated with 75 mm thick mineral wool and cladded with 24 SWG Aluminium.

The filter media shall be Glass Impregnated Bags capable of withstanding temperatures of 240°C, which falls safely within the typical 260°C maximum tolerance for coated fibre glass. These bags shall be internally supported by special high-temperature metal wire cages to prevent them from collapsing under the external pressure of the flue gas stream. Perforated sheets shall be placed at the gas inlet to intercept coarser particles before they can damage the bags.

The structural design shall include collection hoppers with a steep 70-degree plate angle to ensure the smooth, gravity-driven flow of collected

fly ash. The hoppers shall feature access doors and terminate with a rotary airlock valve driven by a geared motor to provide airtight, continuous ash discharge. The supplier shall also provide all supporting structures, handrails, and ladders required for the unit.

The bag filter unit shall include a comprehensive instrumentation suite. Hoppers shall be equipped with thermostat-controlled heaters to maintain ash flowability, as fly ash is highly hygroscopic and can cause severe blockages if allowed to cool and absorb moisture. A differential pressure switch shall be provided to monitor the flow resistance across the filter and initiate on-demand pulse-jet cleaning when the dust cake causes excessive pressure drop. Additional required instrumentation includes a temperature indicator and controller for the bypass damper operation, a sequential controller for the pulsing valves, limit switches to indicate the damper's ON-OFF position, pressure switches for air supply control, and an air filter with a drain valve to ensure dry compressed air is utilized.

The Bag Filter 's Design Capacity and Configuration shall be engineered to meet Governing Norms (PCB, SPCB, CPCB norms) and Stack Emission Limits (particulate matter less than equal 50 mg/Nm^3).

Quantity: 2 EA

4.1.4. **Wet Scrubber:**

Wet Scrubber shall be configured as a Spray Scrubber (or spray tower) and shall be designed to remove particulate matter (fly ash) and acidic gaseous pollutants (primarily sulphur dioxide SO_2) from the flue gas.

The unit shall feature the Mist Tower Construction (absorber tower). Inside the tower, Mist Tower Spray Nozzles atomize the scrubbing liquid into fine droplets, creating a large surface area for Pollutants Controlled to be captured via mechanisms of impaction, interception, and diffusion.

Because the system combusts Coal (a source of sulphur) and Biomass Briquettes (which generally have lower sulphur but may produce light, varying ash characteristics), the scrubbing liquid shall act as both a particulate collector and a chemical reactant.

To neutralize the acidic SO_2, an Alkali Storage and dosing system shall be employed. Dosing Pumps shall inject alkaline reagents (typically lime or limestone slurry) into the water based on a pH Control Method to facilitate the chemical absorption of sulphur oxides, forming calcium sulphite or sulphate.

The Flue Gas Contact Parts and Scrubber Lining must be constructed of corrosion-resistant materials, often falling within the Scope of SS 316L (stainless steel), to withstand the acidic environment created by sulphur and potential chlorides from the biomass, as well as the abrasion from the fly ash slurry.

Water Circulation Pumps (1 Working + 1 Standby) shall recycle the slurry from the Collection Tank (or recirculation tank) back to the spray nozzles to ensure continuous wetting and gas contact. Valves & Strainers and Circulation Piping Material must similarly be selected to handle abrasive slurries without plugging or rapid erosion.

Before exiting the tower, the cleaned gas passes through Mist Eliminators (chevrons) to remove entrained liquid droplets, preventing the carryover of slurry out of the stack.

The wet scrubbing process produces a sludge consisting of ash and chemical reaction products. Sludge Transfer Pumps move this waste from the collection tank to a Sludge Drying Bed Arrangement, where Sludge Drying Bed Media facilitates the separation of solids from the liquid for disposal.

Platform Structures, Staircase, and Hand Railing shall be provided for Mist Tower Access and Maintenance, allowing operators to inspect nozzles and mist eliminators for plugging, which shall be common maintenance requirement in spray towers.

The Wet Scrubber Design Capacity and Configuration shall be engineered to meet Governing Norms (PCB, SPCB, CPCB norms) and SO_2 emission limit shall be less than 100 ppm and No_x emission limit shall be less than 50 ppm.

Quantity: 2 EA

Note : The inclusion of this item is subject to confirmation during the detailed process review and may be excluded from the final scope.

4.1.5. **Chimney:**

The primary function of the chimney shall be to vent hot flue gases and suspended particulates to the outside atmosphere at a suitable height and make ensures pollutants are dispersed over a wide area to meet environmental legislation and safety requirements.

The Chimney shall be self-supporting as per industrial design. Its design must rigorously account for flue gases that are saturated with moisture and contain acidic condensates (sulfuric/sulphurous acids).

The structural design must comply with IS 4998 (Part 1) for reinforced concrete chimneys and ACI 307 for concrete chimneys and shall ensure stability against static and dynamic loads including wind pressure as per IS 875 (Part 3) and seismic forces per IS 1893. The height of the chimney, typically greater than 35 meters, and fulfil the SPCB guidelines completely. shall be finalized based on project-specific statutory requirements for the dispersion of pollutants.

The outer shell shall be constructed using precast concrete segments to ensure high durability and rapid erection. The concrete used must be Grade M40 or higher (minimum compressive strength ≥ 40 MPa at 28 days), manufactured using Ordinary Portland Cement (OPC) conforming to IS 269.

To withstand the bending moments caused by wind shear and dead load, the shell shall be reinforced with high tensile steel bars conforming to IS 1786, maintaining a clear cover of 40–50 mm. The precast units must be cast in steel moulds to ensure a smooth surface finish and strict dimensional tolerances, with adequate steam curing applied to guarantee uniform strength development.

The Chimney shall consist of an independent inner liner constructed of acid-resistant bricks, fireclay, or ceramic materials conforming to IS 4860. The liner thickness shall be typically 100–150 mm. The annular space between the liner and the outer shell shall be filled with mineral wool or ceramic fibre insulation; this thermal barrier is critical to maintain flue gas temperature above the acid dew point as much as possible and to prevent "cold air inversion" which can destroy the natural draught. The liner design must allow for differential thermal expansion independent of the outer shell. The chimney must strictly possess a minimum 2-hour fire resistance conforming to the IS 1642 standard.

The chimney shall be equipped with a flue gas inlet opening extended by 200 mm to 1000 mm from the shell, terminated with counter flanges for connection to the wet scrubber outlet ducting. Because the cut-out creates a structural discontinuity, the periphery of the opening must be reinforced with welded stiffeners (minimum 50 x 50 x 6 mm angles) to transfer vertical loads and prevent buckling. To ensure gas-tightness and prevent the leakage of hazardous fumes, all joints between precast segments must be sealed using epoxy resin or rubber gaskets.

For safe operation and maintenance, the chimney shall include a continuous access ladder extending from the base to the top. The ladder rungs shall be 20 mm diameter rods, 400 mm wide, spaced at 200 mm centers, and supported by structural members (minimum 50 x 50 x 6 mm ISA).

A safety cage/enclosure is mandatory starting from a height of 3 meters. The system shall include a minimum of two platforms (in addition to the lowest level) with a clear width of 800 mm, equipped with 1000 mm high pipe railings, middle bracing, and toe guards to facilitate flue gas sampling and analysis as per pollution control board regulations.

A gas-tight inspection door (minimum 500 mm x 800 mm) shall be provided near the base for internal inspection and ash removal.

To protect the structure from lightning strikes, which can cause catastrophic failure in tall concrete structures, the Supplier shall provide a lightning arrestor made of copper with a minimum of 5 prongs. This shall be connected to two independent earth stations via parallel conductors (GI 25 x 6 mm or equivalent) mounted on epoxy-based insulators to prevent direct contact with the chimney surface. The earth stations must be constructed as per IS 3043, complete with GI plate conductors, charcoal/salt filling, and cast iron covers. Additionally, twin aviation obstruction lights (LED, minimum 40 watts) shall be installed at required levels to comply with aviation safety regulations, wired through rigid PVC conduits and IP55 grade junction boxes.

The external surface of the chimney shall be coated with weatherproof and corrosion-resistant paint, typically in alternate bands of signal red and white for aviation visibility. All Mild Steel (MS) parts shall undergo degreasing, de-rusting, and priming before final painting with heat-resistant paint. The Supplier must perform rigorous quality control, including cube testing for concrete strength and Non-Destructive Testing (NDT) such as ultrasonic pulse velocity to verify structural integrity. Upon erection, a smoke test or gas-tightness test shall be conducted to ensure zero leakage, and the vertical alignment must be within a tolerance of ±5 mm.

Note: quantity of chimney shall be as per OEM design and shall be mentioned in bid.

Note: Suitable for running both boilers.

Quantity: 1 Lot

4.2. Monitoring System:

4.2.1. Continuous Emission Monitoring System:

The function of The Continuous Emission Monitoring System (CEMS) is continuous on-line monitoring of flue gas at the stack to ensure compliance with environmental regulations and shall be designed to withstand the harsh environment of coal and biomass combustion.

The system shall continuously measure, indicate, and record the concentrations of Sulphur Dioxide (SO_2), Nitrogen Oxides (NO_x). Additionally, the supplier must provide an opacity monitor (transmissometer) or particulate matter (PM) monitor to measure dust loading/opacity. The monitoring mode shall be a combination of in-situ analysis for oxygen and opacity, and extractive analysis for other gaseous pollutants to ensure accuracy in variable solid-fuel combustion environments.

The supplier shall furnish a heated extractive sampling probe designed to prevent the condensation of moisture and acid gases; the probe heating temperature must be maintained above the acid dew point of the flue gas, typically controlled more than 130 Deg.C depending on the sulphur content, shall be capable to handle a maximum flue gas temperature of 250°C and an ambient media temperature of 0°C to +80°C.

The probe body and extension material shall be constructed of high-grade Stainless Steel (e.g., SS 316L or better) to resist corrosion from sulphur and chlorine compounds. The probe flange shall be of standard size (e.g., ANSI or DIN standards, typically 3-inch or 4-inch) with a rating suitable for the stack pressure and design conditions.

The probe shall utilize a primary filter (sintered metal or ceramic) with a retention rate capable of excluding fine particles (typically <5 to 10 microns) to protect downstream analysers. The probe length must be sufficient to reach the representative sampling zone within the stack/duct, typically extending to the centroid of the cross-section.

The analyser type shall utilize proven technologies for solid fuel exhaust: Non-Dispersive Infrared (NDIR) or Ultraviolet (UV) absorption for SO_2, and NO_x measurement; and a transmissometer (light attenuation) or light scatter technique for Opacity/PM.

The system shall accommodate flue gas temperatures up to the maximum expected stack temperature (typically 150 Deg.C to 180 Deg.C for this class of boiler, but the probe must withstand excursions up to 250 Deg.C. The ambient temperature range for the analyser cabinet and external components shall be specified to withstand local site conditions, typically 0 Deg.C to 50 Deg.C.

The system shall include facilities for automatic and manual calibration using standard Calibration Gases (Zero and Span gases) stored in cylinders provided by the supplier. Solenoid valves shall be provided to sequence the flow of sample gas, zero gas, and span gas, as well as to facilitate automatic blow-back or purging. A purging facility using instrument air is required to clean the probe filter and optical lenses (for opacity monitors) to prevent fouling from ash. The design must include a moisture removal system (Peltier cooler or permeation dryer) to condition the gas sample for dry-basis analysers, with a condensate removal mode that automatically drains moisture via a peristaltic pump or trap to a designated drain facility. Flow regulation must be managed via a precision pump and flow meter (rotameter) quantity sufficient to monitor sample and bypass flow ranges.

The system shall include a Data Transmission Provision via 4-20 mA analog signals and digital communication (RS-485/TCP-IP) for connection to the plant DCS and the PCB Server (Pollution Control Board) for real-time regulatory reporting.

Quantity: 1 EA

5. Auxiliaries:

5.1. Draft System:

5.1.1. Forced Draft (FD) Fan:

The Forced Draft (FD) Fan shall serve the function of supplying combustion air to the furnace, specifically pushing primary air through the air heater and ductwork to the under-grate plenum of the reciprocating assembly to facilitate fuel burning.

In a balanced draft arrangement, the FD fan is typically shall be centrifugal fan featuring backward curved blade profiles. The fan assembly shall be mounted on a rigid base frame with vibration isolation to prevent transmission of dynamic loads to the supporting structure, and it shall connect to the ductwork via expansion joints to accommodate thermal expansion and isolate vibration.

Flow control shall be achieved using Variable Frequency Drives (VFD) to regulate the motor speed or air swirl, ensuring the air-to-fuel ratio matches the steam demand while minimizing electrical consumption. The fan shall be driven by a high-efficiency (IE3) AC induction motor, typically with a Totally Enclosed Fan Cooled (TEFC) enclosure to protect against dust, with class F Insulation and coupled via a flexible coupling with a guard for safety

Quantity: 2 EA

5.1.2. **Induced Draft (ID) Fan:**

The Induced Draft (ID) Fan shall be responsible for evacuating hot flue gases and maintaining a slightly negative furnace draft to prevent the leakage of combustion products into the boiler room.

This fan shall be located upstream of the chimney and handles hot, dust-laden gases, requiring a robust centrifugal design, often with radial-tip or backward-curved blades equipped with wear plates or liners to resist fly ash erosion.

Due to the high temperature of the flue gas, the ID fan bearings (sleeve or anti-friction) shall be frequently water-cooled to dissipate heat conducted through the shaft.

The ID fan shall be sized with a higher capacity than the FD fan to account for the increased volume of hot gas and infiltration air. Furnace draft control shall be automated, adjusting the ID fan speed (via VFD) or inlet dampers to stabilize pressure during load changes, and interlocks shall be provided to trip the FD fan if the ID fan fails to prevent furnace pressurization and it shall connect to the ductwork via expansion joints to accommodate thermal expansion and isolate vibration.

The fan shall be driven by a high-efficiency (IE3) AC induction motor, typically with a Totally Enclosed Fan Cooled (TEFC) enclosure to protect against dust, with class F Insulation and coupled via a flexible coupling with a guard for safety

Quantity: 2 EA

5.1.3. **Secondary Air (SA) Fan:**

The Secondary Air (SA) Fan shall generate higher pressure than the FD fan, supplies high-velocity air through nozzles in the furnace walls (Over-

Fire Air) to create turbulence and ensure complete combustion of volatiles released from the coal and biomass briquettes.

This fan aids in staged combustion, which shall reduce unburned carbon loss and controls NO_x emissions by ensuring oxygen reaches the combustible gases rising from the grate.

The SA fan assembly shall generally a centrifugal type with narrow impellers to generate the required high static pressure, and flow shall be regulated via dampers at the fan outlet or suction to penetrate the flame effectively at various loads. Like the other draft fans, the SA fan utilizes an electric motor drive, and the entire assembly is supported on a concrete foundation or steel structure designed to withstand static and dynamic loads, ensuring reliable operation of the secondary air circuit.

The fan shall be driven by a high-efficiency (IE3) AC induction motor, typically with a Totally Enclosed Fan Cooled (TEFC) enclosure to protect against dust, with class F Insulation and coupled via a flexible coupling with a guard for safety

Quantity: 2 EA

5.2. Feedwater System:

5.2.1. Pressurized de-aerator cum feedwater storage System:

The Pressurized De-aerator cum Feedwater Storage tank shall be a direct-contact type, specifically a tray or spray-tray type unit, designed to heat feedwater to the saturation temperature corresponding to the operating pressure and mechanically scrub dissolved gases.

The deaerator design must ensure the removal of dissolved oxygen to a maximum residual level and effectively remove free carbon dioxide to prevent corrosion of the boiler tubes and piping.

The system shall be designed to accommodate an RO Water Source by receiving demineralized permeate, treated to remove dissolved solids, through dedicated inlet piping sized to handle the calculated make-up rate required to compensate for system losses such as blowdown and steam venting. The tank design shall also incorporate distinct connections for Recovered Water Return to accept condensate from the process, thereby facilitating the conservation of heat energy and high-purity water. The unit shall be capable of handling and blending diverse streams like ‘recovered condensate, treated makeup water, and

emergency supply' to ensure a continuous, stable feedwater supply to the boiler.

The deaerator shell and storage tank shall be constructed of carbon steel designed for the operating pressure, while the internal components, including trays, spray nozzles, and vent condensers, must be constructed of stainless steel to resist corrosion. The vessel shall carry an ASME stamp indicating design and fabrication in accordance with the ASME Boiler and Pressure Vessel Code.

The system shall be equipped with a feed water storage capacity (shall be as per OEM Requirement) of 30 minutes of boiler Maximum Continuous Rating (MCR), *whichever is greater*, calculated based on the volume difference between the Normal Water Level (NWL) and the Low-Low Water Level (LLWL), and shall be able to provide a stable supply for the boiler feed pumps and accommodate surges.

The system shall be insulated with sufficient thickness to minimize heat loss and ensure personnel safety, covered with an outer lagging. Manways shall be provided on both the deaerator column and the storage tank to facilitate inspection and maintenance of internals. The system must include safety devices such as safety relief valves to prevent overpressure and vacuum breakers to prevent collapse during pressure drops. A pegging steam system shall be furnished to supply auxiliary steam during startup or low-load operation to maintain positive pressure and temperature within the deaerator.

The supplier shall provide boiler feed pumps of the multistage centrifugal type, designed to handle the required flow and pressure for the 10.5 TPH boilers output plus margins for blowdown and wear. These pumps shall be responsible for delivering a continuous, high-pressure supply the deaerated water to the boiler drum through economizer. These multistage centrifugal pumps must generate sufficient hydraulic head to overcome the significant pressure difference between the deaerator and the boiler, including the resistance of the economizer and piping friction, while regulating flow to maintain the drum water level within precise limits to prevent catastrophic tube starvation or overheating

The pumps shall be driven by electric motors, typically totally enclosed fan-cooled (TEFC) type. The pump construction shall feature a SS316 housing/casing and enclosed impellers made of SS316. The pump shaft shall be sealed using mechanical seals equipped with necessary cooling arrangements to handle the high-temperature feedwater. The pump and motor shafts shall be connected via a flexible coupling, such as a non-lubricated flexible-disc or pin type, with a coupling guard.

Suction and discharge piping shall be engineered to ensure proper pump operation. The deaerator shall be elevated to provide sufficient Net Positive Suction Head (NPSH) to the pump suction to prevent cavitation. A suction strainer shall be installed to protect the pump from foreign material. The discharge line shall be fitted with a check valve (non-return valve) to prevent backflow and an isolation valve (gate type) for maintenance. An automatic recirculation (spillback) line with a control valve must be provided to return water to the deaerator or storage tank, ensuring minimum flow through the pump to prevent overheating during low-load conditions. Thermal expansion of the piping must be accommodated by proper pipe supports and layout.

The system shall include a level control system to regulate makeup water inflow and must be equipped with a gauge glass for direct level indication. High and low-level alarms are required, with a low-level trip interlock to stop the feed pumps if the water level falls below a safe limit to prevent vapor binding and pump damage. Continuous venting of non-condensable gases must be maintained through air vents. The tank shall also be provided with overflow and drain connections.

Capacity: It shall have feed water storage capacity (shall be as per OEM Requirement) of 30 minutes of boiler MCR, *whichever is greater*, calculated based on the volume difference between the Normal Water Level (NWL) and the Low-Low Water Level (LLWL).

Quantity: 1 EA

5.2.2. **Low Pressure (LP) Dosing System:**

Low Pressure (LP) Dosing System shall be responsible for conditioning the feedwater to preventing corrosion and scaling in the pre-boiler and boiler circuits by managing dissolved oxygen levels and pH.

The system consists of an Automatic Chemical Dosing System designed to inject chemicals into the low-pressure side of the feedwater system, specifically to the De-aerator storage tank or the Boiler Feed Pump (BFP) suction line. The primary purpose of this system is Feedwater Quality Control; it shall effectively scavenge residual dissolved oxygen and maintain the feedwater pH within the alkaline range to protect the economizer and boiler tubes from corrosion.

The system shall operate in an automatic Dosing Mode, regulating chemical feed based on real-time parameters or flow proportioning to ensure consistent water chemistry. The system shall be capable of

handling Chemicals such as oxygen scavengers (e.g., Sodium Sulfite or Hydrazine/Carbohydrazide) and pH boosters (e.g., Ammonia, Morpholine, or Caustic Soda/Lye). The Chemical Type used shall be compatible with the boiler operating pressure and intended steam use.

The system shall utilize Metering Pumps of the positive displacement type (plunger or diaphragm) to ensure precise volume control. A minimum Dosing Pumps Quantity of two (2) per chemical stream (1 Operating + 1 Standby) is required to ensure 100% redundancy. The pumps shall be rated to discharge at a Dosing Pressure sufficient to overcome the system pressure at the injection point (deaerator operating pressure or BFP suction head) plus line losses.

The system shall include Preparation Tanks for mixing and storing chemical solutions. Tanks shall be cylindrical and constructed of corrosion-resistant materials compatible with the specific chemicals, such as Stainless Steel or heavy-duty Polypropylene. Tanks shall be mounted on legs or directly onto the skid structure, equipped with a motor-driven mechanical agitator/stirrer to dissolve solids and maintain a uniform solution concentration. The tank shall include necessary nozzles and fittings, including a Inlet for make-up water (sourced from the DM/Soft water plant), a outlet with suction strainers for the pumps, drain, overflow, vent to atmosphere, and level sensors (gauge glass and low-level switches) to monitor inventory and protect pumps from dry running.

If caustic soda (lye) is used for alkalinity/pH control, a dedicated Lye Mixing Tank shall be provided.

Quantity: 1 EA

5.3. **Accessories / Spare:**

5.3.1. **Platforms, Frames, Supports, Stacks, Rails:**

All structural elements including platform frames, support structures, handrails, grating and stairs shall be constructed from IS 2062, durable, corrosion resistance. The walking surfaces (gratings) shall be made of Anti-Skid for enhanced safety and ease of cleaning. The exposed surfaces to be sandblasted and painted with anti-corrosive primer and heat-resistant paint. The design shall incorporate box profile framing, safety railings on all four sides, and inclined stairs with handrails for safe operator access to elevated areas.

Quantity: 1 EA

5.3.2. **Instruments/controls/accessories:**

All required instruments/controls/accessories which are not mentioned above.

Quantity: 1 EA

5.3.3. **Spare for 2-year operation:**

The Bidder shall supply all necessary spare parts required to ensure two years of continuous and reliable operation of the steam generation plant.

This supply shall include, at a minimum, the spares detailed in the table below. If any item not explicitly listed is required to maintain two years of continuous plant operation, the Bidder shall supply them at no additional cost.

Sr. No	Category	Spare Description	Quantity	UOM
1	Pumps	Seals and impellers	1	Set
2	Draft System	Bearings, blades, belts, and anti-vibration pads for the ID, FD, and SA fans	1	Set
3	Boiler Tubes	Boiler tube replacements for the membrane wall panel (20%)	1	Set
4	Combustion Assembly	Reciprocating grate bars and blocks (20%)	1	Set
5	Refractory Materials	Lining material (Bricks & Castable) (20%)	1	Set
6	Crusher	Plummer blocks with bearings for the crusher	1	Set
7	Instrumentation & Valves	Magnetic level switches, pressure and temperature gauges, syphon pipes, pressure switches, float valves for the feed water tank, and glass tube level gauges, fusible plugs	1	Set
8	General	Spares for the fuel handling system, ash handling system, electrical system, and instrumentation system	1	Set

Quantity: 1 EA

5.4. Electrical:

5.4.1. Electrical Control Equipment:

The system shall be engineered as a fully automated plant, integrated through a PLC-based Control System with selectable operating modes.

The plant shall employ fully automatic process control across all stages; however, certain critical operations may include manual intervention as required.

The electrical section serves to power, control, and automate the continuous process while ensuring stringent operational safety across the plant.

The core function relies on a centralized Control Panel, include PLC, SCADA, and VFDs to provide comprehensive control and monitoring via Field HMIs, managing parameters throughout the various stages.

Electrical power distribution and regulation ensure that numerous machine drives (motor + gearbox) are frequency-controlled to manage rate and speeds.

Furthermore, the electrical scope includes the physical components necessary for distribution and isolation, such as Junction Boxes and Isolators and services covering.

- HMI
  - Type: Touch Screen HMI
  - Display Size: 12 Inch (Minimum)
  - Mounting: Panel mounting type
  - Communication: Ethernet / RS-485 / Modbus (as required for system integration)
  - Power Supply: 24V DC
  - Protection: Minimum IP65 (Front)
  - Make: Siemens / Schneider / ABB equivalent approved make
  - Quantity: 1 Nos

- Engineering, Operator, MIS PC
  - Processor: Intel i7, Latest Generation
  - RAM: 32 GB DDR4
  - Primary Storage: 512 GB SSD
  - Secondary Storage: 1 TB SATA HDD
  - Monitor: 32-inch LED Monitor

- Operating System: Windows 11 Professional (Licensed)
- Ports: Minimum 2 Ethernet ports, USB 3.0 ports
- Quantity: 1 Nos

- Junction Box
  - MOC: SS 304
  - Door Thickness: 2 mm
  - Body Thickness: 1.6 mm
  - Construction: Dust and vermin proof
  - Stiffener required to prevent warpage
  - Gasket: Neoprene gasket for proper sealing
  - Protection: Minimum IP65
  - Quantity: 1 Lot

- Isolator
  - MOC: SS 304
  - Start, Stop, Emergency Push button
  - Plug Socket
  - Protection: IP65 or higher
  - Mounting: Suitable for process area
  - Quantity: 1 Lot

- VFD
  - Type: Variable Frequency Drive (Industrial Grade)
  - Features:
  - Built-in Choke
  - Built-in EMC Filter
  - Input Choke: 3% Impedance to be provided in power feeding line
  - Communication: Ethernet / Profinet / Modbus (as required)
  - Protection: Suitable for plant environment
  - Quantity: 1 Lot

- PLC
  - Type: High-End PLC
  - Configuration:
  - Suitable for integration with other OEM panels
  - Compatible with Central Plant Automation System
  - Spare Capacity After Commissioning:
  - 20% Spare Memory
  - 20% Spare Tags / Screens
  - 10% Spare PLC I/O
  - Lifecycle Requirement:
  - Latest Configuration

- Not in End-of-Life phase by OEM
- Communication: Ethernet-based industrial communication
- Quantity: 1 Nos

- PLC Panel
  - Make: Rittal / Hoffman / European
  - Enclosure: MS Enclosure
  - Front: Glass Window
  - Glass Beading: V-Groove Type
  - Protection: Minimum IP54 (For Indoor) & IP66 (for Outdoor)
  - Internal Wiring: Ferruled and labelled
  - Space: Adequate for future expansion
  - Quantity: 1 Lot

- MCC (Motor Control Center) (Non-compartmentalized).
  - MCC shall be non-compartmentalized, free-standing, extensible type and suitable for indoor installation with minimum IP44 protection.
  - Panels and bus duct shall be supplied in convenient shipping sections (max. shipping length 2500 mm). Final assembly, alignment, interconnection of bus bars, wiring and erection shall be in Bidder's scope.
  - Foundation channels shall be grouted in flooring. Panels shall be properly aligned, leveled and bolted/tack welded as per Engineer-in-charge instructions.
  - Earth bus shall be continuous throughout the MCC length.
  - Bus duct between transformer and switchgear shall be properly supported. Wall openings shall be sealed to prevent rainwater ingress. Expansion joints/flexible connections shall be installed as per manufacturer recommendation.
  - All switchboards shall be dust and vermin proof. Any openings shall be sealed without extra cost.
  - Cable gland plates (top/bottom) shall be drilled and glands fixed by the Bidder. Base/gland plate thickness shall be 2.5 mm.
  - Switchboard structure shall be fabricated from pressed CRCA steel sections (minimum 14 SWG). Partition plates and doors may be 16 SWG.
  - Doors shall be hinged type; bus bar and cable alley covers shall be bolted type. Durable gaskets shall be provided on all doors/openings.

- MCC shall have integral base frame and provision for extension on both sides. Bus bars shall be drilled for future extension.
- Total panel height shall not exceed 2300 mm. Operating handle/push button height shall be between 300 mm and 1900 mm from panel bottom.
- Space heaters with thermostat, toggle switch and fuses shall be provided in each cable alley.
- All hardware shall be corrosion resistant. Fasteners shall be zinc passivated/cadmium plated high tensile steel with anti-loosening arrangement.
- Loosely supplied relays/instruments shall be mounted and wired by Bidder. Draw-out breaker contacts shall be checked for alignment and interchangeability.
- Overload relay/timer ratings shall be verified as per actual motor load. Replacement (if required) shall be done without additional labour cost.
- Supporting arrangements for proper dressing of power and control cables shall be provided in cable alleys.
- Lifting hooks shall be provided and shall not leave any opening after removal.

BUSBAR

- Main busbars shall be made of high conductivity Electrolytic Grade Copper with a current density (ampacity) of 1.2 Amp per sq. mm.
- Busbar sizing shall be designed considering minimum 20% additional load margin for future expansion.
- Busbars shall be adequately supported with SMC/DMC insulated supports to withstand short circuit stresses.
- Aluminium earthing busbar of size 50 mm x 6 mm shall be provided continuously throughout the panel length.
- Busbars shall be colour coded and insulated with heat shrink sleeves.
- Joints shall be properly tinned/treated and tightened with high tensile bolts and spring washers.

- Programming of Automation system
  - Scope shall include complete programming of PLC/HMI/ SCADA system as per approved P&ID and functional description.
  - Development of control logic, interlocks, alarms, trips and safety sequences.

- Creation of HMI/SCADA screens including mimic diagrams, alarm screens, trend screens and report generation.
- Integration with OEM panels and Central Plant Automation System.
- Testing, simulation and validation of complete program prior to commissioning.
- On-site commissioning support and fine tuning.
- Submission of final backup including PLC program, HMI application and SCADA database in soft copy.
- Quantity: 1 Job

Quantity: 1 Job

6. **Service:**

6.1. **ITC, acceptance, Training & AMC:**

6.1.1. **Installation, Testing, Commissioning, acceptance & Training:**

Design Qualification (DQ)

Design qualification (DQ) for the complete system with all its components, is to be prepared by bidder and submitted to purchaser for approval. DQ document should comprise of Detailed Design Calculations, Equipment GA drawing, instrumentation details and detailed P&ID etc. Design code for all fabricated items needs to be mentioned in the documents as per applicable standards.

Quality Assurance Plan (QAP) which includes material inspection, testing, Fabrication shall be submitted to purchaser for approval

Installation Qualification (IQ)

Installation Qualification shall include the following activities:

- Preparation of IQ protocol (which includes correct component selection, installation as per OEM, connection of all connected utilities, use of approved skilled manpower, approved quality consumables, compliance to BEP and statutory requirements) shall be done by Bidder and submitted for approval.
- After completion of installation, the successful Bidder shall check /verify whether installation of each and every component of the plant is as per approved layout, P& ID drawings and as per order specifications.
- The scope also includes the successful Bidder shall tag mark / neatly type lettering Name of equipment, capacity, direction flow, etc on major component, piping.

Operational Qualification (OQ)

The successful Bidder shall submit OQ & PQ documents, after approval of DQ & IQ documents, as per approved protocol.
OQ document should log/ record data during initial operations for the following:

- Duty/ capacity range (with Max & min)
- Operating conditions (ambient /room condition)
- Inlet & outlet product flow conditions.
- Safety checks

Performance Qualification (PQ)

After the system has been stabilized, the successful bidder shall measure / record actual performance parameters for all equipment, as indicated in the OQ. PQ should conform to the intended system performance as per order/ design (with necessary calculations if any). The test readings in general shall be taken by the supplier in the presence of client & purchaser representative.

All report formats (protocol) and acceptance criteria should be approved by purchaser & client adequately in advance of starting test. All instruments should be calibrated and certificate copy should be attached with reports.

PROJECT MANAGEMENT

Time Schedule

The project execution shall be time-bound as per the mutually agreed time schedule which would not exceed date mentioned in 'DELIVERY & TIMELINE'

The Project Manager will provide the Purchaser's Project in charge with monthly progress reports which clearly indicate the actual Vs. planned progress and the new likely completion dates of supply, erection, commissioning and performance trials.

The project staffing pattern shall be submitted with the offer and should include sufficient personnel to meet the execution time schedule.

Management Team

A competent execution team shall be deputed at site and shall be headed by a Project Manager who shall be adequately experienced in Project Management of such magnitude and type. The Project Manager shall avail of assistance from reputed experts in various fields who shall be directly responsible for satisfactory execution.

The Project Manager shall be responsible for overall implementation of the entire project, from commencement to the final takeover of the plant. Services of a Project Engineer shall be ensured for the day to day operations and co-ordination to ensure successful and satisfactory design, procurement, manufacture, inspection, erection, testing &

commissioning of all the equipment/ facilities/ systems within the time-bound schedule.

The Project Manager and Project Engineer shall attend all technical and review meetings between various parties involved in the project and ensure implementation of all decisions taken in the meetings.

The Project Manager shall be responsible for detailed material accounting at site and management of the store maintained at site.

The Purchaser shall nominate a Project In-charge with whom the bidder shall generally communicate/co-ordinate.

The bidder has to fully authorize the Project Manager to take on-the-spot decision with regard to :

- Modification in layout and execution plan to suit local conditions.
- To purchase essential materials from local market to avoid delays.

For smooth execution of the project, a team of Project Manager and Key Personnel shall remain consistent throughout the execution period.

After satisfactory erection and testing, competent commissioning team shall be deputed to establish the performance parameters for a specific period.

Approvals

Bidder shall submit the technical documents and drawings within agreed time schedule. Approval on technical documentation (with or without specified amendments) shall be taken by Purchaser after submission. The amendments which are not in the original scope of work or due to changes in concept, shall be taken up by the bidder as per mutually agreed rates to be decided before execution, and shall be binding on the bidder.

Bidder shall obtain approval for purchase of specific makes of equipment whose makes are not mentioned in his offer. All the detailed design calculations regarding the selection of equipment sizes, System types, etc. shall be submitted to Purchaser for their specific observation and record.

Inspection

The Bidder shall submit the Inspection and Test Plan for complete system for Purchaser's approval. The purpose of this document is to provide guidelines and agreement on the Quality Control activities and inspection clearances of fabricated equipment, materials and bought out equipment being supplied by bidder.

The bidder shall invite Purchaser for inspection and preliminary testing as per approved Inspection and Test Plan. The inspection may be required at various stages of manufacture/assembly for some items. However, for imported items where the inspection has to be done abroad, the bidder shall do the inspection at his cost and submit the necessary test certificate.

Installation:

It includes unloading, shifting, positioning, installation, interconnecting pipework of Equipments on foundation covering both mechanical and electrical, according to the agreed layout by the bidders qualified representative.

Start-up assistance, Testing, Commissioning, acceptance & Training:

The scope of this service includes the testing, commissioning, acceptance and running product trials to confirm performance parameters, with the project goal set to commence product trials and service load trials.

Training

Training shall be undertaken by the bidder. The bidder would train all levels of staff of the client in operating the plant including managers, engineers, supervisors, operators and maintenance personnel.

Training would be given both at site and the manufacturer's works and a schedule should be proposed by the bidder, together with the content of training programme, their duration and venue.

Training should commence during the erection and commissioning period as follows:

- During erection

Exposure to the working and construction of the various equipment comprising the various systems of the plant, including instrumentation and controls.

- During commissioning
  Exposure to and training on the operations and maintenance of the various equipment in the plant including the testing, calibration setting of instruments both local and panel mounted.

Familiarization with start up procedures, management operations, basic principles of controls, control during operation and adjustments, fault finding and including operation and maintenance on control system and maintenance of the plant

Training on safety aspects, service and machine guidelines, operator trouble shooting guidelines for operation and maintenance staff

6.1.2. **Service Cover: (4 Visits per annum)**

The Bidder representatives (technical and skilled engineer) shall attend the project for continuous five working days in each quarter throughout one year after commissioning, product trial and acceptance of the plant. These visits shall cover meetings, training, equipment adjustment, & servicing. These visits shall not cover guarantee work, which shall be undertaken separately**.**

The objectives of service covers are intended to ensure that the efficiency of the plant is maintained at the optimum level and

- To help improve operating and maintenance procedures.
- To keep the plant adjusted for optimum energy efficiency, product quality and minimum product losses.
- To arrange for service visits by specialists to inspect, service and carry out reports.
- To carry-out and audit of plant operating efficiency at regular intervals.

Note :

- The no. of skilled technical engineer deployed shall be decided by the bidder, and all expenses during visit shall be borne by bidder.

- The inclusion of this item is subject to confirmation during the detailed process review and may be excluded from the final scope.

6.1.3. **Non-Comprehensive AMC (minimum 4 Visits per annum & unlimited breakdown after warranty period) for 2 year (optional):**

The Bidder representatives (technical and skilled engineer) shall attend the project for continuous five working days in each quarter throughout two year after warranty period. These visits shall cover meetings, training, equipment adjustment, & servicing. These visits shall not cover guarantee work, which shall be undertaken separately**.**

The objectives of these visits are intended to ensure that the efficiency of the plant is maintained at the optimum level and

- To help improve operating and maintenance procedures.
- To keep the plant adjusted for optimum energy efficiency, product quality and minimum product losses.
- To arrange for service visits by specialists to inspect, service and carry out reports.
- To carry-out and audit of plant operating efficiency at regular intervals.
- In case of any breakdown except above mentioned 4 visits, bidder to plan visit on emergency basis upon intimation from purchaser during the whole AMC period

Note :

- The no. of skilled technical engineer deployed shall be decided by the bidder, and all expenses during visit shall be borne by bidder.

- The inclusion of this item is subject to confirmation during the detailed process review and may be excluded from the final scope.

- The cost of this item is excluded of tender estimate.

6.1.4. **Comprehensive AMC (minimum 4 Visits per annum & unlimited breakdown after warranty period) for 2 year (optional):**

The Bidder representatives (technical and skilled engineer) shall attend the project for continuous five working days in each quarter throughout two year after warranty period. These visits shall cover meetings, training, equipment adjustment, & servicing. These visits shall not cover guarantee work, which shall be undertaken separately**.**

The objectives of these visits are intended to ensure that the efficiency of the plant is maintained at the optimum level and

- To help improve operating and maintenance procedures.

- To keep the plant adjusted for optimum energy efficiency, product quality and minimum product losses.
- To arrange for service visits by specialists to inspect, service and carry out reports.
- To carry-out and audit of plant operating efficiency at regular intervals.
- In case of any breakdown except above mentioned 4 visits, bidder to plan visit on emergency basis upon intimation from purchaser during the whole AMC period
- Any Parts required for preventive maintenance and in breakdown is in scope of bidder, and no additional charges to be payable for visit charges in case of part replacement.

Note :

- The no. of skilled technical engineer deployed shall be decided by the bidder, and all expenses including parts during visit shall be borne by bidder.

- The inclusion of this item is subject to confirmation during the detailed process review and may be excluded from the final scope.

- The cost of this item is excluded of tender estimate.

APPROVED MAKES

The table below specifies the preferred approved makes of major equipment/ accessories. Where more than one makes are considered for an item OR no make is mentioned in the bid/order, bidder shall obtain prior written approval of Purchaser before commencing the manufacturing/placing an order on bidder as the case may be. However, as regards to the ultimate makes to be supplied to these projects, makes shall be finalized in consultation with the purchaser.

Technical Details Serial No.	Material Description	Preferred Make
1.1.1	Fuel Receiving System	Boiler OEM-Approved Makes
1.2.1	Fuel Conveying System	Geared Motor / Gear Box : PBL / POWER MASTER / ELECON / RADICON/ SHANTIGEAR / IC BAUER / BONFIG LOLI / EURO DRIVES
1.3.1	Crusher	Boiler OEM-Approved Makes
1.3.2	Vibrating Screen	Boiler OEM-Approved Makes
1.3.3	Transfer Conveyor	Boiler OEM-Approved Makes
1.4.1	Bucket Elevator	Boiler OEM-Approved Makes
1.4.2	Transfer Conveyor	Boiler OEM-Approved Makes
1.5.1	Storage Unit	Boiler OEM-Approved Makes
1.5.2	Transfer Conveyor	Boiler OEM-Approved Makes
1.6.1	Fuel Feeding System	Boiler OEM-Approved Makes
2.1.1	Hybrid water-cum-smoke tube Boiler	Reputed Indian OEM
3.1.1	Pressurized Economizer	Boiler OEM-Approved Makes
3.1.2	Air Preheater	Boiler OEM-Approved Makes
3.2.1	Blow–Down Heat Recovery System	Boiler OEM-Approved Makes
4.1.1	Electrostatic Precipitator (ESP)	Boiler OEM-Approved Makes
4.1.2	Mechanical Dust Collector (MDC)	Boiler OEM-Approved Makes
4.1.3	Bag Filter (Pulse-Jet Type)	Boiler OEM-Approved Makes
4.1.4	Wet Scrubber	Boiler OEM-Approved Makes
4.1.5	Chimney	Boiler OEM-Approved Makes
4.2.1	Continuous Emission Monitoring System	EMERSON/ BHOOMI INSTRUMENTS
5.1.1	Forced Draft (FD) Fan	NADI / LAXMI / OEM
5.1.2	Induced Draft (ID) Fan	NADI / LAXMI / OEM
5.1.3	Secondary Air (SA) Fan	NADI / LAXMI / OEM
5.2.1	Pressurized de-aerator cum	Pumps:

	feedwater storage System	GRUNDFOS / WILO / EBARA
5.2.2	Low Pressure (LP) Dosing System	Metering Dosing Pumps: GRUNFOS/ DOSMATIC / SWELORE
5.3.1	Platforms, Frames, Supports, Stacks, Rails	STRUCTURAL STEEL: TATA, SAIL, JINDAL, RINL, IISCO
5.3.2	Instruments/controls/accessories	as mentioned below
5.3.3	Spare for 2-year operation	Equipment OEM-Approved Make
Sub-components of above's -	ELECTRIC MOTORS	BHARAT BIJLEE / SIEMENS / ABB / KIRLOSKAR / CG
	HP / LP STEAM / CONDENSATE VALVES	FORBES MARSHALL / SPIRAX SARCO / UKL
	BLOW DOWN VALVES	LEVCON / SHARP / LEADER / SPIRAX SARCO / UKL / FORBES MARSHALL
	WATER / AIR VALVES (BUTTERFLY / BALL)	SAUNDERS / AUDCO / INTERVALVE / BDK
	STEAM TRAPS & STRAINERS	FORBES MARSHALL / SPIRAX SARCO / UKL / ARMSTRONG
	NON-RETURN VALVES	AUDCO / SPIRAX SARCO/ UKL / FORBES MARSHALL / ARMSTRONG
	NON-RETURN VALVE FOR WATER (WAFER TYPE)	AUDCO / INTERVALVE / BDK / FORBES MARSHALL / UKL
	NON-RETURN VALVE FOR AIR LINE	INTERVALVE / AUDCO/ BDK
	AUTO DRAIN VALVE	ULTRA FILTER / ZANDER
	STEAM CONTROL VALVE	FORBES MARSHALL / SPIRAX SARCO / UKL
	STEAM PRESSURE REDUCING VALVES	FORBES MARSHALL / SPIRAX SARCO / UKL
	STEAM PRESSURE REDUCING STATION	FORBES MARSHALL / SPIRAX SARCO / UKL / ARMSTRONG
	STEAM / WATER FLOW METER	E & H / ROSEMOUNT / FORBES MARSHALL
	STEAM RELIEF VALVE	SEMPELL / LEADER / FAINGER LASER / TYCO
	AUTOMATIC WATER LEVEL CONTROLLER / MOBREY	MALHOTRA / ENGINEERING DEVICES / KDG MOBREY(UK) / LEVCON
	CONDUCTIVITY & PH TRANSMITTER	E&H / EMERSON / YOKAGAWA
	AIR LINES ACCESSORIES	SHAVO NORGEN / FESTO / AIRMATIC / LEGRIS / NUCON
	PRESSURE SWITCH / TEMP.	DANFOSS / ALCO / HANSEN /

	SWITCH	PARKER / E & H / EMERSON / ENDERSON NEGELE / IFM
	PRESSURE SWITCHES	DANFOSS / ALCO / HANSEN / PARKER / E&H/ SWITZER / PYROTECH / ALTOP / GIC/ WIKA / INDFOSS
	PRESSURE & TEMP. GAUGE	FIEBIG / H GURE / WAAREE / WIKA / PRICOL
	PRESSURE GAUGES	FORBES MARSHALL / H GURU / FIEBIG / GLUCK / WIKA / BUMMER
	MANOMETER	TECHNOFLOW / FORBES MARSHALL
	LEVEL TRANSMITTER & INDICATOR	E & H/ EMERSON / ANDERSON NEGELE
	WATER LEVEL INDICATOR WITH DRAIN COCK	TELEFLO / SHARP / LEADER / HAWA / FORBES / MH BROS / WAREE INSTRUMENTS / TECHTROL / LEVCON
	TEMP. DIGITAL INDICATORS	E & H / EMERSON / RADIX / ENDERSON NEGELE / IFM / SICK / YOKOGAWA / HONEYWELL
	TEMPERATURE SENSORS AND DIGITAL INDICATORS/ CONTROLLERS/ RECORDERS	YOKOGAWA/ TATA HONEYWELL/ RADIX/ PYROTECH/ CHINO/ ENDRESS + HAUSER / NUTECH / GIC/ ALTOP INDUSTRIES
	TEMPERATURE SENSORS / DIGITAL INDICATOR / CONTROLLER / RECORDER	YOKOGAWA / CHINO / TATA HONEYWELL / RADIX / PYROTECH / E & H / MASIBUS
	DIAL TYPE THERMOMETERS	FORBES MARSHALL / H GURU / FIEBIG / GLUCK
	MS PIPES STEAM & CONDENSATE	TATA / JINDAL / KALYANI / MST / ISMT
	GI PIPES FOR AIR	TATA / JINDAL / KALYANI / MST / ISMT
	GI PIPES FOR WATER	TATA / MST / JINDAL
	STRUCTURAL STEEL	TATA, SAIL, JINDAL, RINL, IISCO
	RESIN BONDED MINERAL WOOL	LLOYD / UP TWIGA / MINWOOL / ROCKWOOL
5.4.1.	Electrical Control Equipment	
	Panel Manufacturer	CPRI Approved
	VFD	SIEMENS / ALLEN BRADLEY / DANFOSS / SCHNEIDER / LK (Formerly L&T) / ABB
	ELECTRONIC SOFT STARTER	DANFOSS /SIEMENS / ALLEN BRADLEY / ABB / SCHNEIDER / LK

		(Formerly L&T)
	CURRENT TRANSFORMER	KAPPA / AE / NEWTEK / L&T / PRECISE / RISHABH / ELMEX
	POTENTIAL TRANSFORMER	KAPPA / AE / NEWTEK / L&T / PRECISE / RISHABH / ELMEX
	INTELLIGENT MOTOR PROTECTION RELAY	SIEMENS / ABB / SCHNEIDER
	STARTER OVERLOAD RELAYS	ABB / SIEMENS / SCHNEIDER / LK
	APFCR RELAY	SIEMENS / TDK India Pvt Ltd. (TIPL) / LK (Formerly L&T) / ABB / SCHNEIDER / C&S
	VOLTAGE / CURRENT / ENERGY / POWER FACTOR TRANSDUCER	RISHABH / ENERCON
	POWER CAPACITORS	SIEMENS/SCHNEIDER/ TDK India Pvt Ltd. (TIPL)/ LK (Formerly L&T)/ABB/C&
	MULTI-FUNCTION METER	ALLEN BRADLEY / SIEMENS / ABB / LK (Formerly L&T) / SCHNEIDER/ SECURE
	DIGITAL & ANALOG AMMETER & VOLTMETER	RISHABH/ LK (Formerly L&T)/ SCHNEIDER/ SIEMENS/ABB/SECURE / HPL SOCOMEC / MECO
	ACB, MCCB, MPCB, Contactors, MCB	LK (Formerly L&T) / SIEMENS / SCHNEIDER / ABB
	HRC FUSES	LK (Formerly L&T)/ SIEMENS / EE / GE/C&S/EATON BUSSMAN
	INDICATING LAMPS	LK (Formerly L&T) / SIEMENS / SCHNEIDER / VAISHNO / TEKNIC / ABB / C&S
	TIMERS (ELECTRONIC)	LK/ SIEMENS / ABB / SCHNEIDER/C&S
	SWITCH DIS- CONNECTER FUSE UNITS	L&T / SIEMENS / ABB / SCHNEIDER / C&S
	PUSH BUTTONS	ESBEE / SIEMENS / ABB / VAISHNO / TEKNIC / LK (Formerly L&T) / SCHNEIDER/ C&S
	ISOLATING SWITCHES	SIEMENS / L&T / ABB / SCHNEIDER
	ROTARY SELECTOR SWITCH	KAYCEE / SALZER – L&T / SIEMENS / ABB
	Plug & Socket	LEGRAND / CLIPSAL / BCH / SCHNEIDER/ HAGER / ANCHOR / C&S / HENSEL / PCE / MENNEKES

	UPS	EMERSON/HI-REL/DELECTRONICS/ SOCOMEC / NUMERIC/ REILO/ SCHNEIDER / VERTIV
	SMF BATTERY	AMCO / EXIDE / AMARA RAJA
	PC (PERSONAL COMPUTER)	COMPAQ / HEWLETT- PACKARD / IBM LENEVO / DELL / ACER / HCL / WIPRO
	PLC / DCS SYSTEM	SIEMENS / ALLEN BRADLEY
	Network Printer	HP/Cannon
	Ethernet Switches Unmanaged	Phoenix/Rockwell/Siemens
	Ethernet Switches managed	Cisco/Siemens/ Rockwell/Phoenix
	LT XLPE POWER CABLES, Control Cable	KEC (RPG) / FINOLEX / RR KABEL / POLYCAB/ SBEE /UNIVERSAL / APAR
	Steel braided Power & Control Cable	LAPP/SBEE/RR
	SIGNAL & INSTRUMENT CABLE	LAPP KABEL / FINOLEX / POLYCAB / RR KABEL / ERMOPAD/SBEE
	CABLE GLANDS	COMET / DOWELS / LAPP KABEL / BRAVO
	CABLE LUGS	DOWELS / COMET / LAPP KABEL
	CABLE TRAY	INDIANA / MEK / PILCO / ELCON / METALICA PRESSINGS / POWER CONTROLS
	IP 55 BOXES FOR MOTOR ISOLATORS, PUSH BUTTONS, JUNCTION BOXES ETC.	HENSEL / RITTAL / R STAHL/ PCE / MENNEKES/ HANSU
	TERMINAL BLOCKS	WAGO / LAPP INDIA / CONNECT WELL / ELMEX / PHOENIX

Note: While execution, choice of make would be made from the preferred list. Makes and model shall be approved by the purchaser expeditiously.

E. DETAILS NEED TO BE FURNISH BY BIDDER

Blank Details mentioned below shall be filled by Bidder while bidding:

Sr. No	Description	Value	UOM
	Product Details		
1	Fuel – Variety		
2	Fuel - Size Range		
3	Fuel - Input/Feed Rate		
4	Fuel - GCV / HHV		
5	Fuel - Moisture Content		
6	Fuel - Ash Content		
7	Fuel - Volatile Matter		
8	Fuel - Fixed Carbon		
9	Fuel - Sulfur Content		
10	Fuel - Bulk Density		
11	Loss - Dry Flue Gas (Sensible heat lost to stack)		
12	Loss - Moisture in Fuel (Evaporation loss)		
13	Efficiency - Guaranteed Boiler Efficiency (at 100% Maximum Continuous Rating)		
14	Efficiency - Part Load Efficiency (at 75% load)		
15	Efficiency - Part Load Efficiency (at 50% load)		
16	Efficiency - Calculation Method as per submitted calculation (Direct/Input-Output or Indirect/Heat Loss Method)		
17	Efficiency - Heating Value Basis (GCV/HHV or NCV/LHV)		
18	Efficiency - Combustion Efficiency (Effectiveness of fuel burnout on the grate/in furnace)		
19	Efficiency - Thermal Efficiency (Heat absorbed by water/steam vs. heat supplied)		
20	Efficiency - Fuel-to-Steam Efficiency (Overall energy out vs. energy in		
21	Combustion - Excess Air Percentage		
22	Combustion - Flue Gas Exit Temperature		
23	Combustion - Furnace Volumetric Heat Release Rate		
24	Combustion - Grate Heat Release Rate		
25	Grate - Effective Area (Dimensions)		
26	Grate - Grate Travel Speed / Reciprocating Stroke Rate		
27	Steam Output - Type		
28	Steam Output - Net Capacity		
29	Steam Output - Operating Pressure		
30	Steam Output - Operating Temperature (°C)		
31	Steam Output - Steam Purity / Dryness Fraction		

	Utility Characteristic & Consumption Details (Process/Equipment Wise)		
32	Power		
33	Compressed Air		
34	Feed Water		
	Consumable Materials Details		
35	Fuel		
	Process Parameters Details (Equipment Wise)		
36	Equipment Type / Model		
37	Equipment Size/Capacity/Rating		
38	Equipment OEM / Make		
39	Equipment Design Code		
40	Equipment Input Parameters		
41	Equipment Output Parameters		
42	Equipment MOC / Thickness		
43	Equipment Connections Size		
44	Equipment Compliance		
45	Equipment Certificate		
46	Equipment Dimension (L x W x H)		
47	Equipment Weight		
48	Equipment Foundation Details		

F. BATTERY LIMIT

Description	Purchaser's Scope	Bidder's Scope
Civil works	Necessary foundations/floor for equipment based on the details provided by the bidder	Supply of necessary foundation bolts, nuts along with the template, sub base, and all other associated erection materials
Installation	-	Unloading, shifting, positioning, installation, interconnecting pipework of Equipments on foundation covering both mechanical and electrical.
Utilities & Piping	Compressed Air, Raw/Soft/RO water	Interconnecting piping/ducting/platforms etc of the supplied Machinery. *Valves/instruments for Interconnection at side of Machine.*
Drain lines	-	All drains shall be taken outside the boiler house, preferably into the blow down pit
Permanent Power Supply	From LT Power Distribution Panel to at one point in boiler section	-
Fuel	Purchaser Scope	-
Consumables	-	Necessary consumables such as oils, lubricants, boil out chemical required for trial runs and commissioning.

G. PACKING

Bidder shall pack all the consignment in road worthy packaging strong enough to withstand rough handling during transit. Machine surface shall be suitably protected against scratches, corrosion, shocks, impact etc. Packages shall be suitably and distinctly identified for type of handling and kind of storage. The bidder shall take into consideration the 6-months' storage time, possibly in outdoor conditions, prior to final installation of the equipment. All Machines shall be fitted with engraved name plate containing pertinent details such as make, model, capacity, PO Ref, Tag No

H. PERFORMANCE TESTS AND GUARANTEES

Performance test:

The bidder is required to detail the documentation proposed for performance test of all major equipment. This shall detail the guaranteed v/s actual throughput or output or performance (as relevant) and the tolerance of accuracy. Also, the test methods proposed to demonstrates that these guarantees have been met:

Formats of Guarantees:

- Guarantees for throughput of various sections of plant
- Consumption and losses
- Service consumption

Formats for performance tests:

- Procedure for carrying out the tests
- Method of measurement
- Test durations
- Evaluation methodology

PERFORMANCE PARAMETERS AND TEST PROCEDURE

General test procedure

On completion of the commissioning trials shall be operated for establishing the guaranteed performance. The performance trials shall be for 15 days of continuous operation along with main Plant process plant. The successful bidder shall during the performance trials depute their competent engineers for continuously 15 days' time to monitor the performance and take corrective actions as per requirement for improving the operation and performance of the system so that they run at guaranteed efficiencies.

Performance trials shall be conducted for the following:

- Capacity
- Efficiency
- Heat losses
- Individual equipment performance

If shutdown occurs due to external Force Majeure reasons after 16 hrs of operation in any day, this shall be considered as a full day testing. If at less than 16 hrs of operation, the trials shall be continued for an additional full day.

Guarantee / Warranty

12 months from the date of successful commissioning, product trial & acceptance of the plant

I. DELIVERY & TIMELINE

For the complete plant (design, manufacturing, supply, installation, testing, and commissioning, acceptance), the project goal is to commence product trials and service load trials within 9 months from the date of the Letter of Intent (LOI)/Purchase Order (PO) whichever is earlier.