

उज्जैन सहकारी दुग्ध संघ मर्यादित,

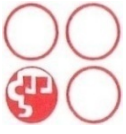
मक्सी रोड, उज्जैन (म.प्र.) 456 010

**SUPPLY, INSTALLATION AND COMMISSIONING OF 4
TPH (GAS+FURNACE OIL) DUEL FUEL BOILER AT DAIRY
PLANT UJJAIN ON TURN KEY BASIS**

ई-निविदा क्रमांक उ.दु.स./नस्ती क्रं. पी.ओ.33/यांत्रिकी/2020/4134 दिनांक: 13.10.2020

उज्जैन सहकारी दुग्ध संघ मर्यादित,
मक्सी रोड, उज्जैन (म.प्र.) 450010
फोन नं. 0734-2527071
ई-मेल: udsplant@yahoo.com

ई-निविदा प्रपत्र मूल्य:- रू. 1,000.00(रू. एक हजार मात्र)



उज्जैन सहकारी दुग्ध संघ मर्यादित

UJJAIN SAHAKARI DUGDH SANGH MARYADIT

Maksi Road P.B. No 106, UJJAIN - 456010, Madhya Pradesh

Phone : (0734) 2527071



E-mail: udsplant@yahoo.com

G.S.T. No. 23AAAAU0051C1ZB

क्रमांक: उ.दु.सं./यांत्रिकी/नस्ती क्र.पीओ33/2020/4134

दिनांक: 13.10.2020

E-Tender Notice (2nd Call)

SUPPLY, INSTALLATION AND COMMISSIONING OF 4 TPH (GAS+FURNACE OIL) DUEL FUEL BOILER AT DAIRY PLANT UJJAIN ON TURN KEY BASIS

Online tenders for following items are invited by Ujjain Sahakari Dugdh Sangh Maryadit, from reputed Manufacturers/Authorized suppliers/Channel Partners available on www.mptenders.gov.in. Details are available MPCDF's website www.mpcdf.gov.in :

| S. No. | Brief Description of the Work | Quantity | EMD. VALUE |
|--------|--|----------|--|
| 1. | SUPPLY, INSTALLATION AND COMMISSIONING OF 4 TPH (GAS + FURNACE OIL) DUEL FUEL BOILERS AT DAIRY PLANT UJJAIN ON TURN KEY BASIS. | 01 Nos. | Rs. 5,00,000.00 (Rupees Five Lakh Only) |

- Period of sale of Bidding documents : From 14-10-2020 up to 5.00 pm
- Closing date : Date 28-10-2020 Time 2:30 pm
- Pre Bid Meeting : Date 21-10-2020 Time 12.30 pm
- Last date & time for receipt of bids : Date 28-10-2020 Time 2.30 pm
- Time & Date of opening of bids : Date 29-10-2020 Time 3.00 pm
- Place of opening bids : Office of the Chief Executive Officer
Ujjain Sahakari Dugdh Sangh Maryadit
Maksi Road, Ujjain
- Cost of bid document : Rs. 1000 (Rs. One Thousand only)

Corrigendum/amendment if any to this publication would appear only on the above mentioned websites and will not be published elsewhere. The tender form may be obtained from the <http://mptenders.gov.in> by making online payment as applicable as online charges. Chief Executive Officer, Ujjain Sahakari Dugdh Sangh Maryadit, Ujjain reserves right to accept a tender in whole or in part or reject any or all the tenders, which in their opinion justify such actions, without further explanation to the bidders.

CHIEF EXECUTIVE OFFICER
Ujjain Sahakari Dugdh Sangh Maryadit

उज्जैन सहकारी दुग्ध संघ मर्यादित

INVITATION FOR BID (IFB)

| | | |
|--|---------|--|
| Bid Reference | | SUPPLY, INSTALLATION AND COMMISSIONING OF 4 TPH (GAS + FURNACE OIL) DUEL FUEL BOILERS AT DAIRY PLANT UJJAIN ON TURN KEY BASIS. |
| Time Completion Period | | 6 months from the date of L.O.I. |
| Bidding Document Sale | START | 14-10-2020 |
| | STOP | 28-10-2020 |
| Last Date & Time of Bid | | 28-10-2020 Time 2:30PM |
| | OPENING | 29-10-2020 Time 3:00PM |
| Pre-Bid Meeting | | 21-10-2020 |
| Place of Pre-Bid Meeting & Place of Tender Opening | | Office of the Chief Executive Officer, Ujjain Sahakari Dugdh Sangh, |
| Address for communication | | Office of the Chief Executive Officer, Ujjain Sahakari Dugdh Sangh, |
| EMD. VALUE (Rs.) | | Rs. 5,00,000.00 (Rupees Five Lakh Only) |
| Cost of bid document | | Rs. 1,000.00 (Rupees One Thousand Only) |
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| • Annexure-II | | Terms & Conditions |
| • Annexure-III | | Scope of work & Performance criteria |

ANNEXURE-I

INSTRUCTIONS TO BIDDERS

ONLINE TENDERS ARE INVITED FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF 4 TPH (GAS + FURNACE OIL) DUEL FUEL BOILERS AT DAIRY PLANT UJJAIN ON TURN KEY BASIS. FROM REPUTED MANUFACTURERS/ AUTHORIZED SUPPLIERS/CHANNEL PARTNERS.

1. The Tenderer are requested to go through the tender document's instructions and various terms and conditions contained in Annexure-I to II. It may be noted that no conditions or stipulations to the contrary or which are inconsistent will be accepted. Tenderer are requested to ensure that all such schedules along with questionnaire (duly filled-in), are submitted along with their offer. The Tenderer should also note that in absence of any of the schedules, their offer is likely to be rejected.
2. All the details to be filled online as per tender document format and tenderer should read all instructions for compliance before submitting his tender.
3. All tenders must be accompanied with EMD as specified in the tender document.
4. Tenders will be opened in the presence of Tenderers representatives who choose to attend on the specified date and time.
5. In the event of the date specified for tender document receipt and opening being declared as a closed holiday for purchaser's office, the due date for submission of tenders and opening of tenders will be the following working day at the appointed times.
6. The vendor will be responsible for complete civil work related to Boiler House ,Foundations for Boiler and its accessories as well as Support for Piping
7. Prospective bidder must send queries 3 days before Pre Bid Meeting. In Pre bid meeting only those issues will be entertained The bidder or his official representative is advised to attend a pre bid meeting which will be convened at the office of CEO USDSM Venue of the meeting: Office of the CEO, USDSM,
Date of Pre bid meeting: 21-10-2020
Time: 12.30 pm

ANNEXURE-II

Terms & Conditions

1. Eligibility Criteria for TENDERER

This tender is open for Registered and reputed manufacturer/Authorized suppliers/Channel partners who provide satisfactory evidence:

- a. Supplied/installed minimum 10 nos. of boilers in last five years, out of which At least 02 nos. of boilers installed in cooperative dairies
- b. Preference will be given to Indian manufacturer so that stage wise inspection of Equipment can be offered to check the quality of product.
- c. Preference will be given to the tenderer having Separate Spare & Service Dept in MP and having sufficient Number of service Engineers nearest to the dairy.

2. EARNEST MONEY

- 2.1. The supplier shall deposit the Earnest Money amount (EMD) of amount Rs. 5.00 Lakh (Rs. Five Lakh Only) only online on www.mptenders.gov.in.
- 2.2. In case, the supplier withdraws his offer during the validity period or after placement of order, the EMD amount shall be forfeited.
- 2.3. EMD shall be returned within 90 days to the un-successful Tenderer, as soon as possible, after the tender is decided and on execution of agreement with successful tenderer. No interest shall be paid on EMD amounts.

3. TAXES AND DUTIES

All taxes and duties should be included in the prices quoted. Any kind of taxes and duties shall not be paid extra. However, the breakup of taxes & duties must be indicated separately.

4. AMENDMENT IN SPECIFICATIONS

The Ujjain Sahakari Dugdh Sangh Maryadit Ujjain may revise or amend the specification and drawing, prior to the date notified for opening of Bid of tender. Such Corrigendum/amendment if any to this publication would appear only on the above mentioned websites and will not be published elsewhere. Bidders are advised to visit web site frequently to see Corrigendum/amendment if any

5. DELAYED/ LATE SUBMISSION OF TENDERS

The Ujjain Sahakari Dugdh Sangh Maryadit Ujjain shall not assume any responsibility for any postal delays either for the late receipt of documents. No Extension in time shall be granted on such grounds.

6. ALTERNATIVE TENDERS

Tender should be submitted as per intent of tender documents; any alternative offers are liable for rejection.

7. DOCUMENTS TO BE SUBMITTED WITH THE TENDER (MANDATORY)

- a. Copy of Registration Certificate of the Firm / Organization (Tenderer).
- b. Permanent Account Number (PAN) & GST registration
- c. Client list
- d. Completion/Performance certificates along with Purchase Order of Same Work last five year.
- e. Certificate/authorization letter from manufacturer.

8. ALTERATIONS/CORRECTIONS IN TENDERS

Any alteration/correction in the tender document should be counter-signed. Further, no post tender alteration/correction shall be entertained

9. INCOMPLETE TENDERS

Tender which is incomplete or obscure in any form is liable for rejection.

10. ACCEPTANCE OF PART/WHOLE TENDERS-RIGHTS THEREOF

Ujjain Sahakari Dugdh Sangha Maryadit reserves the right to accept/ reject wholly or partly any tender without assigning any reason whatsoever. The Ujjain Sahakari Dugdh Sangha Maryadit in this regard shall not entertain any correspondence.

11. AMBIGUITIES IN CONDITIONS OF TENDERS

In case of ambiguous or self-contradictory terms/conditions mentioned in the tender, interpretation as may be advantageous to the Ujjain Sahakari Dugdh Sangha Maryadit shall be taken without any reference to the tender.

12. DISQUALIFICATION OF TENDERS

Tender which gets opened before the due date as a result of improper or no indication having been given on the cover to indicate that it is a tender, will be disqualified.

Tenderer will not be permitted to change the substance of his tender on post interpretation/improper understanding grounds. This includes post tender price changes/modifications etc. after opening of Price Bid. In such events, otherwise, that is, when a supplier does not comply, tender will be rejected.

13. DEVIATIONS FROM TERMS & CONDITIONS

Offers with deviations in the terms of payment, liquidated damages, EMD and performance guarantee are liable to be rejected out rightly.

14. SUBMISSION & OPENING OF E.M.D. & TECHNICAL BID

Bidder has to submit on line EMD receipt, Technical bid form, required documents to prove eligibility as per point no.-1 and documents as per point no.-7 .And also submit the hard copy of these documents before on line opening of tender.

Hard copy of Price bid not required, bidder has to submit Price bid only online.

The concerned tender committee of USDS shall first open the Technical Bid of all the Tenderer and verify the Earnest Money Deposit and Technical Bid submitted by the Tenderer. In case, the requirements are incomplete in EMD and Technical Bid. Tender shall be rejected of Tenderer. After technical clearance of the bid by tender committee, price bid will be opened.

15. VALIDITY OF TENDERS

The offers shall be valid for 90 days. Validity of the offer shall be counted from the date of opening of tenders. Those who do not agree for a validity of 90 days will do so at their own risk and their offers are liable to be rejected.

16. AUTHORISATION/LOCAL REPRESENTATIVE

Only authorized representative, possessing necessary authority letter from the supplier who have participated in the tender shall be allowed to attend the tender opening.

17. ACCEPTANCE OF TENDER

- a. Ujjain Sahakari Dugdh Sangh Maryadit may reject any or all tenders or to accept any tender considering advantageous to Ujjain Sahakari Dugdh Sangh Maryadit Whether it is the lowest offer or not.
- b. Ujjain Sahakari Dugdh Sangh Maryadit may split the quantities against the tender on more than one supplier for the same item. The Ujjain Sahakari Dugdh Sangh Maryadit shall assign no reasons for this and the same will be binding on the Tenderer.

18. PAYMENT TERMS:

- a. 30% advance with purchase/work order.
- b. 40% against the safe receipt of material at site.
- c. 20% after Installation, Commissioning and successful trial run of supplied equipment.
- d. 10% after submission of performance bank guarantee of 10% of total project cost with validity not less than one year from date of commissioning. This payment will be processed after submission of Invoices, Delivery challans by supplier.

19. PRICES AND STATUTORY LEVIES

- (i) **The Tenderer should quote price F.O.R. Destination including Erection, Installation & Commissioning and trial run charges on turn Key basis.** However, Item wise or machine wise price break up of following elements may be indicated separately :-
 - (a) Unit Ex-works/Ex-Godown rate including packing and forwarding.
 - (b) Including GST Tax
 - (c) Including Freight charges
 - (d) Any other levy/taxes.
- (e) No revision on any account shall be allowed during execution of the order.
- (ii) Prices offered by the tenderer should be firm and free from all escalations. The prices offered should be valid at least for a period of 90 days from the date of tender opening. Rate approval shall be communicated within 30 days from the date of tender opening.
- (iii) The Material to be supplied shall be dispatched to site by Road transport under intimation to the purchaser and consignee. Depending upon the type of material, the supplier shall have to carry out proper packing/crating to avoid damage/breakage during transit. Road permit for dispatch of material if required will be sent by USDS on written request from supplier.
After rate approval, the party shall have to execute an agreement on a non-judicial stamp paper worth Rs. 1000/- to be executed with Ujjain Sahakari Dugdh Sangh Maryadit, Ujjain.

20. TRANSIT RISK

- a. Responsibility regarding covering of risks during transit of material shall entirely be on the supplier. The UJJAIN SAHAKARI DUGDH SANGHA MARYADIT, UJJAIN-. shall, in any case, not bear the transit risks/ transit insurance charges.
- b. Insurance shall be arranged by the supplier.

21. SUBMISSION OF DRAWING AND LITERATURE

All the relevant drawings, layouts shall be submitted along with supply of machines. One set of drawing, Descriptive Literature and instructions Manual for Erection, Commissioning and maintenance of the equipments ordered, shall be supplied.

22. DELIVERY

Supply, Erection, Installation & Commissioning shall be commenced within 6 months (including rainy season) from the date of receipt and acceptance confirmation of order or from the date of contract agreement whichever is applicable. In case of any delay due to assembling or any other technical reasons, supplier will have to communicate in advance in written to the CEO, Ujjain Sahakari Dugdh Sangh Maryadit, Ujjain.

23. FORCE MAJEURE

Force majeure condition is herein defined as:-

- (a) Natural phenomena, such as floods, draughts, earth-quakes and epidemics.
- (b) Act of any Government Authority, domestic or foreign, such as war, quarantines, embargoes, licensing control or production or distribution restrictions.
- (c) Accident and disruptions such as fires, explosions, increase in power cut with respect to date of tender opening, break-down of essential machinery or equipments etc.
- (d) Strikes slow down, lockouts continuing for more than three (3) weeks.
- (e) Failure or delay in the supplier's source of supply due to force majeure causes enumerated at (a) to (d) above, provided the supplier produces documentary evidence to show that there were no other alternative sources of supply available to him or if available, the lead time required was likely to be longer than the duration of the Force Majeure at the normal source of supply.
- (f) Any cause which is beyond the reasonable control of the supplier or purchaser as the case may be.
All the provisions of this clause shall apply whether the disrupting cause is total or partial in its effect upon the ability of the supplier to perform.

24. The original bills should be forwarded to the paying authority and should be marked "ORIGINAL". The bill should indicate GST Registration Number and date allotted to him under GST act..

25. The invoice in triplicate with relevant documents such as Material Receipt in good condition etc. should be submitted to UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN.

26. PERFORMANCE GUARANTEE

- a. If during the course of 18 months subsequent to the date of receipt of consignment or 12 months from the date of commissioning whichever is earlier (wherever applicable) any of the goods found to be defective in materials or workmanship or develops defects during service, they will have to be replaced by the supplier, free of all charges. All necessary arrangements on these accounts will be made by the supplier.
- b. The said material if required to be replaced, shall be collected by the supplier/ firm from Area Stores/ work site at their own cost and at their own responsibility. These materials will like-wise be returned duly repaired/ replaced and tested subsequently by the supplier to the destination indicated on "FREIGHT PAID BASIS" at their cost in a reasonable time of 30 days from the date of intimation. The guarantee period as stipulated in clause 32.1 above shall also be applicable for repaired/replaced material, which shall however be counted afresh from the date of its delivery in our stores/site.
- c. Further, it is clarified that all the charges towards supply of fabrication materials including packing, forwarding, loading, unloading shall be borne by the supplier. The amount deposited under security deposit clause shall also cover the performance guarantee of the material.

All equipment/ line materials reported failed within the specified guarantee period may be replaced free of cost by the supplier.

- d. Actual cost of dismantling and replacement of these equipments/ materials with the new ones may be charged to the supplier's account.
- e. To and fro transportation cost of such failed equipment may also be borne by the supplier/ supplier.
- f. In the event of the supplier's inability to adhere to the aforesaid provisions, suitable penal action will be taken, which may include blacklisting of the firm for future business with the UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN for a certain period

27. **COMPLETENESS OF EQUIPMENTS** The equipment/material shall be completed in every respect with all minor fittings and accessories, even though these may not be specifically mentioned in the purchaser's specifications or the tender's offer. The supplier shall not be

eligible for any extra price in respect of such minor fitting and accessories which can be considered as an essential part of the basic equipment even though not specifically mentioned in the specification or in the offer.

28. **LIQUIDATED DAMAGES;**

Delivery date are fixed for supply of material they shall be strictly adhered too. In case they are not followed, or in case of delay in execution or non-execution of the order, the Dugdha Sangh reserves the right either to cancel the order and make alternative purchases from other sources, at the risk and cost & expenses of the defaulting supplier. In case the supplies are not affected as per the schedules, the liquidated damages may be charged on the goods not so delivered as under: -

| Sl. No. | Duration of delay | Liquidated Damages |
|---------|-----------------------|----------------------------|
| 1. | Up to 15 days | 1% cost of the unit. |
| 2. | Between 16 to 30 days | 2% cost of the unit |
| 3. | Beyond 30 days | Up to 5% cost of the unit. |

29. **EXTENSION ORDER**

The UJJAIN SAHAKARI DUGDH SANGHA MARYADIT, UJJAIN Reserves right to place an extension order for any additional quantity to the extent of 100% quantity of the original order on the same rates, terms and conditions within six months from the date of order.

30. **RECOVERIES FOR LIABILITIES AGAINST OTHER CONTRACTS**

All amount recoverable from the successful Tenderer against earlier contracts including orders on sister concern with the UJJAIN SAHAKARI DUGDH SANGHA MARYADIT, UJJAIN will be adjusted from payment due against the contract that may be awarded under this specification.

31. **COMPLIANCE OF REGULATIONS**

The supplier should execute and deliver such documents, as may be needed, by the purchaser in evidence of compliance. All laws, Rules and Regulations are required to be incorporated in this reference. Any liability arising out of contravention of any of the laws shall be the sole responsibility of the supplier and the purchaser shall not be responsible in any manner whatsoever.

32. **CANCELLATION OF ORDER**

32.1 The UJJAIN SAHAKARI DUGDH SANGHA MARYADIT, UJJAIN May upon written notice of default, terminate contract in the circumstances detailed hereunder:-

- a. If in the opinion of the UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN the supplier fails to deliver the material within the time specified or during the period for which extension has been granted by the USDS.
- b. If in the opinion of the UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN the supplier fails to comply with any of the other provisions of this contract or material is found not in accordance with prescribed specifications and or the approved samples.
- c. As a result of stage inspection, if applicable, it is revealed that material and/ or, workmanship is substandard which is likely to affect the performance of the finished product, a notice would be served by the UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN to the supplier to suspend further activities and to take urgent steps towards corrective measures, failing which the entire order would be cancelled.

32.2 In the event of such termination, UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN shall exercise its discretionary power as:-

- a. To recover all the amount paid from the supplier the agreed liquidated damages.

OR

- b. To purchase from elsewhere after giving due notice to the supplier on account and at the risk of the supplier such stores/ material not so delivered or others of similar description in respect of consignment not yet delivered.

OR

- c. To cancel the contract reserving UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN right to recover damages.

32.3 Notwithstanding that the powers under clause (a, b & c) referred to above, are in addition to the rights and remedy available to the UJJAIN SAHAKARI DUGDH SANGHA MARYADIT under the general law of India relating to Contract.

32.4 In the event of risk purchase of stores of similar description, the opinion of the UJJAIN SAHAKARI DUGDH SANGHA MARYADIT shall be final. In the event of action taken under clause above, the supplier shall be liable to pay for any loss, which the UJJAIN SAHAKARI DUGDH SANGHA MARYADIT may sustain on that account but the supplier shall not be entitled to any saving on such purchases made against the default.

32.5 The decision of the Chairman, UJJAIN SAHAKARI DUGDH SANGH MARYADIT. shall be final regarding the acceptability of the stores supplied by supplier and the

UJJAIN SAHAKARI DUGDH SANGHA MARYADIT shall not be required to give any reason in writing or otherwise at any time for the rejection of the stores/ material.

32.6 In the event, UJJAIN SAHAKARI DUGDH SANGH MARYADIT does not terminate the order as provided in clauses above, the supplier shall continue execution of order, in which case he shall be liable to the UJJAIN SAHAKARI DUGDH SANGHA MARYADIT.

33. ARBITRATION

In case of any dispute ,if arises between the parties relating to any terms and conditions of the Tender / Agreement and or regarding the agreement /tender before or after the filling of tender and /or execution of the agreement, any party may refer the dispute to a sole arbitrator who will be the Chairman of Ujjain Sahakari Dugdh Sangh Maryadit, Ujjain or a person nominated by him whose decision and award shall be final and binding to both the parties. The arbitration proceedings shall be under and accordance with provision of Arbitration and Conciliation Act 1996.

Supplies under the Contract shall be continued by the supplier during the arbitration proceedings, unless otherwise, directed in writing by the Purchaser or unless the matter is such that the work cannot possibly be continued until the decision of the arbitrators or of the Umpire, as the case may be, is issued.

34. JURISDICTION

Any dispute or difference, arising under, out of, or in connection with this tender/ contract order shall be subject to exclusive jurisdiction of competent court at Ujjain only.

35. RANDOM TESTING-

Inspection of material after receipt or waiver of inspection will not relieve the supplier from his responsibility to supply the material strictly in accordance with the specification.

The UJJAIN SAHAKARI DUGDH SANGH MARYADIT, UJJAIN

In case, the samples fail to withstand the required test,(As per IBR) the entire lot will be liable to be rejected (i.e. unused material so supplied) and the supplier will have to refund the amount paid, including all taxes and duties, as well as the test charges thereof, after inspection. Such quantities or rejected material as identified, shall be removed by the supplier and replaced in full at his own cost.

36. CORRESPONDANCE:-

Copies of all important correspondence on subject should be sent to “CEO, Ujjain Sahakari Dugdh Sangh Maryadit, Ujjain”.

37. CONSEQUENCES OF BREACH OF AGREEMENT

If the authorized person of the unit or a partner in the contract/tendering firm commit breach of any of the conditions of agreement it shall be lawful for the Chief Executive Officer, Ujjain Sahakari. Dugdh Sangh Mydt, to cancel the contract and purchase or authorize to purchase stores at the risk and costs of the unit.

38. DISPUTE ARBITRATION & FINAL AUTHORITY

- a. It should be clearly understood that in the event of any dispute between supplier and purchaser due to deviation from any terms and conditions of work order & contract agreement, the decision of the Chairman, Ujjain Sahakari Dugdh Sangh Mydt., in this respect will be final and binding on the both supplier and purchaser.
- b. For matters of dispute, relating to the interpretation of the above clause, the decision of the Chief Executive Officer, Ujjain Sah. Dugdh Sangh Mydt, shall be final and binding on all the concerned

ANNEXURE-III

OFFERS ARE INVITED FOR TURNKEY SUPPLY OF 4TPH BOILER INCLUDING FOLLOWING

1. BOILER HOUSE AS PER LAYOUT SUITABLE FOR BOILER AND ACCESSORIES GIVEN BELOW COMPLETE AS PER SPECS ALONG WITH LIGHTING
2. CIVIL FOUNDATIONS FOR BOILER, ACCESSORIES AND PIPING TO THE PROCESS HOUSE
3. HIGH EFFICIENCY BOILER SUITABLE FOR OPERATION ON DUEL FUEL (GAS + FURNACE OIL) ALONG WITH ACCESSORIES WITHIN BOILER HOUSE
4. RO PLANT WITH SOFTENER AS PER SPECIFICATIONS
5. FO STORAGE TANK (10 KL) AS PER SPECIFICATIONS AND DAY TANK FOR FO (1KL) DAY TANK WILL BE INSULATED AND FO RANSFER PIPING WILL BE HEAT TRACED AND INSULATED
6. DAY TANK FOR WATER (10KL)
7. PRESSURE REDUCING STATIONS AS PER SPECIFICATIONS
8. PIPING AND VALVES UPTO PROCESS ROOM AND DISTRIBUTION LINES TO PROCESSING, GHEE, BUTTER AND RMD SECTION ETC. AS PER SPECIFICATIONS
9. INSULATION OF PIPING, VALVES, DAYS TANKS, CONDENSATE RECOVERY PUMP, DEAERATOR, FLASH VESSEL AND ANY OTHER HOT EXPOSED AREA IN SCOPE OF SUPPLY
10. CHIMNEY (30.5 MTR HEIGHT) SUITABLE FOR THE BOILER WITH CONNECTION FROM HRU OF THE BOILER
11. IBR APPROVAL FOR OPERATION OF BOILER AND PIPING
12. ELECTRICAL WORK OF THE BOILER HOUSE
13. INSTALLATION AND COMMISSIONING OF THE EQUIPMENT SUPPLIED
14. ALL WATER, DRAIN, VENT AND DRAIN PIPING INSIDE BOILER HOUSE
15. AMC FOR THREE YEARS FROM COMMISSIONING

BOILER MAIN FEATURES

Boiler should have short order to steaming time & minimum site activity. Boilers should be fully insulated, factory-wired & completely skid mounted. Boiler should be ready to use once utilities are provided at battery limit.

All accessories incl. Feed Pumps, HRU, Gas Train, Control Panel should be mounted on skid.

It should be a fully packaged unit assembled & tested at factory in quality controlled environment

SENSIBLE HEAT RECOVERY (HRU) SYSTEM –

Heat recovery system for sensible heat recovery should be included. HRU should comprises of dual heat exchangers bundled in a single block mounted on boiler. Sensible Heat Recovery System should be used for Furnace Oil having varying content of Sulphur and avoid corrosion to improve boiler uptime.

BOILER CONTROL PANEL –

PLC based panel with HMI for power distribution & boiler controls. A compact, simple to operate and maintain. Relay panel-based panel will not be acceptable.

It should have high quality graphics provide realistic view of boiler operation and generate real time trends to review & analyze process. Troubleshooting or online modification of the program should be possible.

FURNACE

It should be designed to ensure no impingement of flame for longer life of the boiler. The furnace should be of corrugation type.

BURNER

Boiler should be provided with pressure jet, mono-bloc type burners. It should be designed as per European standards EN 676, EN 267 ensuring combustion safety & reliability

ELECTRONIC COMPOUND REGULATION WITH O₂ TRIMMING

Fuel & air controls should be linked electronically, with individual stepping motors meeting highest safety norms. And should offer accurate controls, high repeatability & eliminate hysteresis.

ECR and O₂ should be included in the scope and should have Fail safe BMS with built-in diagnostics, Energy conservation through

RELIABLE COMPONENTS

Boiler components should be selected keeping in mind low cost of ownership. Efficient, reliable & durable components should be given to ensure low operating cost & boiler uptime.

Gas train Should be designed to enhanced safety – Designed as per EN 676 recommendations. It Should be provided with Valve proving system – to ensure no leakage of gas.

Probe Type Level Controller to ensure Improved reliability by ensuring no moving parts, no electro-mechanical interface

Valves with Stellated Seats Should be designed to Resist wear & tear to Reduce water / steam leakage.

1. **UNIT ASSEMBLY**

1 Set

Pressure part assembly consisting of -

- Full fusion welded shell made of boiler quality plates SA 515/516 Gr. 70.
- Wet back furnace made of boiler quality plates SA 515/516 Gr. 70.
- Wetback internal reversible chamber made of boiler quality plates.
- Two sets of convection smoke tubes BS 3059 Gr. 320 Part 1 / Equivalent material.
- Hinged ceramic lined front doors line internally with ceramic wool & clad with SS sheet.
- Smoke chamber with soot cleaning door.
- One Manhole, two head hole on the boiler shell to inspect the internal of the boiler.
- One access opening at the back of the IRC to inspect the internal of the furnace.
- Two fusible plugs are provided as an ultimate mechanical safety to prevent the boiler from over-heating in case of the very extra low water level in boiler.
- Set of nozzles for various boiler mountings.
- Pair of legs / saddle to mount the unit assembly on boiler skid.

2. **HEAVY OIL OR OR GAS FIRED MONO-BLOC BURNER ASSEMBLY**

1 Set

Industrial, pressure jet type, mono-bloc step/step-less modulation oil or gas fired burner with electric spark / pilot flame for ignition for burner light up,

Burner assembly consists of following items –

- Air box with burner gun & nozzle.
- In-built combustion air fan with direct driven electrical motor.
- In-built oil pump with pressure regulating valve
- In-built oil filter
- In-built electric heater
- Solenoid valves for oil, gas – as applicable.
- Ignition transformer, electrode & cable.
- Oil hoses
- Double solenoid valve for gas
- Pressure switch for gas pressure low
- Hinge flange with limit switch.
- Flame sensor is provided in the burner to detect the flame in auto mode operation.

3. **FEED WATER PUMP ASSEMBLY** 2 Set

Highly efficient, centrifugal, multi-stage, vertical feed water pumps in 1 working + 1 standby configuration.

- Suction & discharge ports at same level.
- Efficient, fan cooled, 3 phase motor mono-bloc with pump.
- Rigid spilt coupling for power transmission.
- Cartridge shaft seal for high reliability, safe handling, easy service.
- Pump head & base frame – cast iron, wetted parts – Stainless

4. **POWER CUM PLC BASED CONTROL PANEL ASSEMBLY –** 1 Set

Panel shall be skid mounted, conforming to IP42 degree of protection. It shall be made out of 14 / 16 SGW CRCA sheets. Internal & external surfaces shall be epoxy based powder coated. Prior to powder coating all surfaces shall be de-greased & de-rusted with 7 tank treatment. Control & power section shall be physically isolated.

A. Power section –

Shall consist of incomer & starter feeder for all field mounted motor driven equipment.

B. Control section –

Shall be PLC based with controller & color, touch-screen HMI. Following controls are provided –

1. Burner sequence control.
2. Combustion control.
3. Boiler level control with Single element control system
4. Boiler pressure, flue gas temperature indication.
5. temperature control
6. Alarms & interlocks as mentioned in PID.
7. Start / stop operation of all feeders.

5. **SKID MOUNTED VALVES** 1 Set
- One Main steam stop valve.
 - Two Spring loaded single port safety valves.
 - One Air vent valve.
 - One Blow down valve.
 - One Set of isolation gate / globe valves for various equipment as shown in PID.
 - One Set of drain valve as shown in PID.
 - One Set of non-return valve as shown in PID.
 - One Set of gaskets, fitting & other hardware.
6. **SKID MOUNTED INSTRUMENTS** 1 Set
- One Piezo-electric type pressure transmitter for burner step less modulation^{##}
 - One Pressure switch for burner step modulation^{**}
 - One Pressure switch for burner ON/OFF control.
 - One Main steam pressure gauge.
 - One Temperature element for boiler flue gas temperature measurement & panel indication.
 - Two Pressures gauges at the outlet of boiler feed water pumps.
 - Two Reflex type level gauges along with inbuilt isolation & drain valve.
 - One Top mounted, probe type level controller for boiler water level extra low Interlock.
7. **HEAT RECOVERY SYSTEM –with SINGLE ELEMENT DRUM LEVEL CONTROL** 1 Set
- One Flue gas cooler with finned tubes mounted on top of the boiler.
 - One Feed water Heating module mounted on top of the boiler.
 - One Circulating water pump assembly with motor.
 - One Expansion tank assembly.
 - One DP type level transmitter for single element boiler level control.
 - One Temperature element with panel indication for temperature control.
 - One Pressure gauge at inlet of circulation pump.
 - One Temperature gauge at inlet header of
 - One Set of piping & fitting for
 - One Control valve assembly (with AFR, EPP) boiler feed water control.

- One Control valve assembly (with AFR, EPP) boiler feed pump minimum circulation line.
- One Control valve assembly heat recovery system temperature control.
- One Set of isolation, drain, check valves as shown in PID.

8. **ACCESSORIES**

1 Set

- **Piping & fittings** –

One set of boiler feed piping to connect feed water pumps to the boiler.

- **Boiler skid** –

Made up of structural members to mount unit assembly & other accessories like feed water pump, circulating pump and gas train.

- **Set of insulation & cladding** –

For the Boiler Type of cladding – MS pre-coated sheets.

Insulation

- Mineral wool of 100 kg/m³ density, Aluminum cladding of 22 G or 24 G SWG thickness. Insulation shall be provided for following surfaces.

- Flue gas/ Hot air ducting, Condensate Recovery Equipment, Day Tanks

For the Piping and Accessories-Aluminium Cladded 26mm SWG

- **Set of electric cables, cable trays** –

Set of power, control & instrument cables to connect all motors & instruments to boiler mounted control panel.

BOILER ACCESSORIES TO BE INCLUDED IN SCOPE OF SUPPLY

GAS TRAIN ASSEMBLY

1 Set

- One Isolating ball valve on main line.
- One Gas filter.
- Two Pressure gauge each at upstream & downstream of the pressure regulator.
- One Gas pressure regulator.
- One Safety shutoff valve
- One Relief valve with isolation ball valve
- One Set of interconnected piping for above.
- One Set of structural members for attaching gas train to the skid.

STEAM FLOW METER ASSEMBLY

1 Set

Having 4 – 20 ma, HART type output with 1% accuracy & repeatability of 0.25% of reading.

- One Mass flow meter – vortex type for measuring steam flow.
- One DSC sensor & sensor seal.
- One Temperature sensor – built into flow meter.
- One 2 line display with push button.
- One Set of flange type end connections (mating flanges in customer scope).

WATER FLOW METER [ORIFICE TYPE]

1 Set

- One Flow element (orifice plate assembly) for measuring water flow.
- One Differential pressure transmitter.
- Two Isolating globe valves for connecting water flow transmitter.
- One Three valve manifold for connecting water flow transmitter.
- Two Needle valves for drain.
- One Set of hardware to connect above.

SURFACE TYPE TDS BASED AUTOMATIC BLOWDOWN SYSTEM

1 Set

- One Conductivity sensor of SS316 MOC with sensor chamber.
- One Conductivity transmitter with LCD display & 4 – 20 ma output signal.
- One Angle type, electrically actuated blow-down valve with stellite seat & plug.
- One Controller for blow-down control system.
- One Isolation valve & check valve.

O2 ANALYSER ASSEMBLY FOR MONITORING FLUE GAS

In – situ type, zirconium oxide based with repeatability of +/-0.5% of max value of range, having 4 – 20 ma DC output

1 Set

- One Oxygen detector, SS 316 MOC & of suitable length.
- One Converter having 4 – 20 ma output signal & LCD display.
- Two Rotameter with needle valve.
- One Air filter regulator.
- One Set of solenoid valve.
- One Set of instrument fittings.

TANK MODULE

- One Furnace Oil service tank with Heating and Insulation
 - Design standard – IS 803
 - MOC – IS 2062
 - Capacity – 1 KL for Heavy Oil
 - 3KW Heater for Oil Heating
 - Insulation for above tank
 - One Feed water service tank
 - Design standard – IS 803
 - MoC – IS 2062
 - Capacity – 10 KL
-

- Insulation for above tank
- One Set of valves, instruments & fittings for the oil service tank
- One Set of valves, instruments & fittings for the water service tank
- One Set of boltable structure, common for the service tanks
- One Set of piping & hardware
- One Set of cabling, cable trays upto junction box

| GENERAL TECH SPECS FOR BOILER | | |
|---|-------------------------------|--|
| Boiler Type | | Three pass wet back smoke tube boiler |
| Design Code | | IBR 1950 (With latest amendment) |
| Steam Output F & A 100⁰ C | kg / hr | 4000 |
| Design Pressure | kg / cm²(g) | 17.5 |
| Safety Valve Set Pressure | kg / cm²(g) | 17.5 |
| Thermal Efficiency on NCV (Oil) (as per BS 845 Part -1) | % | 92.5 |
| Thermal Efficiency on NCV (Gas) (as per BS 845 Part -1) | % | 94 |
| Dryness Fraction | % | 98 |
| Boiler Turn Down (Oil) | | 1:3.2 |
| Boiler Turn Down (gas) | | 1:5.7 |
| FUEL | | Gas + FO |
| Type | | Duel Fuel |
| NCV of Furnace oil | kcal/kg | 9650 |
| NCV of NG | kcal/Nm³ | 8500 |
| BURNER | | |
| Light Up | | By High Voltage Spark / Pilot flame |
| Fuel Supply Pressure(Oil) | kg/cm²g | 20-25 |
| Fuel Supply Pressure(Gas) | | 1-2 bar |
| Burner Turn Down (Oil) | | 1:3.9 |
| Burner Turn Down (Gas) | | 1:7 |
| Modulation type (Oil) | | Step less |
| Cumbustion Blower Motor | KW | 7.5 |
| Fuel pump motor | KW | 1.5 |
| Electrical Heater | KW | 12 |
| Electrical connection | | STAR |
| Motor Connection | | DOL |
| FEED WATER PUMP | | |
| Type | | Centrifugal Multistage - Vertical |

| | | |
|---------------------------------|---------------------------|--|
| Flow | m³/hr | 5 |
| Head | MLC | 210 |
| NPSH Required | MLC | 3 |
| Material Of Construction | | |
| Impellar | | Stainless Steel |
| Outer sleeve | | Stainless Steel |
| Shaft | | Stainless Steel |
| Type Of Seal | | Mechanical Seal |
| Speed | RPM | 2900 |
| Motor KW | KW | 5.5 |
| Motor connection | starting | DOL |
| ECO CIRCUIT WATER PUMP | | |
| Type | | Close Coupled - Vertical |
| Flow | m³/hr | 15 |
| Head | MLC | 15.5 |
| NPSH Required | MLC | 0.55 |
| Material Of Construction | | |
| Impellar | | Grey Cast Iron |
| Outer sleeve | | Steel |
| Shaft | | Steel |
| Type Of Seal | | Mechanical |
| Speed | RPM | 1456 |
| Motor KW | KW | 1.5 |
| Motor connection | starting | DOL |
| POWER SUPPLY | | |
| VOLTAGE/FREQUENCY | | |
| Power | | 415/380 Volts ± 6% ; 50 Hz ± 3% ; 3 Ph,3 / 4 Wire |
| Control | | 240/220 Volts AC, Single Phase |
| Control Panel Load | KW | 0.5 |
| Oil | KW | 28.87 |
| UTILITIES CONSUMPTION | | |
| Heavy oil | kg/hr | 242 |
| Natural Gas | Nm³/hr. | 270 |

BOILER SAFETIES

| Unsafe condition | Instruments | Action |
|---|--------------------|-------------------------------------|
| (a) Low water level in the boiler | Level controller | Alarm & burner trip |
| (b) Extra low water level in the boiler | Fusible plug | Fusible plug blow & water quenching |
| (c) Flame failure | Flame sensor | Alarm & burner trip |
| (d) Burner flange open | Limit switch | Alarm & burner trip |
| (e) Steam pressure high | Pressure switch | Alarm & burner trip |
| (f) Steam pressure extra high | Safety valve | Lift off |
| (g) Flue gas temp high | Temperature switch | Alarm & burner trip |
| (h) Gas pressure low | Pressure switch | Alarm & burner trip |
| (i) Gas pressure high | Pressure switch | Alarm & burner trip |
| (j) Furnace pressure high | Pressure switch | Alarm & burner trip |
| (k) Fuel oil service tank extra low level | Level switch | Alarm & fuel pump trip |
| (l) Soft water tank extra low | Level switch | Alarm & boiler feed pump trip |

Note –

For avoiding the dry run of the boiler feed water pumps & fuel oil pumps, supplier has to provide the potential free contact of the extra low level switch of the water and oil service tanks. Same are to be hooked up in the boiler control panel.

BOILER PERFORMANCE BASIS

The performance parameters of the boiler under this offer should be based on the availability of the following inputs with their corresponding values, as specified.

A. FUEL – Fuel specification as follows as per IS 1460 –1974

| Parameters | Units | HO | LDO | HSD |
|---------------------|-------------------|-----------|----------------------------------|------------|
| Flash point | deg c | 66 | 66 | 38 |
| Water content | %vol . (max) | 1 (max) | 0.25 | 0.05 |
| Kinematic viscosity | cst @ 40 deg c | 80 to 100 | 13 | 2.5 |
| Pour point | deg c | 25 – 35 | 18 (in summer) 12 (in winter) | 6 |
| Sediment | % wt max | 0.1 | 0.10 | 0.05 |
| Sulphur | % wt max | 4.5 | 1.8 | 1 |
| Conradson carbon | % by wt | 4 | - | - |
| Net calorific value | Kcal /kg (Min) | 9650 | 10200 | 10500 |

Natural Gas (With composition % by VOL as given below)

| Parameter | Quantity |
|------------------------|-----------------|
| CH4 | 76% |
| C2H6 | 10% |
| C3H8 | 2% |
| N2 | 6% |
| CO2 | 6% |
| Net calorific value | 8500 Kcal/ Nm3 |
| Density | 0.91 Kg/Nm3 |
| Maximum Inlet Pressure | 500 mbar |

B. WATER –

Feed water specification as follows as per IS 10392 –1982

| Parameter | Quantity |
|------------------|---------------------|
| Hardness | < 10 PPM |
| Dissolved O2 | 0.1 PPM (max) |
| pH value | 8.5 to 9.5 |
| Free CO2 | Nil |
| Bound CO2 | < 5 PPM |
| TDS | 400 PPM (max) |
| Temperature | 90 deg. C (max) |
| Chloride | 50 PPM (max) |

Boiler Water specification as per the IS 10392 –1982 to be given by the vendor

C. POWER – We will supply Power with following specifications

| | |
|------------------------|--|
| Supply voltage | 3 ph, 4 wire, 415 / 380 + 6 % V and 50 + 3 % Hz |
| Control voltage | 240 / 220 V, A.C., 1 ph |

Note:

- Control supply one phase to be drawn from the three phase supply line with the neutral.

D. EFFICIENCY –

Supplier shall demonstrate Efficiency as per the standard BS: 845 Part 1 - indirect method.

The following articles and work form a part of the proposal

- 1. Chimney & flue gas duct between boiler and chimney.**
- 2. Soft water and fuel oil service tanks.**
- 3. Steam, water, oil and drain piping up to the respective drains**
- 4. Labor, tools and tackles, and consumables required for assembling, erecting and commissioning the boiler.**
- 5. Unloading, positioning & installation of boiler.**
- 6. Registration and approval with IBR authorities at site.**

PRESSURE REDUCING STATION (PRS)

Technical Specifications for Pressure Reducing Station (PRS)

Inlet Pressure – 17.5 Kg/cm² g

Outlet Pressure – 3.5 Kg/cm² g

Maximum Flow – 3500 Kg/hr

PRS Size – 80 X 150 NB

Control Valve Size – 40 NB

Safety Valve Size – 80 X 100 NB

End Connection - #150 Flanged

MOC of all Valves – Cast Steel

Safety Valve – Darling Musco/Flenger Laser

PID Controller — Omron / Siemens

Control Valve — Emerson / Samson

Pressure Transmitter -- Yokogawa

Valves should be Bellow Seal type

SCOPE OF SUPPLY FOR PRESSURE REDUCING STATION (PRS)

| Sr. No. | Item Description | Quantity |
|----------------|--|-----------------|
| 1 | Inlet and Outlet Bellow Seal Valve | 2 |
| 2 | Bypass Bellow Seal Valve | 1 |
| 3 | Strainer Y Type Cast Steel | 1 |
| 4 | Moisture Separator Baffle Type | 1 |
| 5 | Drain Trap Module Thermodynamic Type with 2 Isolating and one By Pass Bellow Seal Valves | 1 |
| 6 | Control Valve suitable for high turndown precise control and for fluctuating load | 1 |
| 7 | Pressure Transmitter | 1 |
| 8 | PID Controller for above control valve | 1 |
| 9 | Add on Panel for PRS Operation | 1 |
| 10 | Safety Valve | 1 |
| 11 | Pressure Gauges | 2 |
| 12 | Interconnected Piping | As required |

PRS WILL HAVE TO BE IBR Approved

THERMODYNAMIC STEAM TRAPS

**Forged Steel Body ASTM A 105 with SS Hardened Disk
Designed to operate upto a max of 80% of back Pressure
Disk, Seat and Strainer of Stainless Steel
Cover AISI 304**

STEAM STRAINER

**Y Type Traps with investment casting body i
Rating 800 psi with Bode ASTM A 351-CF8M
Screen SS 316**

BELLOW SEAL VALVES

**Forged valves as per EN ISO 15761
Cast Steel valves as per ASME B16.34
Bellows inspection and test as per MSS SP-117
End flange dimensions as per ASME B16.5
Butt weld end dimensions as per ASME B16.25
Face to Face & End to End dimensions as per ASME B16.10
Inspection & testing as per API 598
Two Secondary Stem Seals
Graphite spiral wound gasket and graphite gland packings
Stem back seat and stem packing
Stellite faced seat and disc to prevent seizing and galling
Helium leak test performed on each bellow assembly using a Helium
detector with sensitivity of 10 std cc/sec
Multi-ply bellows**

Material of Construction

**Body Material Cast Steel - ASTM A 216 Gr. WCB
Forged Steel - ASTM A 105
Cast Iron - GG 25
Nodular Cast Iron - GGG 40.3
Bellows Material AISI - 316 Ti**

FLOAT TRAPS

To be installed in Steam Pipe Line with Bypass Valve

**Flue Gas Ducting
From Boiler HRU outlet to Chimney (4 Mm thick)**

BOILER HOUSE TO PROCESS ROOM PIPING:

SCOPE OF SUPPLY:

Design and Drawing of following

Piping from Boiler Stop Valve From Boiler House to Process House size 80NB—App 120 Mtr

Installation of Pressure Reducing Station inside Process House

Distribution of Steam to 5 process points-App 50 Meters with Isolation valves

Suitable Expansion Joints, Steam Trap drains for Pipe and Headers and Supports required to carry the Pipeline and crossing the road.

Vendor to give per meter cost if lines exceed the given length

Designing structural pipe supports as per the site requirements.

Designing, Preparation of Plan & Isometric drawings

Preparing BOQ along with material specifications as per the requirement of IBR.

Submission & approval of Drawings from Director of Steam Boilers -M.P

Designing/ Drawing Blow-down piping

Item

STEAM PIPES , CONDENSATE & WATER PIPING

100 NB Sch 40 seamless pipe

50NB Sch 40 seamless pipe (Blow down)

25 NB Sch 40 seamless pipe (steam trap pocket)

15NB Sch 40 seamless pipe (Steam trap)

Fittings

90° Butt weld Sch40 elbow

100NB sch40 Butt weld Elbow

50NB sch40 Butt weld Elbow

15NB full thread coupling with Plug

SORF Flanges ASA150

50NB SORF flanges ASA 150

100NB SORRF flanges ASA 150

100NB Blind flanges ASA 150

15NB SORF flanges ASA 150

25NB SORF flanges ASA 150

25NB BLIND flanges ASA 150

Valves (Flange End)- *with IBR TC*

100 NB Globe Valve ASA 150

Check Valve ASA 150 Size 100 NB

15NB Globe Valve ASA 150

TD trap Steam Trap (15NB)

Structural Steel

Shoe / Slide Primary Support

Support fabricated & erected - Secondary Support - 5.5 mtr ht., 125 mtr structure support

Foundation Bolts M 16 X 450

STEAM HEADER TRAP STATION, EXPANSION LOOP

Assembly and Erection of 100 NB Expansion Loop

Fabrication & Installation of Steam header

Fabrication erection of steam trap

IBR Isometric drawing Drawing

4" dial Pressure gauge, siphons & valve

Air vent assembly 15 mm

Hardware & Gasket

CONDENSATE RECOVERY SYSTEM

Complete skid of Condensate Transfer Pump consisting of

| Sr. No | Item Description | Qty |
|--------|---|-----|
| 1 | Receiver with following connections Condensate inlet, 50 NB (2 nos) Atmospheric Vent, 80 NB Condensate Outlet, 50 NB ` Overflow, 40 NB Motive Steam/ Vent , 15 NB | 1 |
| 2 | Condensate Transfer Pump with Conductivity based level sensor Pneumatically Actuated 3 way ON OFF Valve with SOV on Steam inlet Disc check at condensate inlet Disc check at condensate outlet Isolation Valve at condensate inlet | 1 |
| 3 | TD Module on Steam Inlet Pressure Gauge on steam inlet Inlet Isolation Valve on steam line | 1 |
| 4 | Totalizer cum Control panel with digital counter | 1 |

Automatic Condensate Transfer System

Condensate Flow Rate: 3500 Kg/hr

Motive Steam Pressure:: 3 kg/cm2(g)

Back Pressure: 10 mlc

SALIENT FEATURES REQUIRED FOR ABOVE PUMP

- zero moving parts.
- Design to have High motive inlet pressure up to 10 barg for.
- discharge of condensate of 135 liters per stroke
- High condensate temperature return- No cavitation issues should be there
- Skid mounted unit – Easy to install
- A large LED display with 8 digits flow totalizer to display the total volume displaced up to 99999 m3.
- Weather proof IP 52 design – suitable for outdoor installations
- Energy efficient pump – Steam trap drain and pump vent should be taken back to the receiver tank to minimize vent losses and save precious fuel

FLASH SEPERATOR VESSEL

When high pressure condensate is discharged from steam traps to low pressure condensate return lines, excess energy is released in form of flash steam. This flash steam will be used to heat boiler feed water or for low pressure steam application

FLASH VESSEL

Process Condensate Load: 3500 Kg/hr

Process / Trap Pressure: 4 kg/cm²(g)

Flash Steam Pressure: 0.5 kg/cm²(g)

SALIENT FEATURES OF FLASH SEPERATOR VESSEL

- Generates low pressure flash steam
- Not covered under IBR.
- Adequately sized to minimize pressure drop
- Rotary slide mechanism in float trap ensures condensate discharge at low pressure.
- Designed with optimum separation velocity to get dry steam
- Suitable for high pressure steam condensate

| Sr. No | Item Description | Qty |
|--------|---|-------|
| 1 | Flash Vessel with Condensate inlet/Condensate outlet and Flash outlet nozzles | 1 |
| 2 | Safety Valve, set pressure Pop up type, screwed, Lift off pressure 3.5 kg/cm ² g | 1 |
| 3 | Pressure Gauge with syphon and isolation valve | 1 set |
| 4 | Y Strainer on condensate outlet | 1 |
| 5 | Float Controlled trap on condensate outlet | 1 |

DEAERATOR

Atmospheric De – aerator Head should be designed to remove dissolved gases and oxygen from feed water by proper mixing of condensate, Flash Vessel and cold make up. oxygen and other dissolved gases should be released through the air vent fitted on the deaerator head. It should facilitates mixing of condensate, flash steam and cold make up water

| Sr. No | Item Description | Qty |
|--------|--------------------------------|-----|
| 1 | Deaerator head Flanged # 150 | 1 |
| 2 | Automatic Air Vent, Screwed | 1 |
| 3 | Vacuum breaker, Screwed | 1 |
| 4 | Immersion Tube | 1 |
| 5 | TADIT mounting collar / nozzle | 1 |

Atmospheric Deaerator Head with Immersion Tube- Immersion Tube Length = 900

- Liberate dissolved gases and oxygen
- SS Deaerator head should be with with SS immersion tube

Atmospheric Deaerator Head, should be bolted to the top of tank and is supplied with connections for cold make up, condensate return, flash steam and recirculation

- An immersion tube should be there which distributes the mixed fluids into the tank along with a guide nozzle for mounting the immersion tube.

Specification for 5000 LPH RO Plant with Softener

| Sr. No. | DESCRIPTION | QUANTITY |
|---------|--|----------|
| 1 | Raw Water Cum Cleaning Pump, (Jhonson/Laxmi Make) SS316 MOC for Pump | 1 No |
| 2 | Dual Media Filter including Sand and Anthracite with frontal piping, valves and first charge of media, | 1 No. |
| 3 | Antiscalant dosing system consisting of one tank with level switch. Dosing Pump 0 – 4 LPH at 2.5 kg/cm ² | 1 No. |
| 4 | PP Cartridge Filter with 5 micron wound type PP cartridges | 1 No. |
| 5 | RO Skid to accommodate high pressure pumps, pressure tubes necessary piping, valves and instruments. | 1 No. |
| 6 | High pressure Pump (XYLEM/GRUNDFOS) with SS316 MOC | 1 No |
| 7 | High pressure tubes in FRP of 8” Diameter (UKL Make) | 1Nos. |
| 8 | 8” Diameter RO Membranes (Only Dow Make BW 30-400) | 5 Nos. |
| 9 | RO Cleaning system consisting of HDPE cleaning tank,10 Micron cartridge filter & necessary piping mounted on skid | 1 set. |
| 10 | RO Water Storage Tank (Capacity 10KL)HDPE | 1Nos |
| 11 | Water Softener with Frontal Piping (Flow 5CuM/Hr and OBR 135 CUM) with 250Ltr Resin(Tulsion Make)-450mm Dia FRP Vessel | 1Nos |
| 12 | SS Pump for 5 CuM/Hr Softener Inlet | |
| 13 | 80 Ltr PP Salt Dosing Tank with Salt Injector for Softener | 1 set |
| 14 | pH Correction Dosing Pump 0 – 4 LPH at 2.5 kg/cm ² | 1 No |
| | INSTRUMENTS | |
| 1 | Conductivity Indicator in RO Plant. | 1 No. |
| 2 | Instrument Panel and Motor Control Panel with Microprocessor | 1 No. |
| 3 | Pressure gauges at all the respective unit inlet & outlet stream | 1 Lot. |
| 4 | Flow Indicators (RO Permeate, RO Feed) | 2 Nos. |
| 5 | Level Switches for Dosing Tank and Permeate Tank | 2Nos |
| 6 | Low Pressure Switches for High Pressure Pump | 1 No |

FURNACE OIL STORAGE TANK

Capacity 10 KL WITH HEATING AND INSULATION

- Design standard – IS 803
- MOC – IS 2062
- Capacity – 10 KL for Heavy Oil
- 3KW Heater for Oil Heating at discharge
- FO Transfer Gear Pump
- FO Transfer Piping MS Class C with Electrical Tracing
- Tank circular – Suitable size for 10 KL Vol. (full tank volume).
- Shell thickness 6 mm , bottom thickness - 8 mm . & Roof - 5/6 mm.
- The Buyer(USDS) will arrange for any approval from Explosives authority if required

Self supported Conical Chimney of 30.5 mtr height & suitable top Dia (to be specified by Vendor).

Scope for chimney supply and accessories –

- **Chimney Foundation load data & GA drawing**
- **The chimney will be provided with access door at the bottom.**
- **Platform at +12.5 mtr. elevation / at sampling point, & landing platform at the top**
- **Spiral Staircase up-to the sampling point as per the local PCB requirement. Spiral staircase is mandatory up to sampling point.**
- **Monkey Ladder with Safety Cage up-to the top of Chimney height from the sampling point platform.**
- **Lightening arrestor with earthing strip (GI) 25 mm, Isolator up-to ground level.**
- **Aviation Lamp (LED) including the cable up-to ground level.**
- **Foundation bolts with nut.**
- **Chimney template (return able)**
- **Specification-**

a) Chimney Design as per IS: 6533 /1989

b) Basic wind speed = 39 m/s

c) Seismic Zone – 3 [L] [SEP]

d) Corrosion allowance – 0 mm External, 3 mm internal [L] [SEP]

e) ID of Chimney 550-600 mm straight portion up to top. [L] [SEP]

f) External Painting – 2 coats of heat resistant Al paint (suitable for 200 Deg.C) for Shell & ladder. [L] [SEP]

g) Internal surface – 2 coats of black heat resistant Paint. [L] [SEP]

h) Tolerance on Dia. Of Shell should be in < 1 % after rolling & welding. [L] [SEP]

Bidder shall submit Chimney Drawing with Weight and design calculations as per IS Code

Material of Construction-

a) MS Plates : IS 2062 Gr.A/ B or higher [L] [SEP]

b) Flats: IS 2062 Gr. A [L] [SEP]

c) Rods : IS 2062 Gr. A (Foundation Bolts) [L] [SEP]

d) Chequered Plate Plates : IS2062 Gr.. A [L] [SEP]

e) Channels - ISMC [L] [SEP]

f) Angles: ISA [L] [SEP]

g) Pipes IS 1239, Med

WORKS RELATED TO THE BOILER INSTALLATION TO BE DONE BY THE VENDOR

1.Boiler House suitable for Boiler and Day Tanks along with Water treatment Reverse Osmosis plant as per the layout to be submitted by the vendor.The Boiler house will have walls up to 7 Ft Height and Coated Sheet structure for the rest of the height.The support structure and foundation for the supports will be in vendor scope.

Columns and Rafters (Primary) of the Boiler House will be of 8 mm Web and 10mm Flange. Purlin(Secondary Members) will be 2 mm Galvanised

The Roof Sheet will be 0.45 mm Galvalume Sheets and necessary Skylight sheet and Turbovent (2 Nos) will be installed on the roof
Side and Front sheets will be Colour Coated).47 mm Thick
The Foundation Anchor Bolts for the Building with be of IS2062 MS

The vendor will submit the Boiler House Layout along with Plan and Elevation.
The Layout should be suitable for operation and maintenance of the Boiler.

| Material Specification For PEB | | | | |
|---------------------------------------|-------------------------|---|-----------------------------------|-----------------------------|
| S.NO. | Item | Description | Design | Material |
| 1 | Primary Member | Column, Rafters, Anchor Bolts With Primer & Paint | Hot Rolled And Built Up Section | IS 2062 |
| 2 | Secondary Member | Brace Rod , Sag Rod, Flange Brace, Tube Assly With Primer & Paint | Hot Rolled | IS 2062 |
| 3 | Purlins | Purlins, Girts, Eaves Struts | Section of Z & C Type (Cold Form) | 2mm & 2.5mm Thk GI |
| 4 | Roof Cladding | Roof Sheeting | Trapezoidal Profile | Bare Galvalume Sheet 0.47mm |
| 5 | Wall Cladding | Side Wall Sheeting | Trapezoidal Profile | PPGL/PPGI 0.5mm |
| 6 | Trims & Flashing | Eave Trims, Valley Gutters, Flashing , Corner, Downspouts, Etc. | Sheeting Material | PPGL/PPGI 0.5mm |
| 7 | Connections Assessories | Nut, Bolt, Washers, Hill Side Washer, Anchor Fastener | 4.6/8.8/10.9 Grade | MS & High Strength |
| 8 | Sky Light | - | Roof Profiles | Poly Carbonate |
| 9 | Turbo Vents | - | STD. | SS/Aluminium |

2.Foundations for the Boilers ,Chimney ,FO Storage and Day tanks, Water Day Tank and Pipe Supports, Condensate Recovery systems etc and accessories for the Boiler as well as Platform with drains suitable for Boiler House and RO Plant

3.IBR Approval for the Boiler and Piping will be in vendor scope

| <u>SR.NO</u> | <u>DESCRIPTION</u> | <u>BATTERY LIMITS</u> |
|--------------|---------------------|---|
| 1. | <u>Steam</u> | <u>Up-to the outlet of main steam stops valves.</u> <u>Up-to the outlet of Building for spring loaded safety valves.</u> |
| 2. | <u>Blow-down</u> | <u>Up-to the inlet of blow-down pit .Blow down Pit will be in USDS scope</u> |
| 3. | <u>Drain / vent</u> | <u>Up-to the all drain valves in the drain.</u> <u>Up-to outlet of air vent valve outside building</u> |
| 4. | <u>Water</u> | <u>Inlet of Boiler water Service Tank</u> |
| 5. | <u>Fuel - Oil</u> | <u>inlet of day tank</u> |
| 6. | <u>Fuel - Gas</u> | <u>inlet of gas train</u> |
| 7. | <u>Air</u> | <u>suction of combustion air fan.</u> <u>inlet of flame view glass cooling.</u> |
| 8. | <u>Flue gas</u> | <u>Chimney</u> |
| 9. | <u>Electrical</u> | <u>From incomer terminal in the control panel.</u> <u>Earthing – Up to earthing node on electrical equipment.</u> |
| 10. | <u>Building</u> | |
