

**TENDER DOCUMENT
FOR**

**75 KLPD DISTILLERY PLANT
TO PRODUCE**

EXPORT QUALITY RECTIFIED SPIRIT

OR

110 KLPD ANHYDROUS ETHANOL

AT

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Section I – General

VSSSI

1. TENDER NOTICE

Sealed tenders in prescribed Tender Document forms are invited from the reputed manufactures who are on approved list of NFCSF or Commissioner of Sugar, Maharashtra State (for all processes i.e. Rectified spirit and Anhydrous ethanol and who have completed successfully running **minimum three** plants based on Continuous/Fed-batch Fermentation, Multipressure distillation and Molecular Sieve Dehydration (MSDH) technology in India for the purpose of the following turnkey job with minimum Net worth is Rs. 50 crores and last three years turnover is Rs. 150 crores.

- i. Design, manufacture, procure, supply, erection & commissioning of 75 KLPD Distillery plant to produce Export Quality Rectified Spirit (EQRS) suitable for potable and as per quality requirement specified based on continuous/Fed-batch fermentation and multi-pressure distillation using cane molasses. Excluding civil work. However, the supplier should provide all load data within 10 days of signing the agreement for above plant.
- ii. 110 KLPD Fuel Ethanol plant (Fermented wash to Rectified Spirit / Anhydrous alcohol) to meet application for fuel, perfumery/pharmaceutical requirement. It should be also possible to run the anhydrous (Fuel) alcohol plant as standalone in the Rectified spirit to anhydrous alcohol mode. Excluding civil work. However, the supplier should provide all load data within 10 days of signing the agreement for above plant.
- iii. Mild Steel Structural work for above distillery plant.
- iv. Blank Tender Documents are available at Sugar mill office during working days except holidays from ---- /----/ 2021 up to ----/ /2021.
- v. Earnest money deposit is **Rs. 27.00 lac** payable by Demand Draft /Bank Guarantee. Demand draft/Bank Guarantee for EMD should be drawn in favour of **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State** on any Nationalized Bank and to be submitted in separate envelope.

- vi. Tender to be submitted in three separate envelopes.
- Envelope No. 1** should contain Technical Bid along-with General terms, Declaration & Agreement,
- Envelope No. 2** should contain Price Bid with Declaration &
- Envelope No. 3** for EMD
- Individually sealed Tender Envelope should be superscripted in bold letters (Tender for Distillery plant) as "**Technical Bid**", "**Price Bid**" & "**EMD**" respectively. The company name with complete address, mail, telephone /fax Nos. etc. should be written on it & it should reach purchaser's office on or before / /2021 at 5.00 pm.
- vii. Blank Tender will be issued only to those who are on the approved list of NFCSF or registered with the Commissioner of Sugar, Maharashtra State and who have already installed and successfully commissioned at least three (3 Nos.) plants to produce Rectified spirit, and anhydrous ethanol based on Continuous/fed batch fermentation, Multipressure distillation and MSDH technology in India and on submission of certificates of evidence indicating performance of plant.
- viii. Tenders with any deviation in technical specifications or incomplete tenders and tenders with out or insufficient EMD & references will be rejected.
- ix. Purchaser will not be responsible for the late receipt of tender after due date & time of closing on account of any reason of postal /courier or man reach delay.
- x. The tenderer will have to submit the sealed tender as per the tender document only signing each & every page of tender document with company rubber Stamp & duly filled in wherever applicable.

- xi. Purchaser reserves the right to accept or reject the tender without assigning any reason there of.
- xii. Technical meeting / pre-bid meeting will be informed later.

Date: ----/---/2021

Place:-

CHAIRMAN

MANAGING DIRECTOR

**M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune,
Maharashtra State**

2. SCOPE OF SUPPLY

Scope of work shall be as follows: -

- 1) Design, manufacture, procure, supply, erection & commissioning up to satisfactory trials as per the parameters given in the process performance parameters /guarantee for 75 KLPD distillery plant to produce RS or Anhydrous ethanol plant based on cane sugar molasses. **The above plants are to be designed for additional 10 % capacity.**
- 2) The plant and machinery, equipments, instruments etc. shall be quoted as per the technical specifications specified and as per the battery limits.
- 3) The capacity, efficiency & performance of the said plants for fermentation & distillation should be guaranteed as per parameters given in the process performance parameters / guarantee.
- 4) The work is to be executed as per the terms & conditions stipulated in this invitation and also in the draft agreement.
- 5) Your scope of supply (turnkey basis) should include the necessary equipments, plant & machinery, building structural & excluding civil work, excluding civil foundations, roofing, painting etc. to meet with the requirements complete with the packing & forwarding charges, transit cum storage cum erection insurance, custom duties, excise duties, GST, works contract tax & other government levies, if any, erection, supervision and commissioning charges. This also includes other tools & tackles required for the fabrication at site, adequate manpower quite conversant to the fabrication & erection work of such plant and machinery.
- 6) After the finalization of the order, the supplier has to get all the foundation and other Civil drawings & detailed G.A. drawing of each & every part of plant & machinery, piping layout drawing, isometric drawings, equipment layout drawings, equipment elevation drawings approved from the inspection agency **“Vasantdada Sugar Institute (VSI), Pune”** appointed by the **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist.**

Pune, Maharashtra State All the drawings submitted well in advance to purchaser's inspection agency (VSI) for prior examination & approval thereof.

- 7) All the consumables required for erection & commissioning like gas, all types of welding /brazing or soldering rods, emery papers, grinding paste, hold lights, graphite, Kerosene Oil, Rustburg, back joints, steam packing etc. are also to be included in the scope of supplier.
8. All types of tools & tackles like hoisting tools, chain blocks, pulleys, wire ropes, hooks including hydra, crane for speedy work etc. to be arranged by supplier. All special tools required are also to be arranged at supplier's cost. All staff including Engineers, Technicians, Skilled, Unskilled workers, Khalashi required for loading / unloading, fabrication, erection etc. should be arranged by supplier. The machinery & other equipments arrived at site should be properly stored at site. Supplier shall also adopt the transportation of machinery and equipments from the stored place to their respective position. After completion of the project the precision tool kits are to be handed over to **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State**. Technical Services shall include:-
 - a. Project In charge:- Supplier will provide a qualified & experienced project engineer /manager to supervise the installation & erection of the plant who will be stationed at site.
 - b. Training of the Purchaser's personnel:- Supplier shall arrange to train the purchaser's all personnel regarding the process operation & maintenance of the plant being set' up under the agreement on its own cost.
 - c. Startup services:- Supplier will provide qualified staff for start up of plant and during the performance period.
 - d. After sale services: Routine operation field review & training update. Supplier will furnish a qualified field engineer to review unit operations & provide additional on-site training on demand by purchaser.

10. Electricity required for site fabrication will be supplied at actual cost at one point. Cables for welding at actual fabrication unit is to be arranged by supplier and energy meter required for the same will have to be arranged by supplier.
Water required for erection & trials will be supplied free of cost and for lifting of water required pumps and its piping will be in the scope of supplier.
11. Before submission of offer, tenderers or their representative should visit the Sugar mill site for inspection of site.
12. The tenderer should also get acquainted with the local conditions at the factory site & must know the rules & regulations of Central & State Govt. and has to follow law of land.
13. All fabrication of equipments will be done under stage wise third party inspection (VSI). All bought out equipments should be offered for inspection before dispatch. The list of sub contractors shall be approved /certified by the Purchaser.
14. Design, supply, erection and mechanical & water commissioning of the plant & machinery should be completed within **eight months** from the date of purchase order. Plant should be commissioned & stabilized within three weeks period.
15. The supplier will prepare & submit to purchaser the PERT /CPM chart and time schedule accordingly. Supplier should ensure that they would maintain the time schedule as per the chart.
16. The price should be quoted in the specified format. Income Tax applicable will be deducted at source.
17. Supplier should arrange Lodging & boarding facilities for their own staff.
18. a) Supplier should submit as built drawings (Four copies each) for all fabricated equipments, actual equipment layout, piping layout, cable layout & equipment elevation drawings, GA drawings etc.
b) Four sets of G.A./Coordinating drawings and O & M manual along with all circuit diagrams will be provided by the Seller.
c) Seller will provide instrumentation details and calibration requirement.

19. First fill of oil & grease for pumps will be in the scope of supplier.
20. The supplier will obtain the required statutory approvals consents for the plant;
However, Govt. fees will be paid by the purchaser.
 - a) Electrical Inspector
 - b) Weights & Measures
 - c) PESO guideline norms (License) for Receiver and storage of anhydrous ethanol as per Petroleum Act
 - d) Factory inspector
 - e) Gauging (Including gauging work)
 - f) Fire & safety as well as Water hydrant system
 - g) Labour license from labour commissioner

3. TERMS & CONDITIONS

I. General Guidelines:-

- i. Tenderers are advised to carefully study these conditions and other tender documents before quoting their rates.
- ii. Before submitting the tender, each page of these conditions /tender documents must be signed by the tenderer, over the firm's seal, in token of their acceptance of the same.
- iii. Tender should be submitted only in the prescribed form and should be submitted only by the purchaser /party in whose name those are issued. Violation of this provision will automatically debar the tenderer from consideration.
- iv. Tenders received after the specified date or postal delay or man reach delay will not be considered.
- v. All entries should be made in ink, any correction should be attested by signature of tenderer over the firm's seal, over-writing will not be accepted. Incorrect words /figures should be crossed and correct figures rewritten. **Conditional tender or incomplete tender will be considered as invalid.**
- vi. All rates quoted should be both in words and figures, In case of any difference between the two; the rates quoted in words would be considered as final and authentic,
- vii. The prices quoted by the Tenderer are firm and final & **NO ESCALATION WILL BE ENTERTAINED.**
- viii. Price of the machinery shall be inclusive of the packing & forwarding charges, handling, transportation up to factory site, unloading at factory site, erection, commissioning up to satisfactory trials & supervision thereof, transit cum storage cum erection insurance, etc. Goods & service tax (GST) custom duties, other State /Central Govt. levies will be extra against proof of payment only.
- ix. Price shall also be inclusive of foundation bolts, first fill of oil & grease and yeast required for the commissioning.

- x. This also includes other tools & tackles required for the fabrication at site, adequate manpower quite conversant to the fabrication & erection work of such plant and machinery.
- xi. Any deviation from the specifications, scope of supply and terms and conditions will make the tenderer liable for rejection.
- xii. Minor changes suggested by the purchaser shall be carried out by the supplier without any additional charges whatsoever and without affecting performance parameters.
- xiii. If tenderer want to have bifurcation of the order, viz: supply and erection, commissioning etc. they should mention it in the offer very clearly.
- xiv. Contract period: Unless otherwise specified/agreed; the contract is awarded for **eight months**.
- xv. Sugar mill reserves the right to: -
 - a) To divide the work among the supplier's at the discretion of the purchaser.
 - b) To reject any or all tenders either in full or in part, without assigning any reason what so ever; and
 - c) To engage additional supplier at any time without giving any notice what so ever to the suppliers already appointed against this tender.

2. Eligibility: -

- Tenderer should have successfully commissioned running distillery plants based on the Continuous/fed batch fermentation & Multipressure distillation to produce R.S. and Anhydrous ethanol plant based on Molecular Sieve Dehydration technology (Turnkey supply of total plant and not the equipment supply)
- **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State** has reserved its rights to opt for above conditions or anyone of above conditions.

3. How to apply -

- i. Tender is to be submitted in three separate sealed envelopes.
- ii. **Envelope No. 1** should contain Technical Bid (Refer Section-II)
General terms, Declaration & Agreement
(Refer Section-I & Section IV)

Envelope No. 2 should contain Price Bid with Declaration

(Refer Section-III) &

Envelope No. 3 for EMD

In respective envelopes duly signed and sealed. The name of the company with complete address, telephone /fax Nos. etc. should be written on it.

The three envelopes should be super scribed in bold letters as (Tender for Distillery plant) "**Technical Bid**" & "**Price Bid**" & "**EMD**" respectively.

Three envelopes should then be put in another outer envelope and then to be submitted before the closing date and time.

- iii. Tenderer or his representative should personally deposit the tender well before the closing time and date at the office **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State** will not accept any responsibility if the tender is not submitted personally by the tenderer but instead handed over to any employee. If the tender is submitted by post, the same must be mailed by registered post, the cover super scribed in bold letter with tender number, closing date should be addressed to the **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State** The postal delivery must take place latest on the working day preceding the date of closing of tender.

- iv. Tender received late/in open condition /without EMD / insufficient EMD /not meeting this tender conditions/incomplete in any respect /any variation in technical specifications are liable to be summarily rejected.

4. Earnest money deposit:

Interest free EMD in following mode to be submitted alongwith the offer Demand draft /Bank Guarantee of any nationalized bank in favour of **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State** Note: EMD in form of cash / cheque shall not be accepted. No interest shall be payable on EMD.

Please furnish the following information on your letterhead -

- a. Name & address of your banker
- b. Account No.
- c. Branch name and code no. to facilitate timely release of your EMD

4.1 Refund of EMD:

EMD paid against the tender is refundable to the unsuccessful tenderers on finalization of the tender and placement /acceptance of the order by successful tenderer. EMD of successful tenderer will be retained by purchaser and will be returned without any interest after successful performance trial of the plants.

4.2 Forfeiture of EMD: -

EMD is forfeited in the following event.

- i. Withdrawal of offers while the offer is under consideration during the validity period.
- ii. Non-acceptance of order /non-confirmation of acceptance of order when placed on mutually agreed terms.
- iii. Any Unilateral Revision made by the tenderer after placement of the order.

5. Clarifications: -

- i. Clarifications /doubts shall be entrained in the Pre-bid /Technical sub-committee meeting of Sugar mill.

- ii. Purchaser reserves the right to clarify with any or all tenderer.
- iii. Tenderers may be required to visit Purchaser's office for clarification /verification of documents entirely at the cost of tenderers.
- iv. Only the proprietor of the firm or the only authorized representative of the firm must personally attend such clarifications, as commitments made and or clarifications given during clarifications will be binding on the tenderers. He /she should carry the necessary authorization to attend such clarifications and hand over a photocopy of the same to the Purchaser.

• **Validity of the Tender:**

The quotation / offer shall remain valid up to **four** months from the date of opening. Tenders are unless extended by mutual consent in writing. Breach of this provision will entail forfeiture of the earnest money.

7. Finalization of the Tender:

- i. The price finalized by the Purchaser shall be firm & final & no escalation /de-escalation whatsoever will be allowed except on taxes & duties as mentioned in clause 11 below.
- i. Once the tender is finalized in the name of a tenderer, it will not be transferred to any other firm.

8. Performance Guarantee:

- i. As per the parameters given in section II-2.2 (R.S.), 3.2 A.A (Anhydrous ethanol) & as per draft agreement
- ii. All the plant & machinery & its accessories should be guaranteed for a period of 24 months from the date of commissioning for material, workmanship & performance.
- ii. Plant & machinery and its accessories should be of standard specifications, first class quality and workmanship. The supplier shall replace free of cost any material found defective during the guarantee

period. If the supplier fails to do so at the request of Purchaser, the Purchase shall be free to do so, on the risk and cost of the supplier without his consent.

- iv. Process performance guarantee for Distillery (15 days for each final product) R.S.and Anhydrous ethanol plant should be for following parameters: -
- a. Capacity, efficiency & yield
 - b. Raw material consumption
 - c. Utility consumption
 - d. Waste generated
 - e. Power requirement
 - f. Finished Product Quality
 - g. Water balance
 - h. Performance of bought out items

9. Payment Terms:

The purchaser shall pay the contract price in the following manner:

- 9.1 10 % (Ten percent) advance of the contract price for plant and necessary facilities contained in Section III- 5.1 only of this agreement i.e. Rs. -----
-----/- (Rupees-----/-) within 15 (fifteen) days of signing of this agreement, on furnishing of Bank Guarantee by the seller for the said advance in the form annexed to this agreement.
After receipt of advance of 10 %, the seller should submit to the **Purchaser and the Inspection agency (VSI)** the following within 15 (fifteen) days for approval:

- a. Billing schedule/price break-up and erection schedule
- b. Layout of plant & machinery
- c. Bar chart indicating activities
- d. Dispatch schedule

- 9.2 5 % (Five percent) advance of the contract price for plant and necessary facilities contained in Section III- 5.1 only of this agreement i.e. Rs. -----
-----/- (Rupees-----/-) shall be paid to the seller within 15 days, on furnishing bank guarantee by the seller for the said advance in the form annexed to this agreement.

After receipt of advance of 5 %, the seller should submit to the **Purchaser and the Inspection agency (VSI)** the following within 15 (fifteen) days for approval:

- a. Piping, electrical and instruments particulars and drawings.
- b. List of detailed specifications of bought out items
- c. Utilization certificate of advance.
- d. GA Drawings
- e. Civil & structural drawings

9.3 65 % (Sixty five percent) of the price referred to above for plant machinery i.e. Rs. -----/- (Rupees -----/-) and the reimbursement of actual amount of GST, (custom duty on imported goods, if any) on documentary evidence, after the receipt of material at site and approval of the same. The advance paid under clause 9.1 & 9.2 (i.e. 15 %) will be adjusted in this amount. The bank guarantees for advance will be returned to supplier after satisfactory commissioning of plant.

In case of fabricated items at site etc. proportionate amount of the bill value will be paid only after completion of fabrication work at site.

In case of bought out items, etc. proportionate amount of the bill of individual item will be paid after receipt of total material and assembling all parts at site like cooling towers, pumps & motors, MS/SS plates, control valves, PCC & MCC panel, instrumentation, Water treatment plant, water hydrant system etc.

Submission of bills and payments:

- i. All the details of GST paid by the supplier shall be shown separately for own manufactured items and for bought out items & to be submitted to the purchaser along with bills by supplier.
- ii. The amount shown in supplier's bill for payment of all such GST will be computed on the basis of all such relevant statutory provisions in force on the date of dispatch and shall the supplier pay the actual amount as.
- iii. The payment shall be released by the purchaser within ten days from the date of submission of approved bills.

- 9.3 10 % against erection of plant & machinery and after Mechanical & Hydraulic trials certified by the inspection agency (VSI).
- 9.5 10 % after successful commissioning and performance trial each for 15 days for R.S. and Anhydrous ethanol plants against performance bank guarantee of 10 % valid for 12 months from the date of successful performance trial.
(For more details please refer the draft agreement)

10. Rate Validity:-

The quoted rates shall be valid for minimum period of **four months** from the date of opening of the tender and once the offer is accepted, and the supply order is placed on the successful party, the rates shall remain valid till the entire delivery is completed.

11. Goods and service tax (GST):

- a) The Govt. taxes (GST, State GST or Interstate GST etc.) and other levies, if any on the works contract shall be borne by the Tenderer.
- b) Tenderer must declare the leviable GST clearly and the purchaser on documentary proof of payment made will pay the same but in no case the contract price will exceed than specified by the purchaser.
- c) Octroi/ entry tax if applicable shall be reimbursed on actual against documentary evidence.

11.1 Turn over tax:

Turn over tax, as applicable, if any, will be borne by the purchaser.

11.2 Goods and services tax (GST):

- i. Tenderer must declare the GST clearly and the purchaser on documentary proof of payment made will pay the same. If there is any difference in the GST quoted and the actual, the differential amount will be recovered from the payable amount.
- ii. The supplier shall furnish to the **M/s Nira Bhima SSK Ltd. Shahajinagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State** with their bills, GST, gate pass in the support of GST, if any. If excise invoice is not submitted

the relative GST amount will be liable for deduction from bill as per the Excise rules.

11.3 Income Tax:

Income Tax, if applicable, will be deducted at source, while releasing the payment against R.A-Bill / Total Bill.

12. Changes in GST Structure:

Any increase or decrease or any changes in GST will be made applicable to both the- purchaser & supplier subject to the authenticated proof. The increase in the amount of taxes and duties will be on Supplier's account if the material is not supplied as per delivery / dispatch schedule / PERT chart.

13. Packing, forwarding, Transportation & Insurance

The prices quoted should be inclusive of packing, forwarding, handling, transportation up to Sugar mill site, unloading at site, transit cum storage cum erection insurance etc.

14. Submission of bills and payments:-

- i. All the details of GST paid by the supplier shall be shown separately for own manufactured items and for bought out items & to be submitted to the purchaser along with bills by supplier for the reimbursement of the same.
- ii. The amount shown in supplier's bill for payment of all such GST will be computed on the basis of all such relevant statutory provisions in force on the date of dispatch and shall the supplier pay the actual amount as.
- iii. The payment shall be released by the purchaser within fifteen days from the date of submission of approved bills.

15. Delivery period:

Tenderer has to adhere to the period stipulated for delivery completion of work in all respect very strictly.

Design, supply, erection and mechanical & water commissioning of the plant & machinery should be completed within **eight months** from the date of purchase order. Plant should be commissioned & stabilized within **three** weeks period.

Liquidated damages for late delivery shall be @ 2 % of contract price per fortnight up to a maximum 10 % the total contract price.

16. Supplier's Responsibilities

16.1 Approvals & Consents:

The supplier shall provide necessary assistance and obtain the necessary approval consents, from State Excise, Central Excise, Weights and Measures including calibration /gauging of tanks, factory & electrical inspector, other authorities as per the statutory requirement in respect of plant to be supplied /erected by the supplier. The supplier will obtain the required approvals consents at their cost.

a. Calibration /Gauging of Storage Tanks:

Calibration /Gauging of all storage tanks shall be carried out by supplier/manufacturer and shall be responsible for obtaining approval of the calibration charts from all concerned statutory authorities.

b. Electrical Approvals

- i. All flameproof equipments shall be certified by CMRS, Dhanbad. CMRS certificate no. should appear on the nameplate of the equipment.
- ii. CPRI test certificate for the design & construction of MCC
- iii. Panel should be furnished by the supplier.
- iv. Type test certificate of CPRI, Bhopal for short-circuit with standing capacity & supplier will furnish degree of protection.
- v. The panels shall have Tariff Advisory Committee's Approval.
- vi. Other necessary approvals /certificates.

16.2 Drawings, Codes & Standards & Testing

16.2.1 Drawings and information required from SUPPLIER during contract stage

The drawings and documents to be furnished by the SUPPLIER (four copies) after the award of the contract shall include a drawing /document submission schedule clearly identifying the documents to be submitted and the purpose of the submission (for information /approval etc.) shall be furnished after discussions and in consultation with the Inspection agency (VSI) and purchaser.

Process and Mechanical:

- Detailed time schedule in the form of network or bar chart for the design, manufacture, delivery period with critical milestone activities and other important intermediate dates for uninterrupted progress of the project.
- List of approved vendors is provided with this tender who should be followed.
- List of manufacturers and specifications of all standard equipment.
- Piping and instrument diagrams for all media showing all related equipment.
- Complete plant performance data including predicted performance at various loads, heat transfer areas, pressure drops, temperature profiles, part load efficiency etc.
- Start-up and shut-down operations for the plant.
- Valve schedule
- Overall plant elevation and plot plan.
- Loading data for the plant /tankages and auxiliaries and above ground mounted equipment and supports.
- Fermentation, distillation plant and storage layout and details.
- IBR /Factory Inspectorate approved drawings and documents.
- Chemical dosing system arrangement and piping layout drawings.
- Overall dimensional drawing of all distillation columns and equipments.
- Manuals indicating pump cross section view showing parts, materials and fittings and the characteristic curves.

- Fans & pumps performance test reports.
- Completed data sheets for pumps/motors/fans.
- Details of safety valve including manufacturer's catalogues and service instructions and capacity calculations.
- Piping layout drawing.
- Purchase specifications for all bought-out items
- Quality plans
- Material test certificate & inspection reports
- Plant process operation and maintenance manual including catalogues, bought out items, start up procedures and O & M manuals for bought out items.

Control and Instrumentation

- Technical specifications of PLC field instruments, sensors and controls indicating operating parameters as per P & I diagram and recommended ranges of the parameters as per the process requirements.
- List of alarm annunciation points with set values (Manuals).
- Layout drawings for local control panel /boxes.
- Hook-up drawings
- Cable schedule

TENDER SPECIFICATION OF DISTILLERY ELECTRICALS.

1. INTELLIGENT MOTOR CONTROL CENTER:

Medium voltage switch board shall be dust, damp & vermin proof construction sheet steel clad totally enclosed, floor mounted, self standing type with single front and front door opening compartmentalized cubicle design with single TPN bus bar arrangement on top with front access with cable entry and outgoing from bottom of the MCC panel.

- a. Local /remote facility to be given.
- b. Capacitor Reactor banks for power factor improvements suitable as per load on MCC panel.

- c. Separator feeders for operating and standby motor loads with suitable handle for operating to each MCCB.
- d. Ammeter to be provided for each feeder.
- e. Fuse less system in MCCB and MCC.

The switchboards shall be suitable for the following operating system.

Rated voltage	:	415V, 3Ph, 4 Wire
Rated Frequency	:	50 Hz
Fault Level	:	50 kA for 1 Sec.
Enclosure	:	IP52

The panel shall be designed for an ambient temperature of 50⁰C. The design, manufacture and testing of the various equipment covered by these specifications shall comply with the latest standards.

MCC'S will be made from CRCA (Cold Rolled Cold Annealed) sheet metal fabrication. MCC will be compartmentalized, non-flame proof type with MCCB system and located at non-flameproof area.

Fuse less system in MCC.

MCC will be fabricated from 14/16-gauge MS CRCA sheet, floor mounted, suitable for indoor installation, vermin/dust proof, weatherproof with IP52 degree of protection. Cable entry shall be from the bottom as a standard feature. Electronic energy meter, Voltmeter, Ammeter tray, PF meter to be provided for all MCC's.

SMPS power supply (if required) with 24 V DC for controller of each feeder /starter to be considered.

Each starter of MCC will consist of:

- MCCB
- Control unit with Contactor, Relay for all protections trips and alarms.

Motor Protection like

- Thermal Overload
- Over/Under current
- Long Start / Jam
- Ground current
- Motor temperature sensor

- ON/Trip indication
- Emergency stop stay – put push button interlocking system with PLC.

Network Communication facility

- Modbus *or*
- CAN Open *or*
- Profibus DP *or*
- Device Net *or*

Ethernet.

The ability of fault diagnostic and fault history along with other facilities shall be given for this intelligent MCC.

Motor rating above 15 KW, Star Delta starter will be provided. MCCB (Molded Case Circuit breaker) for rating upto and including 6300 Amp.

- ACB (Air Circuit breaker) for rating above 630 Amp.

2. POWER AND CONTROL CABLES:

Individual motors will be connected to MCC by 1.1 KV grade, PVC sheathed armored cables. Cable sizes for respective motor rating will be as follows. All incoming cables of suitable size from PCC to all MCC's shall be in scope of supply.

Motor up 1.5 KW	1 No. x 3 core x 2.5 mm ²	Aluminum
Motor above 1.5 KW & upto 5.5 KW	1 No. x 3 core x 4.0 mm ²	Aluminum
Motor above 5.5 KW & upto 11 KW	1 No. x 3 core x 6.0 mm ²	Aluminum
Motor 15 KW	1 No. x 3 core x 10.0 mm ²	Aluminum
Motor 18.5 KW	1 No. x 3 core x 10.0 mm ²	Aluminum
Motor above 18.5 KW & upto 26 KW	2 Nos. x 3 core x 10.0 mm ²	Aluminum
Motor 30 KW	2 Nos. x 3 core x 16.0 mm ²	Aluminum
Motor above 30 KW & upto 45 KW	2 No. x 3 core x 25.0 mm ²	Aluminum
Motor 52 KW	2 No. x 3 core x 35.0 mm ²	Aluminum
Motor above 52 KW & upto 75 KW	2 No. x 3 core x 50.0 mm ²	Aluminum
Motor 90 KW	2 No. x 3 core x 70.0 mm ²	Aluminum
Motor 110 KW	2 No. x 3 core x 95.0 mm ²	Aluminum
Motors above 110 KW	With suitable size.	Aluminium
VFD Motors	With suitable size.	Aluminium
Control cable for push button station	1 No. x 3 core x 1.5 mm ²	Copper

3. INTERNAL POWER WIRING

All the power wiring will be carried out by using copper cable. Cable sizes will be as follows.

	Motor rating	Cable size	
For DOL Starter	Upto 5.5 KW	2.5 mm ²	
	Upto 7.5 KW	4.0 mm ²	
	Upto 9.3 KW	4.0 mm ²	
	Upto 11.0 KW	6.0 mm ²	
	Upto 15.0 KW	10.0 mm ²	
	Upto 18.5 KW	10.0 mm ²	
	Motor rating	Cable size (Supply side)	Cable size (Motor side)
For Star-Delta Starter	Upto 18.5 KW	10.0 mm ²	4.0 mm ²
	Upto 22 KW	16.0 mm ²	6.0 mm ²
	Upto 30 KW	25.0 mm ²	10.0 mm ²
	Upto 45KW	50.0 mm ²	25.0 mm ²

4. CABLE TRAYS:

Galvanized Iron cable trays will be provided for indoor & outdoor application.

5. EARTHING:

Earthing would be done using G.I. pipe rods as per IS standards. G.I. conductor earthing will be done for all electrical equipment and non current carrying metallic structures/tanks. G.I. conductors will be used for lighting protection, connected directly to separate earth pit.

6. PUSH BUTTON STATION:

Push button station will be provided near the motor wherever required. Flameproof push button station (as per IS 2148) will be provided for flameproof section and non-flameproof push button station (as per IS 2147) will be provided for non-flameproof section.

7. PLANT LIGHTING and LIGHTENING PROTECTION:

1. The normal process area lighting will generally comprise of Fluorescent fittings & Mercury vapour fittings.
2. Flameproof light fittings conforming to IS 2148 shall be provided for hazardous areas.

3. Plant lighting with flame proof fitting will be provided in flame proof areas particularly in distillation & storage section while nonflame proof fittings in non flame proof areas.
4. The normal lighting design will be based on average illumination levels recommended as per IS & calculated to take into consideration the aged output of Lamps. All operating platforms for all floors of plant area shall be properly illuminated.

PLANT AREAS	ILLUMINATION LUX	POSITION OF MEASUREMENT
General Area	160	800 mm above floor
Non Operating	50	800 mm above floor
Stairways & Exits	50	AT Treads
Local Machinery Panels	200	ON Panel

The suitable lightening protection shall be provided at Chimney, Boiler and distillery section for arresting the lightening .

8. Documents /Drawings to be submitted for Approval during Contract Stage:

The following drawings/documents (4 copies) shall be submitted by the Supplier for Purchaser / Inspection Agency approval:

1. Single line diagram
2. Vendor drawings, control schemes and other details for MCCS.
3. Physical layout of electrical system showing all panels, motors etc.
4. Cable tray and trench layout.
5. Cable schedule & interconnection charts.
6. Earthing schedule and layouts.
7. Lightening protection drawings.
8. Data sheets BKW calculation and characteristic curves for all motors.
9. Test certificates for panels, critical components and electric motors.
10. Operation and maintenance manuals for all electrical equipments.

9. Scope of work in services

a. Design and engineering:

- Preparation of cable layouts, Earthing Layouts and Lighting Layout drawings
- Preparation of panel layouts for L.T. Panel room and control room
- Preparation of cable schedule, interconnection schedule and detail BOQ of panels.
- Preparation of inspection plan and schedule.
- Preparation of schedule for site testing and commissioning.

b. Statutory approvals :

- Obtaining approvals on drawing and designs from local Electrical Inspector and Chief Electrical Inspector authorities.
- Arranging inspections and approvals for commissioning of total cogeneration plant electrical from Local and Chief Electrical Inspector PWD.

c. Inspections / Review Meetings :

- Making the arrangements for periodical and final inspection of all major equipments in the system at manufacturers works
- Attending the periodical review meetings at site or the agreed locations.

10. Battery Limits :

From : PCC Panel

To : Incoming ACB / MCCB cubicle of MCC and onwards.

- Earthing :Total Earthing system required for plant shall be included in this package along with required excavation , back filling and preparation of Earthing chambers for Electrodes
- Illumination system : Entire Illumination system required for plant shall be included in this package including lighting of area at all elevations.

11. Performance Guarantee

- All equipment shall be guaranteed for workmanship and materials and for satisfactory performance in accordance with the relevant clauses of the General Conditions of Contract.

The guarantee for performance shall cover individual items and systems for their ratings/outputs, as required in the specification.

12 MAKE OF COMPONENTS:

Sr. No.	Item	Make
1	LT Cables	Polycab/ /Finolex
2	Switchgear	L & T
3	Push Buttons	L & T /Siemens/Teknic
4	Indicating Lamps	Teknic/ L & T
5	Selector Switches	Kaycee/Salzar
6	LT Capacitors-reactor(HF)	Schneider /L. &T./Ambik
7	L.T. Panels	CPRI Approved type tested panel builder
8	Bus trunking	CPRI Approved type tested panel builder
9	Lighting fixtures	Bajaj/Crompton/Wipro/Oreva
10	Motor	Siemens only
11	Capacitor/ Reactor	Ambik
12	VFD	ABB only
13	Piping	TATA/Jindal
14	Lighting	LED

MOTOR :

All electrical motors (for equipment in the scope of supply) shall be supplied. These shall be suitable for operation at 415 V +/- 10%, 3 phase, 50 Hz +/- 5%, combine variation +/- 10% power supply.

Motors shall have insulation of class 'F' but temperature rise shall be limited to class 'B'.

All the motors shall be of **energy efficient IE3 type**.

The motor shall meet the following requirements.

- a. Highest among the commercially available makes & range.
- b. Flat efficiency curve between 60% to 100% load.
- c. Efficiency shall be guaranteed without any negative tolerance and tested.
- d. **SUPPLIER** shall obtain specific confirmation / approval from the Purchaser / Consultant before procuring the motor, for the guaranteed efficiency figures.

All motors of rating above 5.5 KW shall be provided with space heaters.

For motor rating 15 KW and above shall be suitable for star delta method of starting.

Terminal box to be rotatable by 4 x 90 Deg. Higher rated motors shall be provided with extension terminal box to receive the aluminum cables to avoid cramping of the cable in the terminal box. The terminal boxes shall be capable of withstanding the maximum system fault current (50 KA) for a duration of at least 0.25 second.

The motor shall be capable of withstanding 150% of the rated voltage.

Motors shall be capable to start and run-up at a minimum of 80% of rated voltage at its terminals with the driven mechanism / equipment connected.

Motors shall be capable of operating satisfactorily at full load for 5 minutes without injurious heating with 75% of the rated voltage at its terminals.

Break away torque, pull-up torque and pull-out torque shall be properly coordinated with the speed torque characteristics of the driven equipment and the **SUPPLIER** shall submit the characteristic curves interposing motor & driven equipment curves.

Motor shall be capable of withstanding locked rotor current for atleast 5 seconds longer than the starting time under rated load conditions.

Starting current shall be less than or equal to 600% of the rated current and the motors shall be designed for direct on line / reduced voltage starting.

Continuous duty motors shall be capable of three equally spread starts per hour under normal condition or two starts in quick succession from cold or one hot start, under rated load conditions.

The selection of drive motor rating for all pumps shall be done considering maximum of the following requirement. :

- a. 5% margin over the B KW at the rated duty parameters.
- b. All motors above 55 KW shall have RTD,BTD.
- c. Inverter duty motors ,wherever required shall have insulated bearings at its NDE end and VPI treatment windings.

ELECTRICAL WORK FOR FERMENTATION & DISTILLATION HOUSE, TANK FARM & UTILITY SECTION.

NOTE: In addition to bellow the technical specification given above will applicable.

Complete electrification of plant including design, manufacture, procure, supply, erection, testing & commissioning of compartmentalized MCC, electrical motors, **all flameproof equipments**, power cables, control cables, instrument cables, lightning arrestor, cable trays, local push button stations for each & every pump, blower, vacuum pump, agitator etc., lighting of all sections of plant including light fittings, earthing pits etc.

It also includes cable laying, earthing of motors, MCC, push button stations etc. All necessary modifications, trials, etc.

In MCC, 3 Nos. spare compartments suitable for higher HP starters shall be provided. Panel MCC boxes should be as per Indian Electric Rule (thickness) switch, starter, relays, and conductors, ACB, MCCB, ELCB etc. should be of L&T/Siemens/schneider Volt, Ampermeter & energy meter for each panel should be of AE/teknic,newtech make. A copper thimble only is to be used. Earthing should be as per Indian Electrical Rule Standard only. Cable (3.5 core) from main power house to MCC panel is in supplier's scope.

Earthing Type - Pipe in pipe having diameter 80 mm X 10 feet long.
Every MCC panel should have multi function meter.
All lighting – LED
MOC of sleeve in pumps should be SS-316

17. Instrumentation & Controls

The scope of instrumentation work shall include the following:-

Design, system engineering, manufacture and supply of all hardware and software necessary to meet the specified functional requirements, as required for the 105 KLPD distillery plant to produce R.S. & Anhydrous ethanol plant.

Implementation of measurement, monitoring, alarm, recording and control of the following as a minimum through PLC and SCADA for R.S. & Anhydrous ethanol plant:-

- a. Temperature control
Pressure control
Flow control
Level control
Plant protection & safety interlocks
Plant startup /shutdown sequence
Other required controls as per overall system design:-
- b. Local gauges, switches, sensors, field instruments for sensing, transmission and all the associated accessories such as Isolation valves, Impulse piping, tubing, fittings and accessories for the connection of instruments and control equipments to the process etc., that are required for the safe and continuous operation of the systems.
All transmitters shall be SMART type.

- c. Interposing relays and other types of converters that are required to convert one type of voltage level to another for actuating the final control elements.
- d. Interconnecting cables between the field instruments and the control panel, branch cables between the field instruments and junction box, inter panel wirings, internal wiring of the panels.
- e. Various final control elements like control valves, solenoid valves, pneumatic actuators, power cylinders etc., along with all necessary filter regulators, piping/tubing etc.
- f. Hardware required for erection by the Erection Contractor such as junction boxes, clamps, air headers, cable trays, cable glands, supporting structural and the other necessary materials that are required to carry out the erection work as per engineering practices.
- g. In addition to local mounted instruments, local Boards free standing and fully wired and complete with essential instruments as per the Supplier's practice for guidance of operator.

List of Documents/Drawings to be furnished

The following are the documents/drawings (4 Copies) to be given by the Supplier during contract stage.

- a) Specifications and Drawings including Supplier's recommended layout of instruments in field and control room.
- b) PLC architecture
- c) PLC configuration diagram
- d) I/O list
- e) Control Panel drawings
- f) Spare parts list (Commissioning & Maintenance)
- g) List of Tools and Tackles
- h) List of calibration and diagnostic equipments
- i) List of Consumables
- j) Power consumption estimate
- k) Instrument air consumption estimate
- l) Environmental conditions for instrument operation
- m) Consolidated bill of material including field instruments and Erection hardware
- n) Technical catalogue/literature of the model of the PLC System components and accessories offered.

Note: These documents shall be provided as hard copy.

17.1 Insulation for various equipments

This specification covers the technical requirements and essential particulars for the supply of the complete thermal insulation and its protective covering for pipes, valves, fittings including bend, equipment, tanks and vessels, all distillation columns etc. with working temperatures above 50⁰C up to 500⁰C. Unless otherwise specified the scope of supply of the “Supplier” shall include, but not be limited to the following items:-

- a. Insulating materials for all types as specified/required.
- b. Angles, irons, clamps, lugs, etc. for supporting insulation on pipes, ducts, valves & fittings and equipments.
- c. Wire mesh, lacing/binding wires, bands, straps, screws, etc. as required.
- d. Weather hoods.
- e. Any other material as may be required for making the insulation work complete.

Codes and Standards

The supply of thermal insulation to piping systems and equipment covered under this specification shall comply with all currently applicable regulations and safety codes in the locality where the thermal insulation will be applied. The insulating material shall also conform to the latest editions of the codes and standards listed below.

Nothing in this specification shall be construed to relieve the SUPPLIER of this responsibility.

IS: 3346: Method of determination of thermal conductivity of thermal insulation material.

IS: 10556: Code of practice for storage and handling of insulating materials.

IS: 14164: Industrial application and finishing of thermal insulating materials at temperatures above 80°C and up to 200°C.

IS: 737: “Specification for wrought aluminum and aluminum alloys sheet and strip (For General Engineering Purpose).

American Society for Testing and Materials

IS: 8183: “Specification for Bonded Mineral Wool”

IS: 3150: “Hexagonal wire netting for general purpose”

IS: 3144: “Methods of test for Mineral Wool Thermal Insulation Material”

17.2 Testing and Inspection

1. Test and Inspection of pressure & Non-Pressure Parts

Inspection of raw material

Dimensional checking

Inspection of welds and completes assembly

Visual inspection on completion of finishing.

Inspection after painting.

2. Tests and Inspection on bought-out equipments

Stage Inspection of all the critical components

Dynamic balancing for rotating equipments

Performance tests of all the equipments.

Dimensional checking and visual inspections of final equipments on completion.

3. Tests on Instruments

Inspection of materials

Dimensional checking and stage inspection of all critical components

Checking of panels, checking of relays, simulation, etc.

4. Quality Plan

The SUPPLIER shall submit a Quality plan detailing the list of tests and inspection envisaged for all the mechanical, electrical equipment and instruments during contract stage also indicating stages of inspection, Consultant /Purchaser hold points, etc. for approval.

During contract stage, detailed quality plan along with stages of inspection, customer hold points, etc. will be finalized and followed.

17.3 **Manpower:**

- i. Staff including Engineers, Technicians, skilled, highly skilled and labour, khalasi required for erection and commissioning of the machinery are to be deputed by the supplier.
- ii. The transportation of machinery and equipments from the stored place to their respective position is also to be done by the supplier's staff.

17.4 **Tools & Tackles:**

- i. Gas cutting equipments, electric welding set, adequate supply of Gas Cylinders and other consumable are to be managed by the supplier at his cost.
- ii. All tools and tackles required for erection are to be brought by the supplier. If purchaser's tools and tackles are used, extra rent will be charged.
- iii. All the instruments required for the performance measurement during trials will be brought by supplier.

17.5 **Breakages / Thefts:**

Purchaser will not be responsible for any breakages; the purchaser will entertain theft of the supplier or Sub-Contractors material kept at the site and no claim in this respect.

17.6 Causality, Loss/Damages:

- i. Any damage caused by the supplier's person/team to purchaser's property/person will be assessed and recovered from the supplier. In other words, the entire responsibility in connection with any acts or deeds of supplier's person / team detrimental to purchaser during the course of work will be on supplier's account.
- ii. The responsibility in respect of injury caused to supplier's or sub contractors person / team or any thing happened wrong during the course of work will be the supplier's responsibility.
- ii. During the period of execution of the work / job the supplier shall be fully responsible for any causality, loss or damage. The purchaser will not be responsible for any type of payment like compensation etc. to the supplier's workers.

17.7 Equipment Fabrication:

All fabrication of equipments will be done under stage wise third party inspection by purchaser. All bought out equipments should be offered for inspection before dispatch – 15 days.

18. Changes:

- i. Purchaser without invalidating this agreement may order minor extra work or make changes by adjusting work, the contract price being remained same. All such work shall be executed under terms & conditions of this agreement.
- ii. Except in an emergency endangering life or property, no change shall be made unless authorized in writing by the purchaser.

19. Purchaser's Right -

19.1 Risk purchase:

If the successful tenderer fails to execute the work as per order / schedule and after request of the purchaser contractor fails to do so then the purchaser shall be free to execute the work/purchase the required material on the risk and cost of the supplier without his consent.

19.2 Cancellation:

Purchaser reserve the right to cancel the contract forthwith upon or anytime after the happening of any of the following events:-

- i. If supplier commit a breach of any of the terms and conditions of the tender and fail to remedy such breach within ten days of the receipt of the written notice from purchaser in regard thereto.
- ii. If supplier do not adhere to the instructions which may be issued from time to time after mutual discussions in connection with the manufacture / supply of the material.
- iii. Purchaser's right to so terminate the contract shall be without prejudice to any of purchaser's rights and remedies against supplier and in the event of our so terminating the contract, purchaser shall not be obliged to pay for any loss or compensation in respect of such termination the security deposited will be forfeited.

20. Arbitration:

If at any time there should be any question, dispute or difference between the parties in respect of any matter arising out of or in relation to this Agreement, either party may give to the other party notice in writing of the existence of such question dispute or difference and the same shall be referred to the Arbitration of a single Arbitrator when the parties may agree upon, otherwise to two Arbitrators, one to be nominated by each party. The Arbitrators shall before proceeding with the reference, nominate an Umpire to act in case of disagreement as Single Arbitrator. The award of the Arbitrators shall be final and binding on the parties and be accepted by them. This reference to the Arbitrators shall be deemed to be a reference under the provision on the Indian Arbitration and Conciliation Act, 1996 and the rules made there under and any statutory modifications and re-enactments thereof that may be made from time to time and actually in force at the time of the reference. The place of arbitration shall be **Indapur, Dist. Pune (Maharashtra)**. The cost of Arbitration shall be borne by the parties as may be decided upon by the Arbitrators or the Umpire as the case may be. No party shall take recourse to judicial courts including higher courts before exercising this clause.

21. Duplication of clause:

Whenever there is duplication of clause either in the terms and conditions or in the agreement, the clause, which is beneficial to the purchaser, will be considered applicable at the time of any dispute.

22. Execution of agreement:

- i. Successful tenderer will be required, before undertaking the contract, to execute the agreement with purchaser on court stamp paper.
- ii. Specimen set of agreement (Refer Section III) is enclosed alongwith the tender document. Tenderers are advised to carefully read the same and submit with tender duly signed on all pages over the official seal, in token of acceptance of the terms and conditions thereof.
- iii. The person signing the tender should produce necessary notarized power of attorney in original authorizing the signatory to act on behalf of the proprietor/firms before signing the agreement. The original power of attorney will remain with the purchaser.
- iv. Failure to execute the agreement within ten days time may render the tenderer liable for forfeiture of earnest money deposit and termination of contract without prejudice to the rights of the purchaser to recover the damages under law.
- v. All terms and conditions stipulated in the tender notice, tender document, agreement and other documents furnish with the tender and related correspondence shall form part of the contract.

We have read and understood the above terms and conditions of this tender and hereby agree to abide by them and the same are acceptable to us.

Date: ---- / ---- / 2021

**Place: M/s Nira Bhima S.S.K. LTD. Shahajinagar, Tal. Indapur, Dist. Pune
Maharashtra State**

**Signature of the representative of the
Plant & Machinery Suppliers Tendere
with Company rubber stamp**

4. STATEMENT OF CREDENTIAL

a. General Information

1. Name of the firm
2. Nature of the firm (State whether Limited Company/ Partnership Company/Co-operative Society / Proprietary)
3. Year of establishment
4. Company Registration No.
5. Registered address
6. Correspondence address of Head office with telephone, mail & fax nos.
7. Address of Branches, if any
8. Address of the workshop
9. Name & address of Director, in case of Limited Company
 - b. Name & address of partners, in case of partnership firm alongwith
 - c. Deed and MOU.
 - d. Name & address of proprietor, in case of proprietary firm
10. Permanent Account Number (PAN)
11. Registration No. of ESI and PF
12. Excise Registration No.
13. MST & CST certificate
14. Work Contract Registration
15. Latest Income Tax Clearance certificate
16. Current solvency certificate
17. Name of Banker with full address
18. Style of account and account no.
19. Whether the firm has any suits/claims pending with tax authorities
(Give Details)

Note: Tenderer is required to fill up the above information wherever applicable or submit the documents in support of the above information.

b. Information Related to Distillery to produce R.S. and Anhydrous ethanol plants:-

The whole Tender Document (in original) including:

1. Registration certificates from NFCSF or Commissioner of Sugar (MS).
2. EMD in the form of DD/ Bank Guarantee.
3. Plant performance certificates.
4. PWD registration certificates, Min. class III State Govt. approved with MoU.
5. Income tax returns certificates.
6. Statement of credentials.
7. Turn-over for last 5 years (give year wise)
8. Minutes of prebid meeting.
9. Process flow diagrams.
10. Organizational chart & division undertaking such projects for execution.
11. List of orders currently in hand with their order value & order copy
(Give details separately for R.S., and Anhydrous ethanol plants)
List of projects commissioned in last 5 years with reference list of projects, year project value & performance certificates (Give details separately for R.S., and Anhydrous ethanol plants)
12. Details of the repeat orders (Separately for each product i.e. for R.S. and Anhydrous ethanol plants)
13. Details of sales service department & details of technical center or R & D, laboratory facility & list of patents acquired, if any.
14. Reference list and performance certificate of Continuous/fed batch fermentation and Multipressure distillation plants.
15. Any other highlights of process /system.

5. DOCUMENTS TO BE SUBMITTED

Following documents / details are required to be submitted by the tenderer:-

The whole Tender Document (in original) including: -

1. Registration certificates from NFCSF or Commissioner of Sugar (MS).
2. EMD in the form of DD / Bank Guarantee.
3. Plant performance certificates.
4. PWD registration certificates, Min. class III State Govt. approved with MoU.
5. Income tax returns certificates.
6. Statement of credentials.
7. Turn-over for last 5 years (Give year wise)
8. Minutes of prebid meeting.
9. Organizational chart & division undertaking such projects for execution.
10. Section I- i.e. General document dully filled in wherever applicable, signing each & every page of the document with company stamp.
11. Section II- i.e. Technical Specifications for R.S. and Anhydrous ethanol plant in purchaser's specified format only, duly filled in wherever applicable signing each & every page of the document with company stamp.
12. Section III- i.e. Commercial Format with declaration in purchaser's specified format only, duly filled in signing each & every page of the document with company stamp.
13. Section IV- i.e. Declaration & Agreement duly filled in wherever applicable signing each & every page of the document with company stamp.
14. Section V- Format for Bank Guarantee & EMD
(For Advance, Performance, Bank Guarantee and EMD)
15. All the documents mentioned in the statement of credential.
16. Block diagram of water balance, mass balance and energy balance for R.S. and Anhydrous alcohol plants.
17. Drawings (Process flow diagram) for R.S. and Anhydrous ethanol plants.
18. No deviation certificates.

6. CHECKLIST

Following documents should be submitted in the separate envelopes as given below:

Envelop No. 1 - (Technical Bid) -

1. Registration certificates from NFCSF or Commissioner of Sugar (MS)
2. Plant performance certificates.
3. PWD registration certificates, Min. class III State Govt. approved with MoU.
4. Income tax returns certificates.
5. Statement of credentials.
6. Solvency certificates.
7. Turn over for last five years.
8. Minutes of pre-bid meeting.
9. Process flow diagrams.
10. Technical specifications duly signed.
11. The entire general document duly signed.
12. Declaration & agreement duly signed.
13. Water & mass Balance –block diagram.
14. Name, address & other details of your banker.
15. Photocopy of authorization letter.
16. No deviation certificates.

Envelop No. 2 - (Commercial Bid) -

1. Declaration
2. Price offer in the given commercial format

Envelop No. 3 - (Earnest Money Deposit) -

EMD in the form of Demand draft /Bank guarantee

Section II – Technical Specifications

- 1 Capacity**
- 2 Continuous /Fed-batch Fermentation & Multipressure Distillation system**

Rectified Spirit

- 2.1 Technical Specifications for Continuous /Fed-batch Fermentation & Primary distillation
- 2.2 Process performance parameters /guarantee
- 2.3 Drawings from supplier for Rectified spirit plant

- 3 Anhydrous (Fuel) ethanol**

- 3.1 Technical Specifications
- 3.2 Process Performance Parameters /guarantee
- 3.3 Drawing from supplier for Anhydrous ethanol plant

- 4 Battery Limits**

- 5 Specifications for civil & structural work**

- 6 Makes of Bought-out items**

1.0 Basis of Project

CAPACITY

1.1 Plant Capacity *

Distillery - 75 KLPD of Total Spirit
71.25 KLPD of Pure Rectified Spirit &
3.75 KLPD of Impure spirit

OR

75 KLPD Anhydrous alcohols to meet
application for fuel, perfumery/
Pharmaceutical requirement

* Above plants are to be designed for 10% additional capacity

1.2 Process for Consideration: -

Fermentation*

- Continuous /Fed batch fermentation technology for cane molasses,
- The molasses quality to be considered as fresh,
- F.S. (Min.) – 40 %,
- Volatile acids \approx 5000 to 7000 ppm,
- Sludge content in molasses – 15 to 20 %.
- The plant should be able to run in Continuous/ Fed batch fermentation mode as per the quality of molasses available.
- Post wash clarification system is a part of fermentation system.

a) Primary distillation - Multipressure distillation to produce
a) RS - RS of potable grade /Industrial alcohol

b) ETHANOL - 75 KLPD production Fuel ethanol (From
Fermented wash or from R.S.) Based
on Molecular Sieve Dehydration
Technology.

(* The plant should be designed considering 7.5 % (v/v) alcohol in F. wash.)

1.3 Design Basis:-

The following design standards should be used for the design of equipment /plant.

These are the minimum standards. However, if mentioned specifically in the tender document, higher specs have to be used.

- 1) The plant should be designed considering 7.5 % (v/v) alcohol in F. wash.
- 2) Pressure Vessels and distillation columns as per ASME
- 3) Storage tanks as per API
- 4) Heat Exchangers as per TEMA
- 5) Piping and valve as per DIN/JIS
- 6) Instruments as per ISA
- 7) Indian Boiler Regulations (IBR)
- 8) IS 800: Code of practice for construction in steel
- 9) IS 875: Code of practice for design loads for building structure
- 10) IS 1893: Criteria for earthquake resistant – Design of structures.

Note –

Selection of the process will be done after evaluating the economic viability & merits of the process, giving preference to established processes by visiting the working plants and taking into account operation and maintenance cost.

1.4 Utilities Available: -

Molasses, steam, water- As specified in battery limit.

Power - 440 V, 3 ϕ , AC, 50 Hz

2.0 Distillery – FERMENTATION & DISTILLATION

2.1 Technical Specifications

**(Continuous /Fed-batch Fermentation & Primary Distillation
(MPR)**

2.2 Process Performance parameters /guarantee

2.3 Drawings from supplier for Rectified spirit plant

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2.1 TECHNICAL SPECIFICATIONS FOR 75 KLPD DISTILLERIES (R. S.)

2.1.1 Fermentation Section:

A. Molasses Weighing Section						
Sr. No.	Particulars	Capacity	M.O.C.	Dim./Thk (mm) S / B / T	Qty	Remark
1	Molasses day storage tank	400 MT	MS	8 / 8 / 6	1 No.	
2	Automatic weighing system for molasses with duplex Strainer with counter & totaliser.	20 MT / hr	MS	----	1 No.	Nova make & BIS Approved
3	Weighted Molasses receiving tank	3 M ³	MS	6 / 6 / 6	1 No.	
4	Weighed molasses tank / Molasses feed tank	50 MT	MS	8 / 8 / 6	1No.	
5	Check weighment with suitable system approved by weights measurement	20 MT/hr cap.	MS	Specify	1No.	
6	Check weighment tank	3 MT/hr	MS	6/6	1No.	
5	Molasses Filters	Suitable	MS with Internal SS mesh	MS-5mm	2Nos.	

B. Process equipments						
Sr. No.	Particulars	Capacity	M.O.C.	Dim./Thk (mm) S / B / T	Qty	Remark
1	Process molasses magnetic flow meter with totalizer	Suitable	----	----	(5Nos.) 4 Nos. for Fermenter + 1No. for P.F.	
2	Molasses broth mixer or molasses & water mixer for pre-fermenters & fermenters	20MT/h	SS-304 Pipe schedule 40 mixing element	3 mm	4+2 Nos.	4 Nos. for fermenters and 2 Nos. for P.F.

	(static mixer with non-clogging mixing element)		3 mm			
3	Yeast propagation vessels (Culture vessels) - I, II, III with sterilizing, cooling jacket and air sparging arrangement with necessary fittings & accessories (Sterilization to be carried out 1.1 bar and 121°C)	I- 0.2 M ³ II- 2.0M ³ III-10 M ³	SS-304	3 / 4	One each	Internal surface 180 grit finish with necessary vacuum relief valve
4	Pre-fermenters with and air sparging arrangement & necessary fittings.	I-100M ³ II-100M ³	SS-304	4 mm	One each	Internal surface 180 grit finish
5	Fomenters with Lateral Agitators, sight and light glass, manholes, level indicators, mechanical pressure relief device & other necessary fittings & nozzles	450 M ³ each	SS - 304	4 / 5 / 4 mm	4 Nos.	
6	CO ₂ scrubber & internals	Dia.- mm Specify	SS-304	3 mm Sieve tray	1 No.	With sampling facilities
7	Wash settling tank with sight & light glass, manholes, level indicator, & other necessary fittings &	Cap. – 250 M ³	SS-304	4 mm	1 No.	

	nozzles					
8	Clarified wash tank	Cap.-175 M ³	SS-304	3/ 4 mm	1 No.	

C. Process pumps (Pump with motor)							
Sr. No	Particulars	M.O.C.	Capacity	Head in MLC	HP/ KW	Qty	Remark
1	Progressive Flow Pump with variable speed motor for molasses. (Screw Type) (Day tank to weighing system)	Body-CI Other wetted parts SS – 304	20 MT/hr	Specify	Specify	1+1 Nos	
2	As above Molasses pump/Molasses feed pump (screw type) (Weighing section to diluter)	Body-CI Other wetted parts – SS – 304	20 MT/hr	Specify	Specify	1+1 Nos	
3	Fermenters cooling pump / Fermented wash Re-circulation Pump Type- Centrifugal	SS -304	300 M ³ /hr	Specify	Specify	4+1 Nos	
4	Pre-fermenters to fermenter Pump, Type – Centrifugal	SS -304	Specify	Specify	Specify	1+1 Nos	
5	Clarified wash pump/Wash transfer to distillation pump Type – Centrifugal	SS -304	45 M ³ /hr	Specify	Specify	1+1 Nos	
6	Process water Pump Type – Centrifugal	Body-CI Shaft & impeller – SS – 304	Specify	Specify	Specify	1+1 Nos	

Note – All pumps should be provided with double mechanical seal.

- CIP tank with pumps (1+1Nos.) in fermentation is considered with a view to clean PHE of fermenters/pre-fermenters in place from time to time.
- Non Return valve should be provided wherever required.
- Safety guards for all motors to be provided.
- All flanges should be as per ASME/ANSI B 16.5 & should confirm to Table E
- All elbow should be long radius type
- All stub ends should be long neck type

- All ball valve should be full port type only.
- For piping every 6 M distance flanges should be provided.
- For SS-304 Piping –Sch.10 upto 50 NB & Sch. 5 NB for above 50 NB.

E. Plate Heat Exchangers						
Sr. No.	Particulars	H.T.A. M ²	M.O.C.	No. Size & thickness of plate	Qty	Remark
1.	Fermenter wash cooler Pre-fermenter cooler	Specify	Plate - SS - 316 Frame - MS	Specify	4 No.for Ferm. 2 No for PF.	

F. Spent Recycle System						
Sr. No.	Particulars	Cap./HTA	Head	M.O.C.	Qty	Remark
1.	Spent Wash Holding Tank	Specify	---	SS-304	01	
2	Spent Wash Feed Pump with Motor	Specify	Specify	Contact Parts SS-304	1+1	
3	PHE	Specify	----	Frame-MS Plates – SS-316	1+1	
4	Piping and Valves	----	---	SS-304	Lot	
5	Pressure Gauges	---	---		1+1	
6	Temperature Indicator for holding tank				02	

G. Miscellaneous						
Sr. No.	Particulars	Capacity	M.O.C.	Dim./Thk	Qty	Remark
1.	Blowers with motors: a. Twin lobe type Air blower with air purifier. (Bacteria proof sterilizable) & with liquid separator.	Specify	Body-CI Type –Water ring	Specify	1+1 Nos.	
2.	Strainer for dil.	Specify	SS-304	Specify	1	

	Molasses				Lot.	
3.	Air filters (Bacteria proof sterilizable)	Specify	Corrugated HEPA type Frame -MS	Specify	2Nos.	
4.	Water Header	Specify	MS	Specify	1 No.	
5.	Air Header	Specify	SS-304	Specify	1 No.	
6.	CO ₂ Header	Specify	SS-304	Specify	1 No.	

H. Piping & Valves				
Sr. No	Particulars	M.O.C.	Class	Remark
1.	Piping (Including piping supports) a. Molasses b. Fermented wash c. Process & cooling water d. Air e. Steam piping for yeast vessels/PF/ Fermenter	MS SS-304 MS SS MS	'C' class --- 'C' class 'C' class --- --- ---	For SS-304, Piping-Up to 2" & above Sch.10s As per IBR rule
2.	Valves - a. Molasses b. Fermented wash c. Process & cooling water d. Air	CS SS-304 CS SS-304	---	Specify type of valve

Note-1) Antifoam pipe line SS- 304 (size 1") should be provided from antifoam storage tank pump out let to each fermenter top in the antifoam inlet tank (cap. 50 Lit. each x 6Nos.) with valves (12Nos.) arrangement.

2) For piping every 6M distance flanges should be provided.

DISTILLATION SECTION

**2.1.1 Distillation Section – Multi-pressure vacuum Distillation System
(R.S. Production) (Minimum 5-column system)**

A. Columns							
Sr. No.	Particulars	Dia. (mm)	M.O.C.	No. of plates/ type of plates/ plate spacing	Thk.* Shell / Tray / /Down comer /Cap (mm)	Qty.	Remark
1.	Analyzer column	Specify	SS - 304	Rh-Grid	6/2.5/2.0/1.6	1 No.	
2.	Degasifying column	Specify	SS - 304	Rh-Grid	6/2.5/2.0/1.6	1 No.	
3.	Extractive / Purifier stripper column	Specify	SS - 304	Bubble cap	4/2.5/2.0/1.6	1 No.	
4.	Rectifier cum exhaust column	Specify	R.S. zone (Shell, cap, tray) DOW-Cu & zone of FO in SS-304	Bubble cap	5/2.5/2.0/1.6	1 No.	
5.	Fusel oil column	Specify	SS - 304	Bubble cap	4/2.5/2.0/1.6	1 No.	

(Above given scheme is tentative. Suppliers can quote for advanced schemes with additional columns)

Note:-

1. Necessary Manholes to be provided for the columns along with sight & light glasses.
2. Necessary connections like manometer, vapour bottle, antivacuum valve etc. to be provided to the column.
3. No. of segments with body flanges to be specified.

4. Please elaborate the cleaning arrangement for plates in the column.
5. D.O.Cu – Deoxidized Copper (DOW Cu. Purity min. 99.5%)
6. * To be finalized on the basis of diameter of the column

B. Condensers/Coolers/reboilers							
Sr. No.	Particulars	H.T.A. (M²)	M.O.C.	Thk. OD/Tube (mm) & Length of tube (m)	Thk. * Shell (mm)	Qty.	Remark
1	Rectifier PCV condenser	Specify	SS-304	25.4 /1.2 / 3	3mm	1 No.	
2	Rectifier vent condenser	Specify	SS-304	25.4 /1.2 / 3	4mm	1 No.	
3	Degasifying condenser	Specify	SS-304	25.4 /1.2 / 3	4mm	1 No.	
4	Extractive /Purifier Main Condenser	Specify	SS-304	25.4 /1.2 / 3	4mm	1 No.	
5	FOC condenser I	Specify	SS-304	25.4 /1.2 / 3	4mm	1 No.	
6	FOC condenser II	Specify	SS-304	25.4 /1.2 / 3	4mm	1 No.	
7	Alcohol Cooler/product cooler	Specify	D.O.Cu	25.4 /1.6 / 3	4mm	1 No.	
8	Impure spirit cooler	Specify	SS-304	25.4 /1.2 / 3	4mm	1 No.	
9	Weak alcohol heater	Specify	D.O.Cu	25.4 /1.6 / 3	3mm	1 No.	
10	Fusel oil cooler	Specify	SS-304	25.4 /1.2 / 3	3mm	2 No.	
11	a) Analyzer column reboiler b) Analyser reboiler vent condenser	Specify Specify	SS-304 SS-304	38.1 /1.6 / 3 25.4 /1.2 / 3	4mm 4mm	1+1No. 1 No.	Specify type of reboiler
12	Purifier (Stripper) column re-boiler	Specify	Shell SS-304 Tube 316	25.4 /1.6 / 3	3mm	1 No.	
13	Rectifier cum exhaust column -I re-boiler	Specify	Shell SS-304 Tube 316	25.4 /1.6 / 3	4mm	1 No.	
14	FOC column re-boiler	Specify	SS- 304	25.4 /1.6 / 3	3mm	1 No.	

15	Vent scrubber heat exchanger	Specify	SS-304	25.4 /1.2 /3	3mm	1 No.	
----	------------------------------	---------	--------	--------------	-----	-------	--

Note –

1. Condensers to be provided with front/rear water header, necessary reflux flow glass housing, degasifying bottles mentioning the position i.e. horizontal/vertical & necessary connections etc.
2. Tubes in SS- 1.2mm thick for condensers, Dow-cu 1.6mm for coolers / condensers & 1.6 mm for reboilers.
3. *To be finalized on the basis of diameter of the condensers /reboilers.
4. For all reboilers & condensers, flanges should be provided on the end of the caps (both ends) for easy manual brushing & cleaning.
5. Piping passes from every floor flanges should be provided (except vacuum line).
6. Suitable capacity Chain pulley block with necessary arrangement to fix chain pulley block for opening of reboilers and condensers dish-end top/bonnet should be provided.

C. Miscellaneous						
Sr.No.	Particulars	Capacity	M.O.C. (Shell, nozzles, flanges etc.)	Thickness	Nos.	Remark
1	Fusel oil De-canter with sight and light glass and water sparger for recovery/fusel oil column	To be specified	SS-304	3mm	1No.	
2	Plate Heat Exchangers 1. F. Wash heater /Sp. wash cooler 2.Rectifier feed heater	HTA To be specified	Plate SS-316	Thickness of plate (0.5mm)	1+1 Nos. 1+1 Nos.	
3	Jet mixer	To be specified	SS-304	To be specified	1 No.	

4	Hot water collection tank	To be specified	MS	8mm	1 No.	
5	Steam condensate Tank	To be specified	MS	8mm	1 No.	
6	Steam Header (Chest) With pressure & temp. gauge, safety valve, inlet, outlet steam valve, etc.	To be specified	MS- IBR approved	--	1 No.	
7	Water Header	To be specified	MS	To be specified	1 No.	
8	Fusel oil washing tank	To be specified	SS-304	3mm	1 No.	
9	Analyzer flash tank	To be specified	SS-304	4 mm	1 No.	
10	Analyzer Condensate tank	To be specified	SS-304	3 mm	1 No.	
11	Rectifier reflux tank	To be specified	SS-304	3mm	1 No.	
12	Recovery/Fusel oil feed tank	To be specified	SS-304	3mm	1 No.	
13	Recovery/Fusel oil reflux tank	To be specified	SS-304	3mm	1 No.	
14	Extrative/Purifier reflux tank	To be specified	SS-304	3mm	1 No.	
15	IS feed tank	To be specified	SS-304	3mm	1 No.	
16	Spent wash/ Spentless siphon	To be specified	SS-316	Sch. 40	To be specified	
17	FOC feed preheater	To be specified	SS-304	To be specified	1 No.	
18	Seal pot	To be specified	SS-304	To be specified	1 No.	
19	Sealing water system for vacuum pump (Tank, PHE & pump)	To be specified				
20	Gas liquid	To be	SS-304	To be	1 No.	

	separator for analyzer column	specified		specified		
21	Spentlees collection tank	2 M ³	SS-304	3mm	1 No.	
22	Manometer bottles	To be specified	SS-304	To be specified	Lot	
23	Vapour bottles	To be specified	SS-304	To be specified	Lot	
24	HDPE pipe(pressure 6kg/cm ² g)	As per IS specification 4984-95 HDPE pipes PE - 80				

D. Piping Fittings & Valves					
Sr.No.	Particulars	Capacity	M.O.C.	Class	Remark
1.	Piping – (Including piping supports) a. Fermented wash b. Water c. Steam d. Rectified spirit e. Impure spirit f. Fusel oil g. Spent wash h. Spentleese		SS-304 MS- MS- SS-304 SS-304 SS-304 SS-304 SS-304 SS-316	-- C IBR Sch. 10 Sch. 10 Sch 10 Sch. 10 Sch. 10 Sch. 10	For SS-304, Piping- Sch.10 up to 50 NB & Sch. 5 for above 50 NB
2.	Valves – a. Fermented wash b. Water c. Steam d. Rectified spirit e. Impure spirit f. Fusel oil g. Spent wash h. Spentleese	--	SS-304 CS CS SS-304 SS-304 SS-304 SS-304 SS-304	-- -- -- -- -- -- --	Specify type of valve

Note:-

1. All flanges should be as per ASME/ANSI B 16.5 (Edition 1998 including addenda 1998) & should confirm to Table E.
2. All elbows should be of long radius type.

3. All stub ends should be of long neck type.
4. All ball valves should be full port type only.
5. All SS-304 piping –Sch. 10 only up to 50 NB and above 50 NB schedule 5.
6. Flanges should be provided at every 6 meters in the piping.
7. Spent lease piping should be SS-316

Flameproof motor & double mechanical seal.

E.						
Sr. No.	Particulars	M.O.C.	Capacity	HP/KW	Nos.	Remark
1	Rectifier Reflux pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
2	Recovery/Fusel oil feed pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
3	Analyzer condensate transfer pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
4	Flash tank bottom pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
5	Rectifier bottom (Spentlees) transfer pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
6	Purifier reflux transfer pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
7	Purifier bottom transfer pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
8	Spent wash transfer pump with double mechanical seal	Body-CI, Shaft & impeller – SS – 316	To be specified	To be specified	1+1 Nos.	

9	I.S. cut transfer pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
10	Fusel oil washings transfer pumps	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
11	Fusel oil feed (FOC) pumps	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
12	Vacuum pump	Contact part in SS	To be specified	To be specified	1+1 Nos.	
13	Steam condensate transfer pump	Body-CI, Shaft & impeller – SS – 304	To be specified	To be specified	1+1 Nos.	
14	Sealing water system for pumps (Water supply & return header, tank, pumps and PHEs)	To be specified	To be specified	To be specified	1+1 Nos.	

Note-

1. All pumps should be provided with flameproof motors with mechanical seal & wherever required double mechanical seal should be provided.
2. Motor capacity design data as per load to be submitted.
3. CIP tank with pumps (1+1Nos.) is installed in fermentation section. It can be used for Distillation to clean all PHE's, all columns and reboilers (water side) in place from time to time.
4. Safety guards for all motors.
5. Piping passes from every floor flanges should be provided (except vacuum line).
6. For 250 NB and above piping size every 6M distance flanges should be provided.
7. Pumps, piping, fittings, pipe supports, valves, instrumentation & electrical items required for all utilities as per battery limit should be in the scope of supplier. Supplier should specify all the details for this particular requirement.
8. Sealing water system, soft water to all pumps gland-Inlet and out let water header with piping and water collection tank, PHE and pumps to be provided.
9. Pumps -1+1Nos. (1No. in operation +1 No. process standby)

10. Non return valves (NRV) should be provided for each pump delivery line.
11. All flanges should be as per ASME/ANSI B 16.5 (Edition 1998 including addenda 1998) & should confirm to Table E.
12. All elbows should be of long radius type.
13. All stub ends should be of long neck type.
14. All ball valves should be full port type only.
15. For piping every 6M distance flanges should be provided.
16. For SS-304 Piping - Sch.10 up to 50 NB & Sch. 5 for above 50 NB.

Note:- ASME CODE SHALL BE USED WHEREEVER NECESSARY

Instrumentation section (For Fermentation & Distillation- R.S.) –

*** Exact scope of instrumentation and control loops will be finalized only after submission of detail P&I diagrams.**

A. Instrumentation for Fermentation House

Given Instrument list is only for indicative purpose; supplier has to specify actual requirement.

*** Flow meters- 25% extra capacity**

Sr.No.	Particulars	Type	Range/ Qty.	Make
1	Air to culture vessels, pre-fermenters & fermenters	Rotameter	To Specify	
2	Process water to scrubber	Glass tube Rotameter	Specify	
3	Process water to blower	G.T.Rotameter	Specify	
4	Process water to diluters	G.T.Rotameter	Specify	
5	Process water to yeast activation pre-fermenter	G.T.Rotameter	Specify	
6	F.W. to Wash settling tank	Magnetic flowmeter	Specify	
7	F.W. to Distillation from CWT	Magnetic flowmeter	Specify	
8	Other	Rotameter	Specify	
9	Molasses flow meter- YAV/PF, F1, F2, F3 & F4	Magnetic Flow-meter with electronic transmitter, digital indicator cum integrator	6 Nos.	
10	Air to PF/Fermenter	Glass tube Rotameter	2 No.	

*** Temperature indicators**

Sr.No.	Particulars	Type	Range/Qty.
1.	Static mixer outlet	Temperature gauges (mercury filled type) 4" size	Specify
2.	Pre-fermenter, Yeast vessels		Specify
3.	Fermenters		Specify
4.	Process water		Specify
5.	Cooling water to fermenters PHE		Specify
6.	(Header)		Specify
7.	F. W. outlet from PHE (F. W. line)		Specify
8.	F.W. to distillation		Specify
9.	Air blower discharge		Specify
10.	Cooling water return from fermenter		Specify
11.	PHE (return header) Others		Specify
12.	Temperature indicating controller for PHE circuit	Specify	Specify

* **Temperature transmitter**

1	Propagation vessel I, II, III pre-fermenters	Sensor:RTD-Pt 100 Transmitter head mounted	Specify
2	Fermenters		Specify
3	Fermented wash coolers		Specify
4	Wash outlet		Specify
5	Cooling water return from PHE		Specify
6	Cooling water supply header		Specify
7	Recycle pump discharge		Specify
8	Clarified wash pump discharge		Specify
9	Feed to analyzer column		Specify
10	Spent wash cooling pump discharge		Specify
11	Spent wash to vapour separator		Specify

* **Pressure gauges**

Sr. No.	Particulars	Type	Range /Qty.
1	Process water pump	Siphon	Specify
2	Cooling water pump	Diaphragm	Specify
3	Molasses (between mixer & filter)	Diaphragm	Specify
4	Molasses (after filter)	Diaphragm	Specify
5	Nutrient dosing pump	Diaphragm	Specify
6	Dilution water fed pumps	Siphon	Specify
7	Propagation vessel I, II, III pump	Diaphragm	Specify
8	Fermenter dil. Pump	Diaphragm	Specify
9	Fermenter recirculation pumps	Siphon	Specify
10	Weak Beer (after strainer)	Siphon	Specify
11	Deyeasted Wash (from PHE to column)	Diaphragm	Specify
12	Fermented wash to hydrocyclone	Diaphragm	Specify
13	Clarified wash pump	Diaphragm	Specify

14	Steam chest	Diaphragm	Specify
15	a. Raw molasses pump	Diaphragm	Specify
16	b. Weighed molasses pump	Diaphragm	Specify
17	c. Clarified wash pump	Diaphragm	Specify
18	d. Air blower/CO ₂ blowers	Diaphragm	Specify
19	e. F.W. recirculation pump	Diaphragm	Specify
	f. On all remaining pumps	Diaphragm	Specify
20	Process water header	Diaphragm	Specify
21	Cooling water header	Diaphragm	Specify
22	Others	Siphon	Specify
		Diaphragm	Specify
		Diaphragm	Specify
		Siphon	Specify
		Diaphragm	Specify
		Specify	Specify
		Siphon	Specify
		Siphon	Specify
		Diaphragm/siphon	Specify

Pressure Transmitters

Sr.No.	Particulars	Type	Qty.
1.	Process water header	To be	To be
2.	Air Header	specified	specified

* Other instruments

Sr. No.	Particulars	Type	Qty.
1.	Level indicator for fermenters	Specify	Specify
2.	Flow glass for yeast separator	Specify	Specify
3.	Foam sensors for fermenters/PF	Specify	Specify

* Specify all the control loops in detail.

If RTD is used instead of dial thermometers, local indication should be provided.

Necessary control panels for different sections to be provided.

B. Instrumentation For Distillation Section (Multi-pressure System)

Given instrument list is only for indicative purpose; Supplier has to specify actual requirement.

* **Flow meters-25% extra capacity**

Sr.No.	Particulars	Type	Range/Qty.
1	Rectifier reflux from wash pre-heater	Digital type Metal	Specify

2	& condenser to rectifier column. Aldehyde reflux/fusel oil reflux/any other column reflux from 1 st & 2 nd condenser	tube Rotameter with Transmitter	Specify
3	Rectified spirit draw Impure spirit draw	Digital type Metal tube Rotameter with Transmitter	Specify Specify Specify/ Specify
4	Fusel oil draw from pre-rectifier, Rectifier & FOC	Glass tube Rota meter	Specify Specify
5	Process water	Glass tube Rota meter	Specify Specify
6	Soft water to vacuum pump & scrubber	Glass tube Rota meter	Specify Specify
7	Spent wash	Magnetic Flow Meter Magnetic Flow Meter Glass tube Rotameter	Specify Specify Specify
8	Spentleese		
9	Others		
10	a. R.S.Draw b. I.S. Draw c. Steam d. Fermented wash feed line	Digital type Metal tube Rotameter with Transmitter Orifice type Magnetic Flow meter	Specify Specify Specify
11	Steam flow control system	Specify	Specify

Note- All column reflux rotameter should be digital indicator metal tube rotameter with transmitter.

* **Temperature Indicators**

Sr.No.	Particulars	Type	Qty.
1	Wash pre-heater (F.W. outlet)	Sensor	: Specify
2	F.W. feed to analyzer (F.W. line)	RTD-Pt 100	Specify
3	Analyzer/degasifying column (Analyser- top, middle, bottom plus degasifying)	Temperature Sensor with Transmitter head mounted	Specify
4	Rectifier column: (Bottom/Middle/Top) a. R.S. draw plate b. F.O. plates		Specify
5	Exhaust column/simmering/refining column (Top/Bottom/middle)		Specify
6	a. Pre-rectifier/ Aldehyde column / (Top/Bottom) b. F.O. column (Top/Bottom/F.O. Tapping)		Specify

7	Cooling water inlet header		Specify
8	Cooling water outlet header		Specify
9	Cooling water outlet from [condensers of pre-rectifier (I, II, III), analyzer reboiler vent condenser, FOC (I, II)		Specify
10	Process water header		Specify
11	Steam (analyzer/degasifying/exhaust/FOC column)		Specify
12	Steam chest		Specify
13	R.S., I.S. & F.O. Cooler, spent wash outlet		Specify
14	Primary, Vent, degasifying, 1 st & 2 nd Aldehyde condenser cooling water outlet.		Specify
15	PHE Circuit		Specify
16	All reflux tanks		Specify
16	Digital single point temp. indicators (Panel mounted)	Specify	Specify
17	Digital eight-point temp. scanner (Panel mounted)	Specify	Specify
	a. Temp. control system – for recycle flow to fermenter.		
	b. Temperature control for columns (Analyser/Rectifier/F.O.)		
	c. Temp. recorder for columns		

* **Pressure gauges**

Sr.No.	Particulars	Type	Qty.
1.	Distillation cooling water header	Siphon	Specify
2	Distillation column (Analy, degasifying, Alde, Recti, Exhaust, Fusel oil,)	Diaphragm	Specify
3	Steam (various column)	Siphon	Specify
4	Steam chest	Siphon	Specify
5	For pre-heating F.W., PHE	Diaphragm	Specify
6	On recycle pump & spentwash cooling pump	Specify	Specify
7	Others on all pumps	Specify	Specify
8	Feeds & refluxes to various columns	Diaphragm	Specify

* **Pressure Transmitters**

Sr.No.	Particulars	Type	Qty.
1.	Distillation column (Analyzer/degasifying, RC, ED,	To be	To be
2	FOC column Top & Bottom)	specified	specified
3	Steam (various column)		
4	Steam Header		
5	Feeds to various columns		

6	Cooling water supply Header		
7	Cooling tower pump		

* **Equipment / Other Instruments**

Sr.No.	Particulars	Type	Qty.	Make
1.	Sykes hydrometer	Specify	Specify	Specify
2.	Antom Par	Specify	1 No.	Specify
3.	Sykes table for determining strength of alcohol	Specify	Specify	Specify
4.	Safe & tester for rectified spirit, impure spirit.	Specify	Specify	Specify
5.	Level indicator with alarm	Specify	Specify	Specify
6.	Level controller for various analyzer columns	Specify	Specify	Specify
7.	Anti-vacuum/pressure relief valves (distillation column)	Specify	Specify	Specify
8.	Safety Valve	Specify	Specify	Specify
9.	Timers	Specify	Specify	Specify
10.	Manometer	Specify	Specify	Specify
11.	Vibration switch for cooling tower	Specify	Specify	Specify
12.	Motor & Instrument control panel	Specify	Specify	Specify
13.	Instrument air compressor with dryer for distillation plant	Specify	1+ 1No.	Specify
14.	Air compressor with dryer	Specify	1+ 1No.	Specify
15.	PRDS	Specify	Specify	Specify
16.	PLC based automation system with SCADA, Redundancy for: controller and server, power supply, communication module, Latest configuration of Engineering cum operator station for fermentation, distillation (R.S. & F.A) with integrated spent wash evaporation plant Automatic data storage for minimum 3 months period.	Flow, Level, Pressure, Temperature control loops as per required Nos.		
17.	Redundant UPS 1 hr backup, laser jet printer			

* PLC based automation system is to be placed in AC room & AC to be provided by the supplier to maintain the temperature of AC room in the range 20-25⁰C (Make:- Videocon/LG/Voltas/Daikin).

- * SCADA & logic development software shall be development & run time, report, trends & alarm licenses to be provided (All original)..
- * The PLC software:.
- * **Specify all the control loops in detail. Final scope of control loops will be decided only after submission of all P & I diagrams & system engineering.**

Electrical:-

Electrical Work For Fermentation & Distillation House, Tank farm & Utility section	
<p>Complete electrification of plant including design, manufacture, procure, supply, erection, testing & commissioning of compartmentalized MCC, electrical motors, all flameproof equipments, power cables, control cables, instrument cables, lightening arrestor, cable trays, local push button stations for each & every pump, blower, vacuum pump, agitator etc., lighting of all sections of plant including light fittings, earthing pits etc.</p> <p>It also includes cable laying, earthing of motors, MCC, push button stations etc. All necessary modifications, trials, etc.</p> <p>In MCC, 3 Nos. spare compartments suitable for higher HP starters shall be provided. Panel MCC boxes should be as per Indian Electric Rule (thickness) switch, starter, relays, and conductors, ACB, MCCB, ELCB etc. should be of L&T/Siemens/schneider Volt, Ampermeter & energy meter for each panel should be of AE/teknic,newtech make. A copper thimble only is to be used. Earthing should be as per Indian Electrical Rule Standard only. Cable (3.5 core) from main power house to MCC panel is in supplier's scope.</p>	Specify details

Note –The incomer of MCC shall be 1.5 times of its actual rating & cables shall be 1.2 times of actual rating.

Make:-

1. All the cables used for electrification shall be Finolex/Asian/C.C.I. make only.
2. All lighting (Distillation & Warehouse) material should be flame proof and of Philips or Crompton Greaves make only.

Insulation & Painting:-

Insulation & painting for fermentation & distillation section.	
<p>Insulation: Insulation for distillation columns & other related equipments & piping like Steam chest, hot water tank, steam piping, CIP tank etc. with</p>	Specify details

Aluminum cladding of 22 G (As per IS code) Painting: Painting as per the relevant code to all MS equipments, CS piping, Supports etc.	
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Tank farm: -

Sr. No.	Particulars	Working Capacity	MOC	Thk. (mm) Shell/Bott./Top	Qty	Remark
1	Pure spirit receivers with cage ladder railing and walkway	150 M ³	MS	8/6/8/6	3 Nos.	
2	Impure spirit receivers	10 M ³	MS	6/6/6	3 Nos.	
3	*Pure spirit storage tank	1000 M ³	MS	As per IS :803,1976	2 Nos.	
4	*Impure spirit storage tank	200 M ³	MS	8/8/6	1 No.	
5	Fusel oil storage tank	25 M ³	MS	6/6/6	1 No.	With pump circulation arrangement for better separation of Fusel oil.
6	Turbine type Flow meter with totalizer for issue to be approved by Weight & Measure Dept.	2 Nos. one for R.S. (Pure) and one for IS/TA				

- * These will be provided with flame arrester & cooling vent condenser.
- * The level indicators will be provided on all tanks.
- * Receivers are also provided with flame arrester (SS-304).

Pumps with flameproof motor & double mechanical seal

Sr No	Particulars	M.O.C	Type	Cap.	HP/KW	Qty.	Remark
1	R.S. pump (From receiver to storage tank to issue)	SS -304	Specify	40M ³ /hr	Specify	1+1 Nos.	

2	Fusel oil feed pump (from storage tank to issue)	SS -304	Specify	10M ³ /hr	Specify	1+1 Nos.	

Note – All motors are flame proof with mechanical seal pump.

- Pumps -1+1Nos. (1No. in operation +1 No. process standby)
- Non return valves (NRV) should be provided for each pump delivery line.
- Safety guards for all motors.
- All flanges should be as per ASME/ANSI B 16.5 (Edition 1998 including addenda 1998) & should confirm to Table E.
- All ball valves should be full port type only.
- For SS-304 Piping - Sch.10 up to 50 NB & Sch. 5 for above 50 NB.

Utilities:-

Sr. No.	Particulars	Capacity	M.O.C.	Other details	Qty.	Remark
1	Cooling tower with motor & cooling water circulation pump (1+1 Nos.) a.For fermentation b.For distillation(R.S.)	Specify	Wooden Wooden	Induced draft cross flow type	1No. 1No.	Paharpur Bellow system for vibration control for Cooling Tower
2	Emergency Diesel pumps for Distillation Cooling tower	Specify	SS-304	Specify	1 Nos.	
3	Air Compressor for Instrumentation Air	Specify	-	Specify	1+1Nos.	
4	Raw water tank	24 Hr. storage duration	RCC	Specify	1 No.	
5	Filtration, sedimentation & chlorination unit with pump motor set (1+1Nos.) –	Specify	-	Specify	1 No.	Specify capacity, ION Exchange / Tharmax

	(inter connecting piping, pumps, Rotameter, dosing & regeneration tank, carbon filter, resins etc.) (for process water)					make
6	Process water tank after filtration with process water pumps (1+1Nos.)	storage for 12 hrs. duration	RCC	Specify	1 No.	
7	Water softening unit for all cooling tower.	Specify	Specify	Specify	1 No.	Regeneration cycle 24 hrs.
8	Soft water tank with soft water pumps (1+1Nos.)	Storage for 12 hrs. duration	RCC	Specify	1 No.	
9	D.M. Water plant for ENA/PRDS	Specify	RCC	Specify	1 No.	Regeneration cycle 24 hrs.
10	Industrial Type Water Hydrant System as per safety/factory inspector's rules – For new Fermentation, Distillation, Receivers, Storage section and distillery yard - Consist of wet raiser, Hose reels, Yard or ring hydrant, fire alarm system, under/over ground storage tank, fire pumps, fire brigade connection, sign indicators for all fire safety in case of emergency.					
11	Non-process streams recycle arrangement with tank, pumps (1+1Nos.), pH adjustment system etc. (i.e. blowers, vacuum pump, alcohol scrubber water, spentlees etc.) (Recycle water can be used for Fermentation process/cooling tower makeup)					
12	Bellow system for vibration control for Cooling Tower					

Note -Pumps, piping, fittings, pipe supports, valves, instrumentation & electrical items required for all utilities as per battery limit should be in the scope of supplier. Supplier should specify all the details for this particular requirement.

- Sealing water system, soft water to all pumps gland-Inlet and out let water header with piping and water collection tank, PHE and pumps to be provided.
- Pumps -1+1Nos. (1No. in operation +1 No. process standby)
- Motor capacity design data as per load to be submitted.
- Non return valves (NRV) should be provided for each pump delivery line.
- Piping passes from every floor flanges should be provided (except vacuum line).

- For 250 NB and above piping size every 6M distance flanges should be provided.
- Safety guards for all motors.
- All flanges should be as per ASME/ANSI B 16.5 (Edition 1998 including addenda 1998) & should confirm to Table E.
- All elbows should be of long radius type.
- All stub ends should be of long neck type.
- All ball valves should be full port type only.
- For piping every 6M distance flanges should be provided.
- For SS-304 Piping - Sch.10 up to 50 NB & Sch. 5 for above 50 NB.

PLC system-

PLC based control panel with SCADA on PC,
PLC latest version of SCADA Software having run time facility with original license. The controller will be communicating to the local I/O and SCADA station over Profibus/Ethernet network. System will be complete with followings:

1. PID algorithm needs to be in auto/manual bump less transfer.
2. SCADA development software is required.
3. Capacity of SCADA software will have required number of Tags **(Required 20% extra).**
4. **The supplier should provide one spare module each for AI, AO,and DI,DO**
5. All the process will be operated from SCADA station. SCADA system has following features:
 - a) ON-LINE data and Status.
 - b) Powerful sizes and colors, moving and rotating objects, filling, active X control etc.
 - c) Real time and historical trends.
 - d) Data logging and reporting and ability to take print-out in custom built log sheet format.
 - e) Multiple trends in one display.
 - f) Standard password system with various level of security.
 - g) Standard alarming system with configurable alarm history page. Various categories of alarm can be configured.

Specification of ES/OS:-

500 GB SATA hard disk drive, i5 Processor, 8GB RAM, DVD ROM/CD read write, 06 numbers USB port, 01 No. serial port, Standard Key Board, Optical Mouse, 24" LED (HD) monitor, UPS (1KVA) with 1 hr battery backup. PC will be DELL/HP make with latest version configuration loaded with Operating software and MS Office. Operating

software will be Windows to Professional with original license. MS office with original license will also require.

PLC system panel shall be complete with mounting, wiring and testing shall be consist of :

I/O Pack	- As required
Digital Input module	- As required
Digital Output module	- As required
Analog Input modules	- As required
Analog Output module	- As required
Power supply modules	- As required
Processor modules	- As required

Specification for PLC Panel :-

PLC panel will be dedicated for termination of PLC I/O modules. All IO block should be segregated, IO type wise and have proper label for identification Cross ferruling scheme should be followed for termination. All the panel should have sufficient space to accommodate wiring easy maintenance etc. Sufficient illumination/ lighting should be provided and all panel should be internally connected. All panel will be normal panel with double door and locking arrangement.

2.2 PROCESS PERFORMANCE PARAMETERS/GUARANTEE

Supplier should guarantee for the following parameters:

A. Capacity, Efficiency & yield

1. Capacity - 75.00 KLPD
- Pure Rectified Spirit - 71.25 KLPD
- Impure Spirit - 3.75 KLPD
2. Fermentation Efficiency (Min) - 89 - 90%
3. Distillation Efficiency (Min) - 98.50%
4. Overall Efficiency - 88.65%
5. Alcohol % in fermented wash - (Min. 7.5 % (v/v))
6. Alcohol strength - 68^o O.P. (Potable Grade)
 for R.S. & I.S
7. Yield of spirit (R.S. & I.S.) -280 lit./MT of 'A' grade molasses
 (47% F.S.)
8. Spent wash generation -It should be around 10 lit/lit max.
 R.S. at 40% F.S.
9. Steam Consumption: -
 Multi-Pressure Vacuum distillation –
 F. Wash to Rectified spirit - Specify/litre of R.S.
10. Water Consumption: - Specify /day
 (Process +Make up)
11. Impure spirit production (from F. Wash to R. S.)-
 ≈ 5 % during Rectified spirit production
12. Potassium Permanganate Time –
 Rectified Spirit – Not less than 30 Minutes.

The above said performance parameters should be achieved on every day of fifteen consecutive full working days for each unit. This should be fulfilled immediately after stabilization of plant.

B. Finished Product Quality

Qualitative Specifications For Rectified Spirit (R.S.):

The material shall comply with the requirements prescribed in the following table.

Sr. No.	Characteristic	Requirement of Rectified Spirit (R.S.)
1.	Ethanol content (Minimum), % v/v at 15.6 ⁰ C	96 %
2.	Acidity as acetic acid, Mg/100 ml (Max.)	2
3.	Esters as ethyl acetate, Mg/100 ml (max.)	10
4.	Aldehydes as acetaldehyde, Mg/100 ml. (Max.)	5
5.	Residue on evaporation, Mg/100 ml. (Max.)	2
6.	Methanol, Mg/100 ml. (Max.)	5
7.	Butanol – 1	Nil
8.	Butanol – 2	Nil
9.	Isobutanol - Mg/100 ml. (Max.)	5
10.	Isopentanol - Mg/100 ml. (Max.)	1
11.	N-Propanol & Isopropanol, Mg/100 ml. (Max.)	10
12.	Copper as Cu, Mg/100 ml. (Max.)	0.3
13.	Lead as Pb, Mg/100 ml. (Max.)	0.05
14.	Furfural	Nil
15.	KMNO ₄ reaction, time, minutes (Min.)	30
16.	The spirit shall be suitable for potable purpose & meet norms of Organoleptic taste	Minimum score 6.5/8 scale

The afore-said quality (Grade-I) should be met by minimum 95 % of total production daily. However, supplier should specify the maximum percent of Grade I alcohol, which will be produced by the design he is proposing.

* Suppliers can improve on the finished product quality given above.

C. Raw Material Consumption

Nutrients/Chemicals

- a. DAP :----- Kg/KL
b. Urea :----- Kg/KL
c. Acid :----- Lit/KL
d. Antifoam :----- Kg/KL
e. Antibiotics & other preservatives-----Kg/KL
f. Cleaning agents :----- Kg/KL

D. Utilities Consumption

- i. Steam :----- Kg/KL
ii. Water
a. For dilution :----- M³/KL
b. For cooling water make-up -----M³/KL
iii. Cooling water circulation rate----- M³/hr
iv. Electrical :----- Kwh/KL

Break-up of electricity should be given in the following format ;-

Sr. No.	Particulars	Pump Type	Discharge M ³ /hr	Head M	Motor HP (KW)	No. with standby	Whether flameproof/Non-flameproof
a.	Distillery						
	i. Molasses handling system						
	ii. Fermentation						
	iii. Distillation						
	iv. Receiver & Storage						
	v. Water treatment plant						
	vi. Plant lighting						

E. Waste Generated During The Regular Operation

- i. Spent lees generation a) R.S. :----- M³/KL
ii. Spentwash generation :----- M³/KL

F. Water balance, Mass & Energy balance: To be enclosed by supplier

G. Performance of bought out items : Minimum 2 years guarantee.

2.3 DRAWINGS FROM SUPPLIER

The Supplier has to supply following set of drawings along with offer –

RS Plant (75 KLPD capacities)

- a. Distillery layout & elevation -
- b. Storage layout (day and bulk storage)-
- c. Utilities layout
- d. P & I diagram with interlocks for distillation, utilities and Storage system.
- e. Drawings showing individual control loop

3.0 Anhydrous (Fuel) Alcohol Plant

3.1 Technical Specifications

3.2 Process performance parameters/Guarantee

3.3 Drawings from supplier

Note- Suppliers shall consider the following option

- 1. Fermented wash to Anhydrous (Fuel) alcohol**
- 2. Rectified spirit to Anhydrous (Fuel) alcohol**

**3.1 TECHNICAL SPECIFICATION FOR ANHYDROUS (FUEL) ALCOHOL
PLANT AND MACHINERY FOR 110 KLPD
(Based on Molecular sieve dehydration from R.S. or F. Wash)**

A. Column							
Sr. No.	Particulars	Dia-(mm)	M.O.C.	No. of plates/ type of plates / plate spacing	Thk.* Shell/Plate/ Cap/ Down- Comer (mm)	Qty.	Remark
1.	Evaporation Column	To be specified	SS -304 Bottom Segment -SS-316	Bubble cap	4/2.5/1.6/ 2.5	1 No.	

B. Sieve Bed							
Sr. No.	Particulars	Dia-(mm)	Height	M.O.C.	Shell thickness (mm)	Qty.	Remark
1.	Sieve Bed/ bottles with molecular sieve and supports internally	To be specified	To be specified	SS-304	5	2 or 3 Nos.	

Note- Specify quantity of Molecular Sieve and supports used for each Bed in Kg.

C. Reboiler / Condensers							
Sr. No.	Particulars	H.T.A. (M ²)	M.O.C. Shell and Tube	Tube OD/ Tube Thk./(mm)/	Shell Thk. *	Qty. Nos	Remark

				Length (m)	(mm)		
1.	Evaporation column Reboiler	To be specified	Tube SS - 316	25.4/1.6/3	3	1	
2.	Super heater	To be specified	SS -304	25.4/1.2/3	3	1	
3.	Regeneration condenser	To be specified	SS -304	25.4/1.2/3	3	1	
4.	Regeneration feed preheater (PHE)	To be specified	Frame- MS and Plate-SS316	25.4/1.2/3	3	1	
5.	Rectified feed preheater (PHE)	To be specified	Frame- MS and Plate-SS316	25.4/1.2/3	3	1	
6.	Product condenser	To be specified	SS -304	25.4/1.2/3	3	1	
7.	Product cooler	To be specified	SS -304	25.4/1.2/3	3	1	
8.	Recovery Column Condenser	To be specified	SS -304	25.4/1.2/3	3	1	
9.	Regeneration cooler (PHE)	To be specified	Frame- MS and Plate-SS316	-	-	1	
10.	Any Other equipment	To be specified	SS-316	25.4/1.2/3	3		

Note –

1. For all Reboiler's & condenser's, flange should be provided on the end of the caps (both ends) for easy manual brushing, cleaning and drain valve arrangement.
2. Condensers to be provided with front/rear water header, necessary reflux flow glass housing, degasifying bottles mentioning the position i.e. horizontal/vertical & necessary connections etc.
3. * To be finalized on the basis of diameter of the column & HTA
4. Piping passes from every floor flanges should be provided (except vacuum line).
5. Tubes in copper as 1.6 mm thick, for reboiler's tubes SS-304, 1.6 mm thick & for condenser tubes SS-304, 1.2 mm thick.
6. All condensers and coolers tube to tube sheet grooving and expanding is required. Tube to tube sheet welding is not acceptable.

D.	Miscellaneous					
Sr.No.	Particulars	Capacity	M.O.C.	Thk.	Qty.	Remark

1.	Product Receiving tank	To be specified	SS -304	3 mm	1 No.	
2.	Regeneration Receiver tank	To be specified	SS -304	3 mm	1 No.	
3	Recovery Reflux Tank	To be specified	SS -304	3 mm	1 No.	
4.	Educator	To be specified	To be specified	To be specified	1+1 or 1Nos.	
5.	R.S. feed filter	--	To be specified	--	1 No	
6	Regeneration feed filter	--	To be specified	--	1 No	
7	Product filter	--	To be specified	--	1 No	
E. Piping Fittings and Valves						
Sr.No.	Particulars	Capacity	M.O.C.	Class	Remark	
1.	Piping – (Including piping supports) a. Rectified spirit b. Water c. Steam d. Fuel Alcohol e. Spent lees		SS-304 MS MS SS-304 SS-316	-- C-class IBR -- --	Steam piping should be IBR or as applicable For SS-304 Piping - Sch.10 up to 50 NB and Sch. 5 for above 50 NB.	
2.	Valves – a. Rectified spirit b. Water c. Steam d. Fuel Alcohol e. Spent lees	--	SS-304 CS CS SS-304 SS-316	-- -- -- --	To be specified type of valve	

Note:-

- All flanges should be as per ASME/ANSI B 16.5 (Edition 1998 including addenda 1998) and should confirm to Table E.
- All elbows should be of long radius type.
- All stub ends should be of long neck type.
- All ball valves should be full port type only.
- Piping passes from every floor flanges should be provided (except vacuum line).

F. Pumps with motors- with flameproof motor							
Sr. No.	Particulars	M.O.C.	Capacity	Head in MLC	HP/KW	Qty.	Remark

1.	Rectified sprit feed pump	SS-304	8 M ³ /hr	To be specified	To be specified	1+1Nos	
2.	Regeneration circulation pump	SS-304	To be specified	To be specified	To be specified	1+1Nos	
3.	Product Pump	SS-304	8 M ³ /hr	To be specified	To be specified	1+1Nos	
4.	Recovery Reflux pump	SS-304	To be specified	To be specified	To be specified	1+1Nos	

Note – All pumps should be provided with flameproof.

Note:- ASME CODE SHALL BE USED WHEREEVER NECESSARY

B. Instrumentation for Ethanol plant

Given instrument list is only for indicative purpose; Supplier has to specify actual requirement.

* **Flow meters**

Sr.No.	Particulars	Type	Capacity
1	Feed (Rectified Spirit) to evaporation column	Digital Metal Tube Rotameter with transmitter	To be specified
2	Regeneration feed to the evaporation column.	Digital Metal Tube Rotameter with transmitter	To be specified
3	Product (Fuel alcohol) to receiver	Digital Metal Tube Rotameter with transmitter	To be specified
4	Evaporation column reflux	Digital Metal Tube Rotameter with transmitter	
5	Steam	OFT with flow Transmitter	

Temperature Indicators

Sr.No.	Particulars	Type	Range
1	Feed temperature after feed preheater	Local Temperature gauge (mercury filled type) And transmitter	To be specified
2	Regeneration feed temperature after preheater		
3	Column bottom temperature.		
4	Column regeneration feed plate		

5	temperature. Column RS feed plate temperature Column top temperature		
6	Steam temperature		
7	Super heated vapor temperature after		
8	super heater Sieve Bed –I and II top temperature		
9	Sieve Bed –I and II upper middle temperature		
10	Sieve Bed –I and II lower middle temperature		
11	Sieve Bed –I and II bottom temperature		
12	Regeneration receiver tank temperature		
13	Product receiver tank temperature Product temperature after cooler		
14	Condenser cooling water inlet temperature		
15	Condenser cooling water outlet		
16	temperature PHE Circuit		
17	Others		
18			
19			
20			

• **Pressure/Vacuum gauges**

Sr. No.	Particulars	Type	Range
1.	Evaporation column (bottom, middle, top, etc)	Diaphragm	To be specified
2		Specify	
3	Sieve Bed (bottom, middle, top, etc)	Siphon	
4	Steam (evaporation column and super	Siphon	
5	heater)	Diaphragm	
6	Steam header	Diaphragm	
7	For cooling regeneration PHE	transmitter	
8	On recycle pump and others all pumps Feeds and refluxes to columns Other	Diaphragm Specify	

* **Equipment/Other Instruments**

Sr.No.	Particulars	Type	Qty.	Make
1.	Sykes hydrometer	To be	To be	To be specified

		specified	specified	
2.	Sykes table for determining strength of alcohol	To be specified	To be specified	To be specified
3.	Safe and tester for Ethanol	To be specified	To be specified	To be specified
4.	Level indicator with alarm	To be specified	To be specified	To be specified
5.	Level controller for column	To be specified	To be specified	To be specified
6.	Anti-vacuum/pressure relief valves (evaporation column)	To be specified	To be specified	To be specified
7.	Timers	To be specified	To be specified	To be specified
8.	Manometer	To be specified	To be specified	To be specified
9.	Vibration switch for cooling tower	To be specified	To be specified	To be specified
10.	Motor and Instrument control panel	To be specified	To be specified	To be specified
11.	Instrument air compressor with dryer for distillation plant	To be specified	1+ 1Nos.	To be specified
12.	Air compressor with dryer	To be specified	1+ 1Nos.	To be specified
13.	PRDS	To be specified	To be specified	To be specified

- * Specify all the control loops in detail. Final scope of control loops will be decided only after submission of all P and I diagrams.
- * If RTD is used instead of dial thermometers, local indication should be provided.
- * The SCADA-DCS instrumentation system for Anhydrous Alcohol is to be provided with UPS and printing arrangement automatic data storage for minimum 3 months period. This is to be placed in AC room and AC to be provided by the supplier to maintain the temperature of AC room in the range 20-25^oC (Make:- Samson/LG).
- * UPS back-up period for PLC room should be 1hr. Capacity.
- * The DCS software license should have original and “Lifelong” validity.

Tank farm: - As per PESO norms.

Sr. No.	Particulars	Working Capacity	MOC	Thk. (mm) Shell/Bottom /Top	Qty	Remark
1	R.S. day tank with cage ladder, railing	300 M ³	MS	8/8/6	1 No.	

	and walkway					
2	Ethanol receivers with cage ladder, railing and walkway	120 M ³	MS	6/6/6	3 Nos.	
3	*Ethanol storage tank with staircase, railing and walkway	1000 M ³	MS	As per IS: 803.1976	3 No.	
4	Vent condenser with necessary piping with inlet & out let valves		Shell -MS & Tube-SS-304	Tube size- 25.4mmODx 1.2mm thick x 3M length	2 Nos.	
5.	Turbine type Flow meter with totalizer for issue to be approved by Weight & Measure Dept.				1No.- For A.A.	

* These will be provided with flame arrester and cooling arrangement for vent condenser water in and outlet piping from cooling tower.

- 1) The level indicators will be provided on all tanks.
- 2) Receivers are also provided with flame arrester (SS-304)
- 3) PESO License/certificate is in scope of supplier.

All motors with flame proof and pumps with mechanical seal and double mechanical seal wherever required.

- Sealing water system, soft water to all pumps glands.-Inlet and out let water header with piping and water collection tank, PHE and pump to be provided.
- Pumps -1+1Nos. (1No. in operation +1 No. process standby)
- **Motor capacity design data as per load to be submitted.**
- Non return valves (NRV) should be provided for each pump delivery line.
- Safety guards for all motors.
- All flanges should be as per ASME/ANSI B 16.5 (Edition 1998 including addenda 1998) & should confirm to Table E.
- All elbows should be of long radius type.
- All stub ends should be of long neck type.
- All ball valves should be full port type only.
- Piping passes from every floor flanges should be provided (except vacuum line).
- For SS-304 Piping - Sch.10 up to 50 NB & Sch. 5 for above 50 NB.

Utilities:-

Sr. No.	Particulars	Capacity	M.O.C.	Other details	Qty.	Remark
1	Cooling tower with motor and cooling water circulation pump (1+1 Nos.)	To be specified	Wooden	Induced draft Cross Flow type	1No.	Paharpur Make Vibration controller for CT-Bellow
2	Soft water unit with pump (1+1 Nos.) & storage tank	To be specified	To be specified	To be specified	1 No.	To be included RS distillation
3	Emergency Diesel pumps for Cooling tower	To be specified	SS-304	To be specified	1 Nos.	See under R.S.

Note :-

1. Pumps, piping, fittings, pipe supports, valves, instrumentation & electrical items required for all utilities as per battery limit should be in the scope of supplier. Supplier should specify all the details for this particular requirement.

Electrical :

Electrical work for AA plant

Complete electrification of plant including design, manufacture, procure, supply, erection, testing & commissioning of compartmentalized MCC, electrical motors, **all flameproof equipments**, power cables, control cables, instrument cables, lightening arrestor, cable trays, local push button stations for each & every pump, blower, vacuum pump, agitator etc., lighting of all sections of plant including light fittings, earthing pits etc.

It also includes cable laying, earthing of motors, MCC, push button stations etc. All necessary modifications, trials, etc.

In MCC, 3 Nos. spare compartments suitable for higher HP starters shall be provided. Panel MCC boxes should be as per Indian Electric Rule (thickness) switch, starter, relays, and conductors, ACB, MCCB, ELCB etc. should be of L&T/Siemens/schneider Volt, Ampermeter & energy meter for each panel should be of AE/teknik, newtech make. A copper thimble only is to be used. Earthing should be as per Indian Electrical Rule Standard only. Cable (3.5 core) from main power house to MCC panel is in supplier's scope

Insulation & Painting:

Insulation & painting for distillation section.	
<p>Insulation: Insulation for distillation columns & other related equipments & piping like Steam chest, hot water tank, steam piping etc. with Aluminium cladding of 22 G</p> <p>Painting: Painting as per the relevant code to all MS equipments, CS piping, Supports etc.</p>	<p>To be provided as per IS specification.</p>

3.2 PROCESS PERFORMANCE PARAMETERS/GUARANTEES FOR ANHYDROUS (FUEL) ALCOHOL PLANT

Supplier should guarantee the following parameters:

A. Capacity, Efficiency and yield

- Capacity - 110 KLPD A.A.
(From Rectified spirit to Anhydrous Alcohol)
- Dehydration plant Efficiency (Min) - 99.5%
- Water content in Anhydrous Alcohol- Not more than 0.1% w/w

The above said performance parameters should be achieved on every day of fifteen consecutive full working days for each unit.

B. Finished Product Quality

Qualitative Specifications For Anhydrous (Fuel) Alcohol

The material shall comply with the requirements prescribed in the following table.

Sr. No.	Characteristic	Requirement of Anhydrous alcohol
1.	Relative density at 15.6/15.6 ⁰ C, Max.	0.7961
2.	Ethanol content, % by volume at 15.6/15.6 ⁰ C, Min. (Excluding denaturant)	99.90
3.	Miscibility with water	Miscible
4.	Alkalinity	Nil
5.	Acidity (as CH ₃ COOH), Mg/lit, Max.	30
6.	Residue on evaporation, Percent by wt, Max.	0.005
7.	Aldehyde content (as CH ₃ CHO), Mm/lit, Max.	60
8.	Copper as Cu, Mg/Kg. Max.	0.1
9.	Conductivity, μS/m, Max.	300
10.	Methyl alcohol content, Mg/Lit, Max.	300

11.	Appearance	Clear and bright
-----	------------	------------------

C. Raw Material Consumption

- a) R.S. required: - Lit /KL (if AA to be prepared from R.S.)

D. Utilities Consumption

- i. Steam :----- Kg/KL
 ii. Cooling water make-up ----- M3/KL
 iii. Cooling water circulation rate----- M3/hr
 iv. Electricity :----- Kwh/KL

Break-up of electricity should be given in the following format :

Sr. No.	Particulars	Type	Discharge M ³ /hr	Head M	Motor HP	No. with standby	Whether flameproof/Non-flameproof
					(KW)		flameproof
A	Anhydrous alcohol						

E. Waste Generated During the Regular Operation

- i. Spent lees generation :----- M³/KL

F. Water balance and mass balance for R.S. to Anhydrous Alcohol

G. Performance of bought out items - minimum 2 years guarantee is to be given by supplier.

3.3 DRAWINGS FROM SUPPLIER FOR ANHYDROUS ALCOHOL PANT

Drawings to be submitted by the supplier along with offer only –
Anhydrous Alcohol Plant (110 KLPD capacity)

- a. Flow sheet R.S. to Anhydrous Alcohol
 b. Distillation layout and elevation -
 c. Storage layout (day and bulk storage) -
 d. Utilities layout
 e. P and I diagram with interlocks for distillation, utilities and storage system.
 f. Drawings showing individual control loop.

4.0 BATTERY LIMITS

(R.S. /ANHYDROUS (FUEL) ALCOHOL PLANT)

Molasses	It will be made available up to inlet of day molasses tank
R.S. / Anhydrous ethanol plant	At the outlet of issue flow meters with flexible hose pipe of 8 M length with SS coated.
TA /Impure Spirit	At the outlet of issue flow meters with flexible hose pipe of 8 M length with SS coated.
Fusel oil	At the outlet of pump of storage tank for issue Purpose
Spentwash	To be discharged by the supplier, from spentwash cooler to the 5 days spentwash cooling tank by HDPE (6kg/cm ²) pipe line
Spentlees	To be discharged by the supplier to the feed tank of condensate polishing unit
Sludge	The client will carry it away after the outlet flange of drain valves of the respective tanks
Steam	It will be made available at inlet of distillery steam chest at a steam pressure 3.5 kg/cm ² (g)
Raw water	Raw water made available at the outlet of existing storage tank & will be taken by supplier to the inlet of filtration unit. (storage capacity 24 hrs.) for Distillery unit, soft water & D.M. Water unit
Process water	Raw water will be filter by filtration unit (900M ³ Cap.) after filtration process water will be stored in the storage tank (RCC) storage capacity 12 hrs. duration
Soft water	Raw process water will be softened by supplier. Softening unit with pumps (1+1Nos.) to be provided & storage of soft water for 12 hrs. period. Storage tank (RCC) in the scope of supplier. The pipe line for transfer of soft water from WTP to soft water storage tank is in the scope of supplier
D.M. water	It is to be provided by supplier by providing D.M. plant with pumps (1+1Nos.) & storage of D.M. water for 8 hrs. period. Storage tank (RCC) in the scope of supplier. The pipe line for transfer of DM water from WTP to DM water storage tank is in the scope of supplier
Steam condensate	It is to be carried away by supplier up to the boiler water feed tank.

Instrumentation	All instruments and Panel as per the process requirement in the supplier's scope
	All control valves should be with electronic smart positioned & feedback positioned.
Instrument air	It will be supplied by the supplier at the respective places
Electrical	Supplier shall provide required length of cable from power house to distillery isolation switch of MCC
	Power supply to the instrument panel with MCCB from MCC will be in the scope of supplier
Utilities	
Cooling water & make-up water	In the scope of supplier
Tank farm of R.S./AA and Fusel oil	In the scope of supplier

5.0 Specification of civil and structural work for proposed Multipressure distillery plant to produce (R.S. /Anhydrous Ethanol)

General –

1. Tentative layout drawings have to be submitted along with technical offer.
2. Design of MS structure for plant should be submitted by supplier and the required drawings are to be approved by factory /electrical inspectorate /safety inspectorate weights & measurement inspectorate /PESO etc. For this, sugar mill will pay statutory fees. However, the approval has to be obtained by the supplier.
3. The load data for all the process units and the super structure should be given to the factory so that they can arrange the design and drawings of civil work and RCC works. This civil work is in the scope of sugar mill. All civil and RCC drawings will be approved by VSI (Inspection agency)
4. Excavated murum only good quality considered for plinth filling & if any additional filling is required and then the same is to be provided without any extra additional cost.
5. All RCC work should be in M20 grade except RCC tanks (M-25) and reinforcement steel as per suitable design.
6. Safe Bearing Capacity of soil considered as 20T/M² at 5.0 M depth. If soil SBC changes, then design will be done accordingly. Suppliers are requested to visit the proposed distillery site and collect necessary information regarding safe bearing capacity of soil before submitting the technical offer.
7. Ground Water Table at 5.0M below GL. If GWT is different, then design will be done accordingly without any additional cost.
8. Plinth of all the sections is considered as 0.75M above the DGL and it is to be built by brick masonry.
9. RCC ring wall foundations to be considered for all the tanks and bitumen concrete (min. 5% bitumen content)
10. Two staircases each for fermentation & distillation section – One each at either ends.
11. The roof of the structures (Fermentation, distillation, receivers) must be covered totally by pre-coated sheets (Pre-painted galvano loom sheet i.e. PPGL sheets) of 0.5mm thickness. The sides of distillation shed to be louvered totally. In case of receivers 2.5 M height wall from plinth and above it make louvered.
12. For fermentation & distillation house internal and external gutters (constructed in brick masonry over PCC bedding and with cement concrete coping 1:3:6 with plastering) with proper slope should be provided. External gutter distance (length) should be extended up to 50M away from Distillery plant and it should be covered with MS grating (6mm thick).
13. The instrumentation dust proof (AC) chamber with adequate space for maintenance is to be provided.
14. All M.S. Structure considered as per IS 2069 Grade A.
15. The structural work to be painted by one coat primer and two-coat first grade enamel paints – Berger first grade colour.
16. Building painting – Oil bond distemper inside and cement colour (Showcem) outside.

17. Plant building lighting as per norms & to be provided by supplier as per Electrical inspectorate /factory inspectorate norms.
18. The design for all circular tank foundations shall be designed and certified by supplier's /Sugar mill structural consultant.
19. Water hydrant system as per the requirement of the safety/factory inspector's rules should be considered in the scope of supplier.
20. Chemical laboratory- minimum size 5Mx 6M is to be provided. The required laboratory working platform with antacid tiles and vitrified tiles for flooring, dado & fascia with plumbing & sanitary arrangement. Pre-coated aluminum windows with glass fixing with sliding facility, Plywood door with lamination and glass fixing to doors with necessary fittings & fixtures, Ply cupboards for storage of chemicals & glassware's

Fermentation Section –

1. Excavated murum only good quality considered for Plinth filling. If required more to be brought by the contractor without any cost.
2. Plinth of all the sections is considered as 0.75M above the DGL and it is to be built by brick masonry.
3. RCC ring wall foundations to be considered for all the tanks and bitumen concrete (min. 5% bitumen content).
4. RCC foundations considered for structural columns.
5. RCC foundations for all Pumps and PHE's.
6. Flooring Treatment considered – 230 mm rubble soling above that 100 thick P.C.C. 1:3:6 and above that 50 mm thick IPS.
7. Internal process & external drains with proper slope are in brickwork (constructed in brick masonry over PCC bedding and with cement concrete coping 1:3:6 with plastering) covered with MS Gratings (6mm thick).
8. External gutter distance should be extended up to 50M from the distillery plant.
9. The roof of the structures must be covered totally by pre-coated sheets (Pre-painted galvano loom sheet i.e. PPGL sheets) of 0.5mm thickness.
10. Staircase – M.S. (Chequered Plate with supports/grating of 6mm thick) Staircase of 1M wide, 150mm risers and 300mm treads with a landing at every 3M maximum and hand rails will be provided on both sides (one each at either ends), thus two staircases to be provided up to operational floor of the section.
11. Oil painting is necessary to structural works.
12. Painting to civil work is necessary

MCC room, PLC room with AC, Air compressor room in between fermentation and distillation section

1. Plinth is considered as 0.75M above the DGL and it is to be built by brick masonry in CM 1:6 and external plaster work CM 1:4.
2. All RCC work should be in M20 grade and reinforcement steel as per suitable design.
3. RCC frame structure to be considered for the complete building.

4. Excavated murum only good quality considered for Plinth filling above that 230mm thick rubble soling. If additional rubble soling is required, it is to be provided without any additional cost.
5. Internal plaster 15-20 mm thick and outside plaster 20mm thick. minimum
6. Oil Bond Distemper painting considered for inside surface and Snow cream painting considered for outside surface.
7. Flooring treatment for MCC and air compressor room considered is 100 thick P.C.C. 1:3:6 and above that vitrified tile flooring.
8. Flooring for control room is vitrified tiles.
9. Pre-coated aluminum windows with glass fixing with sliding facility & fix M. S. grills.
10. Plywood door with lamination and glass fixing to doors with necessary fittings & fixtures for PLC control room.
11. M.S. Rolling shutters for MCC and air compressor room.
13. Oil painting is necessary to civil works.

Distillation Section –

1. Excavated murum only good quality considered for Plinth filling. If required more should be brought from outside without any cost.
2. RCC pedestal with foundations considered for structural columns (M 20 grade).
3. RCC foundations for all Pumps and PHE's (M 20 grade).
4. Plinth is considered as 0.75M above the DGL and it is to be built by brick masonry in CM 1:6 and external plaster work CM 1:4.
5. Flooring Treatment considered for all section is – 230mm rubble soling above that 100 thick P.C.C. 1:3:6 and above that 50mm thick IPS.
6. Internal process & external drains with proper slope are in brickwork (constructed in brick masonry over PCC bedding and with cement concrete coping 1:3:6 with plastering) covered with MS Gratings (6mm thick).
7. External gutter distance should be 50M from the distillery plant with suitable capacity sump.
8. Staircase – M.S. (Chequered Plate with supports/grating of 6mm thick) Staircase of 1M wide, 150mm risers and 300 mm treads with a landing at every 3M maximum and hand rails will be provided on both sides, thus two staircases to be provided up to top of distillery building. The staircases have to be inside the building.
9. Floors of the distillation building should be with MS grating of 6mm thickness and each floor height should be minimum 4M & Chequered plate at a condenser floor of 6 mm thickness.
10. All distillation columns (Internal & external sides) accessed from flooring (chequered/grating)
11. The roof of the structures (distillation) must be covered totally by pre-coated sheets (Pre-painted galvano loom sheet i.e. PPGL sheets) of 0.5mm thickness.
12. Pre-coated sheet should cover roofing with extension on both side minimums, as 0.75M. Similarly, pre-coated louvers of 0.75M size & 0.5mm thickness must be provided.
13. Louvers should be provided for all floors and louvers should be extended 0.75M from the respective roofs
14. Oil painting is necessary to structural works.
15. Distance between flameproof and non-flame proof area should be min. 15M.

Receiver Section –

1. PESO norms should be applied for anhydrous ethanol receivers.
2. Plinth is considered as 0.75M above the DGL and it is to be built by brick masonry in CM 1:6.
3. RCC ring wall foundations to be considered for all the tanks and bitumen concrete (min. 5% bitumen content).
4. Excavated murum only good quality considered for Plinth filling & if any additional filling is required and then the same is to be provided without any extra additional cost.
5. Flooring Treatment considered for all section is – 230mm rubble soling above that 100 thick P.C.C. 1:3:6 and above that 50mm thick IPS.
6. Internal drains are in brickwork covered with MS Grating.
7. RCC columns and beam frame considered for the receiver building with structural steel roof at top.
8. The roof of the structures (Receiver section) must be covered totally by pre-coated sheets (Pre-painted galvano loom sheet i.e. PPGL sheets) of 0.5mm thickness.
9. Side walls of structure should be constructed in brick masonry; plaster and painting up to the 2.5M height and above burnt brick masonry (BBM) wall standard MS chain link fencing with proper supports up to the roof should be provided with oil painting internally and externally (chain line area to be covered by louvers).
10. Internal and external plaster for wall 20mm thick.
11. Oil Bond Distemper painting considered for inside surface and Snowcem painting considered for outside surface.
12. Lockable door rolling shutter of width 2M and height 2.5M shall be provided.
13. All receiver transfer to storage tank by pipeline, lock system should be provided as per excise rule.

Storage Section –

1. PESO norms should be applied for anhydrous ethanol storage tanks.
2. Plinth is considered as 0.75M above the DGL and it is to be built by brick masonry in CM 1:6 & external side to be plastered in CM 1:4.
3. RCC ring wall foundations to be considered for all the tanks and bitumen concrete (min. 5% bitumen content).
4. Excavated murum only good quality considered for Plinth filling & if any additional filling is required and then the same is to be provided without any extra additional cost.
5. Flooring Treatment considered for all section is – 230mm rubble soling above that 100 thick P.C.C. 1:3:6 and above that 50mm thick IPS.
6. Bulk storage tanks will have dyke wall with chain link fencing (2.5M ht. brick wall and above it 1.5M ht. chain link shall be provided with Mild steel door with lock and key arrangement).
7. The spacing between adjustment storage tank and dyke wall with chain link fencing (2.5 M ht. brick wall with plaster and painting, above it 1.5M ht. MS chain

- link with painting shall be provided with MS door with lock and key arrangement) shall be maintained as per explosive safety act.
8. All gutters with brick masonry over PCC bedding & cement concrete coping (1:3:6) & covered with MS grating.
 9. Internal and External plaster for wall 20 mm thick.
 10. Oil Bond Distemper painting considered for inside surface and Snowcem painting considered for outside surface.
 11. MS door is considered for entrance.
 12. Tanker loading platform outside of the storage section. Shed for protection during loading of tankers.
 13. All storage tanks delivery line lock system should be provided as per excise rule.
 14. Denaturant storage room.

Cooling tower -

1. Three separate cooling towers are to be considered for Fermentation, Distillation & Evaporation section.
2. Cooling tower basin should be provided in RCC in M25 grade. This shall be followed by waterproof plaster from internally and externally. It should be provided with water proofing coating treatment to inside.
3. PCC flooring of width of 1M shall be provided at ground level along the external periphery of the basin and below the pumps.

Water Storage – To be constructed in RCC in M25 grade & will be covered by RCC slab.

1. Raw water tank – storage capacity – 24 hrs.
2. Process water tank – storage capacity – 12 hrs.
3. Soft water tank – storage capacity – 12 hrs.
4. DM water tank – storage capacity – 8 hrs.

Structural design -

1. Fermentation
2. Distillation

Sr. No.	Section	Structure Items
1.	Fermentation	14M height upto truss covered by pre-coated (PPGL) sheet, Roof Truss, MS grating, hand rail, toe guard as per requirement,
2.	Distillation	Self supporting columns on Civil foundation and Pre-coated sheet (PPGL) for roofing at 30M ht. and condenser floor chequered plate (6mm thick) and other floors by MS grating, Hand Rail, Toe guard, Roof Truss, Louvers should be provided for all floors and louvers should be extended 0.75M from the respective roofs.

3. Administration building size –

RCC building size of 10Mx15Mx 3.8M ht (Including DM Office, Excise Office, Distillery office, Excise guard room, pantry, toilet block (2Nos.), with over head water tank cap. 1000 Lits. and with plumbing & sanitary arrangements.

External & internal plastering & painting in oil bond for Internal & in cement paints for external for rooms. The slab should be water proof & the structure must have 1M parapet wall. The work of brick masonry should be min. in CM 1:6 & plastering in CM 1:4 min. The flooring & skirting should be in vitrified tiles. The plinth should be min. 1 M above DGL & all steps & risers must be of polished tiles. Pre-coated aluminum windows with glass fixing with sliding facility & Plywood door shutter with lamination and glass fixing to doors with necessary fittings & fixtures. Ply cupboard facility for keeping files.

The layout will take into account the working space & safety requirement of Factory Inspectorate, Govt. of Chhattisgarh State.

6.0 Makes of bought out items:

D.O. Copper	- Alcobax / Multimetal
SS & MS sheet	- SAIL /Tata / Jindal
SS tubes	- Ratnamani/Divine
GI nut & bolt	- Tata / GWK.
MS channel, beams, angles-	SAIL /Tata/ Jindal
HDPE pipes	- Hasti/ Nocil
C.S. Pipes	- Tata / Jindal
PHE	- Alfa-Laval/GEA
Screw pump	- Resansi/Roto/PSP
Dosing pump	- Metering/Milton Roy
Centrifugal Pumps	- Microfinish/ /KSB/Kirloskar/Mather Platt
Molasses pumps	- PSP- Kolhapur /Rovar/Ravalgaon
Motors	- Crompton Greaves /ABB/Siemens
Valves (Ball/butterfly/Gate/Globe)	- Audco /Saunder /Intervalve
Control Valves	- Samson/Dembla/Pneucon/ Keystone
Air conditioner	- Videocon/ LG/ Voltas/ Blue Star
Decanter	- Alfa Laval/ Hiller
Cooling tower with bello	- Paharpur
Air blower & vacuum pump-	PPI /Joyam
Gear Box	- Radicon/Greaves
Weighing scale	- Nova/Avery/Maxwell(With BIS approved)
Filtration, sedimentation & Chlorination unit - Ion exchange/Thermax	
Air compressor	- Chicago/Atlas Copco
Air Filter	- Dyna
PRDS	- Forbes Marshall
Rotameter	- Spink Controls/Eureka
Temp. Sensors	- Eureka /Pyro
Pressure Indicator	- H. Guru/Wika/ Radix
Pressure, Temp. Level, flow Transmitter-	Emerson/ABB/Yokogawa/ Siemens
Flow meter (Turbine)	- Toshniwal/Rockwin
DCS	- Allen Bradley/ABB /Siemens
PC with monitor printer	- Dell/HP
Variable frequency drive	- ABB /Siemens
Electrical cable	- Finolex/Polycab
LT Cable	- Finolex/Polycab
Switchgear	- L & T
Lighting material (Flame proof) -	Phillips / Crompton Greaves/

Instrument Cable	- Polycab /Finolex
PVC wires	- Polycab/Finolex
MCCB/ELCB/RCBO/MCB-	L&T/Siemens /BCH
Power Contactors	- L&T/Siemens
Plug and socket dB-	- L&T /Siemens
Digital meters (Kwh.VIF)	- Conserv/L&T/Delta Energy (MSEDCL approved)
Indicating Lamp (LED Type)	- Teknic/L & T/Siemens/Atlos
Capacitor/ Reactor	- Ambik
Lighting fixtures	- Oreva/Phillips
Motor	- Siemens/ Crompton Greaves
VFD	- ABB only
Push Buttons	- L&T/Siemens
Cable Gland	- Comet/Dowell/HMI
Lugs	- Dowell/Jaison
PVC conduit & accessories (HD)	- Diamond/Modi/Precision
Selector Switch	- Kaycee/L&T/Saizer
Cement	- 43 grade Ultratech
Steel	- Fe 500- Tata or SAIL
Structural Steel	- Fe 500- SAIL/ Tata
Vitrified tiles	- Johnsons/Kajaria
Color coated sheets	- Tata/JSW
Aluminum section	- Jindal
Welding rod	- Advani/Modi
Oil paint	- Asian/Berger
UPS	- Emerson

* Supplier will submit & get approval of makes from sugar factory/its inspection agency (VSI, Pune).

Makes of Civil Materials

Sr. No.	Materials	Makes
1	Cement (53 Grade)	A.C. C/ L & T/ Birla Super
2	Reinforced steel (TOR)	Tisco/ Rajuri/ Mahavir
3	Structural steel (MS)	Tisco/ SAIL
4	Precoated sheets (PPGL)	Metacolour/ Bhushan/ Uttam
5	Paints	
a)	Cement paint	Snowcem/ Topcem/ Surfacedm
b)	Oil bound distemper	Asian/ Berger/ Nerolac
c)	Oil paint (Synthatic Enamel)	Asian/ Berger/ Nerolac
d)	Exterior paint	Apex
6	Tiles	
a)	Vitrified	Jonson/ Marbonite
b)	Ceramic	Kajaria/ Bell

8.0 Section III – Commercial Format

- a. Declaration**
- b. Price bid**

8.1 DECLARATION

(To be submitted on Tenderers letterhead)

To,
Managing Director
Nira Bhima Sahakari Sakhar Karkhana Ltd..
Shahajinagar, A/p Redni,
Tal. Indapur, Dist. Pune,
Maharashtra State

PRICE

Ref.: Tender No.

Date: ----/ ---/ 2021

I/We declare that I/We have gone through your tender notice and carefully examined the scope of supply, terms & conditions, technical specifications and other details enclosed with this agreement. We hereby confirm that the scope of supply & the other technical details of our offer confirm strictly to your technical specifications. We have enclosed all Technical details, Drawings & other information as required in your requisition.

Authorized signature of tenderer with
Company rubber stamp

Name & Address of the Tenderer

Note – If your bid is incomplete with respect to Documents requirement, Technical information, Drawings & specific information, which are called for in specifications, it will be liable for rejection.

8.2 PRICE BID –

**DISTILLERY– FED- BATCH FERMENTATION & MULTIPRESSURE
DISTILLATION
(Fermented wash to R.S. & Anhydrous ethanol plant)**

DESCRIPTION	PRICE BIFURCATION					
	Basic price of plant and machinery according to specifications and details given in Section II- 2.1 & 3.1 including transport & insurance charges.	Price of Necessary Facilities	Erection, commissioning and trial run and supervision thereof	Other	Civil & Structural work	Grand Total
Design, manufacture, procure, supply, erection & commissioning of 75 KLPD Distillery plant with Continuous/Fed-batch fermentation & MPR Distillation to produce 75 KLPD Rectified spirit (R.S.), and 110 KLPD MSDH plant to produce Anhydrous ethanol suitable for Industrial, Potable, Pharm. & Fuel purpose as per quality requirement specified & as per battery limits. a) Fermentation house including molasses handling section. b) Distillation section (R.S./A. ethanol) c) Instrumentation d) Electrical e) Tank farm f) Utilities for above units						
(Please quote separately for each item otherwise tender will be considered as incomplete & will be disqualified)						

Please specify the following:

- Plant erection & mechanical completion / commissioning period
- Performance Guarantee
- Excise modvat: Y/N

Authorized signature of tenderer with
Company rubber stamp

Date: - - - / - - - / 2021

Please do not write 'If applicable' – Amount to be filled.

Section IV – 9.0 Specimen Agreement

V
S
I

B. Specimen Agreement:-

THIS AGREEMENT made at -----on-----
--- BETWEEN **M/s. Nira Bhima S.S.K. Ltd. Shahaji Nagar, A/p Redni Tal.Indapur Dist. Pune Maharashtra State** (a society registered under the Co-operative societies Act 1960) as a purchaser. Which expression shall unless repugnant to the subject or context includes their legal representatives, administrators, successors or assigns represented by Mr./Mrs. ----- , Chairman/President/Managing Director of----- AND

M/s. -----a Company registered under the Companies Act 1956 having its registered office at ----- (hereinafter referred to as the Seller) which expressions shall, unless repugnant to the subject or context including their legal representatives, administrators, successors, or assigns -represented by ----- of -----other part.

1.0 Whereas

- 1.1 The seller has for many years engaged in and have got vast experience in the manufacture, supply, erection, commissioning and supervision of 75 KLPD Distillery plant to produce (R.S., & Anhydrous Alcohol plant).
- 1.2 The Seller has acquired and is in possession of secret, know-how relating to the designing, engineering, fabrication, erection, commissioning and operating of 75 KLPD Distillery plant to produce (R.S. & 110 KLPD Anhydrous Alcohol plant)
- 1.3 The seller has collaboration with M/s. ----- for the said system, which is permitted by the Government of India, and this Collaboration is still in existence or a know-how patent based on proven technology has been taken from.
- 1.4 The purchaser is desirous of acquiring the said 75 KLPD Distillery plant to produce (R.S. & 110 KLPD Anhydrous Alcohol plant)
- 1.5 The purchaser have floated tender giving the specifications of the plant and machinery and after receiving the tenders from all the parties, the same have been approved in the Technical subcommittee meeting of Sugar mill held on ----/----/2021 to design, procure, manufacture, supply, erect and commission, the plant for achievement of guaranteed performance as agreed in the Purchase Committee meeting of Sugar mill held on ----/----/2021. The purchaser and seller have agreed to the terms and conditions appearing hereinafter and the seller has agreed to supply, erect and commissions the plant and machinery as per the

specifications enlisted in the Section II- 2.1, and 3.1 annexed to this agreement.

1.6 And whereas the contract price here in after mentioned is based on the sellers undertaking to make ready for the commercial used of distillery ((R.S. & Anhydrous Alcohol plant) within **eight months** from the effective date of this agreement. TIME IS THE ESSENCE OF THE CONTRACT.

1.7 In the event of failure to complete the plant within stipulated period, the seller shall pay penalty to the purchaser under the clause "Penalties" of this agreement as hereinafter provided.

1.8 And whereas the contract price hereinafter mentioned is based on the supply, by tenderer of the distillery (R.S. & Anhydrous Alcohol plant) considering overall efficiency of the plants. The details of the performance parameters for these units are provided in section II - 2.2, 3.2 & clause 4.0 of this agreement.
If the seller fails to give guaranteed performance, as hereinafter specified, the seller shall pay the penalty/liquidated damages to the purchaser as hereinafter referred

1.9 The effective date means the date signing the agreement.

2.0 **Definition**

2.1 "Site" shall mean the location at **M/s. Nira Bhima S.S.K. Ltd. Shahaji Nagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State**
"Plant" shall mean the complete machinery and equipments as specified in Section II -2.1, 3.1 & 4.1 of forming part of this agreement and include the commercial plant to be designed, procured, constructed, manufactured, supplied, erected, commissioned and supervised by the sellers having an initial design, capacity for distillery (R.S. & Anhydrous Alcohol plant) with guaranteed performance as specified in section II- 2.2, 3.2, & clause 4 of this agreement.

2.2 "Technical know-how and information" shall mean and include all technical facts, physical data in which the know-how, drawing and documents which the seller employed in the ordinary course relating to the construction, erection and operation of the said plants material used therein procedures and techniques used in the plants owned by the seller and repairs and maintenance manual shall be supplied to the purchaser.

2.3 "Contract Price" shall mean the price defined in Section III & clause 5 of this agreement.

2.4 "The seller" shall mean M/s. ----- who will carry

out design, detailed engineering, fabrication, erection, civil construction and commissioning of the plants as stated in Section I & section II -2.1 & 3.1 of this tender document.

2.5 "The Battery Limits" shall mean the area of plants as specified in section II-5.

3.0 Scope of Supply & Services of Sellers

3.1 75 KLPD –Distillery plant to produce R.S. or 110 KLPD Anhydrous ethanol.

The sellers shall design, procure, fabricate, supply, erect, construct, commission the complete new distillery- 75 KLPD distillery plant to produce R.S. & 110 KLPD Anhydrous Alcohol plant including civil construction detailed in Section II- 2.1, and 3.1 and forming part of this agreement confirming the specifications. The progressive delivery and erection schedules to be drawn up by the seller & duly approved by the purchaser and their authorized; inspection agency, so that the plant shall be ready for commissioning and commercial production, within the time provided in clause 1.5 of this agreement. The capacity and efficiency & yield of the plant shall be as per Section II- 2.2, & 3.2. The plant shall produce R.S. and Anhydrous ethanol as per the requirement and specifications given in process performance guarantee /parameters (Refer Section II- 2.2, & 3.2).

3.2 The seller scope of work:

Seller scope of supply of seller should include the necessary equipments, plant & machinery, building structural & civil work, civil foundations, roofing etc. to meet with the requirements complete with the packing & forwarding charges, transportation to the site, transit cum storage cum erection. Insurance, custom duties, GST & other government levies, if any, erection, supervision and commissioning charges. This also includes other tools & tackles required for the fabrication at site, adequate manpower quite conversant to the fabrication & erection work of such plant and machinery. All foundation bolts, foundation wedges, foundation packing, liners etc. are also to be included in the scope of supply.

The supply of engineering detailed drawings of each and every part of the plant and machinery should be submitted well in advance for prior examination and approval thereof.

All the consumables required for erection and commissioning like gas, all types of welding /brazing or soldering rods, emery papers, grinding paste, hold-lights, graphite, kerosene, oil rust berg, back joints, steam packing etc. are also to be included in the supply. All types of tools and tackles like hoisting tools, chain blocks, pulleys, wire ropes, hook chucks first fill of oil & grease & yeast etc. to be arranged at seller's cost.

All staff including engineers, technicians, skilled/unskilled workers, khalashis required for loading and unloading, fabrication, erection and commissioning are to be adopted by seller.

The machinery arrived at site should be properly stored at site.

Seller shall also arrange the transportation of machinery and equipments from stored place to their respective positions.

Electricity and water required for site fabrication and construction will be supplied at extra cost, however water required for trials will be supplied free of cost. Supplier shall arrange the pumps and piping for lifting of water from Sugar mill reservoir.

Copies of the drawings showing the ground plan of the existing factory and proposed layout of the distillery (R.S.& Anhydrous Alcohol plant) shall be made available by seller for guidance/reference.

3.2.1 Seller's scope of work shall also include -

3.2.1.1 Painting – General and as per Central & Excise rule, if any.

3.2.1.2 Railing and staircase wherever required as per the factory act.

3.2.1.3 All design with respect to civil, structural, tank foundations etc. should follow the standard code practice for earth quake resistant viz. as per IS 1893.

3.2.1.4 Insulation, lagging with aluminum cladding wherever necessary, earthing, lightning arrester, flame proof connections/lighting arrangement as per the rules in Distillery (R.S. & Anhydrous Alcohol plant).

3.2.1.5 Technical Services shall include

a. **Project Incharge** – Supplier will provide a qualified & experienced project engineer/manager to supervise the installation & erection of the plant that will be stationed at site.

b. **Training of the Purchaser's personnel** – Supplier shall arrange to train the purchaser's all personnel regarding the process operation & maintenance of the plant being set up under the agreement on its own cost.

c. **Startup services** – Supplier will provide qualified staffs for start up of plant and during the performance period.

d. **After sale services** – Routine operation field review & training update. Supplier will furnish a qualified field engineer to review unit operations & provide additional on-site training on demand by purchaser.

4.0 Performance Guarantees of the plant & machinery

- 4.1 All the plant & machinery & its accessories should be guaranteed for a period of 24 months from the date of commissioning for material, workmanship & performance.
- 4.2 Plant & machinery and its accessories should be of first class quality as per standard specifications. Any material found defective during the Guarantee period shall be replaced by the Seller free of cost.
- 4.3 Process performance guarantees –15 days for each unit.
Guarantee for 75 KLPD distillery plant to produce R.S. & 110 KLPD Anhydrous ethanol plant be for following parameters.
- a. Capacity, efficiency & yield
 - b. Raw material consumption
 - c. Utility consumption -
 - i. Steam, ii. Water, iii. Power, iv. Chemicals
 - d. Waste generated -
 - i. Waste water quality & quantity
 - ii. Solid waste quality & quantity
 - e. Finished product quality
 - f. Water, mass & energy balance
 - g. Performance of bought out items

The above performance parameters should be achieved on every day of **fifteen consecutive** full working days for each final product i.e. R.S. & Anhydrous ethanol respectively. This should be fulfilled within three months for R.S.& Anhydrous ethanol plant from start of the plant operation after successful commissioning.

- 4.4 The make of the main units to be supplied by the seller to the Purchaser shall be as per the make specified by the Purchaser.

5.0 Contract Price

- 5.1 The seller agrees to design, procure, manufacture, supply, erect, construct & commission the plant and machinery specified in Section II- 2.1, & 3.1 and forming part of this agreement at a Total price of Rs----- /-- (Rupees -----/-) hereinafter referred to as the “Contract Price” subject to terms and conditions as hereinafter provided as per the break-up given below in PART- I
- 5.2

PART- I

Sr. No.	Particulars	Rs. Lac
i)	Basic price of plant and machinery according to specifications and details given in Section II-2.1, 3.1 & including transport & insurance charges.	
ii)	Price of Necessary Facilities	
iii)	Erection, commissioning and trial run and supervision thereof	
iv)	Other	
v)	Total	
vi)	Civil & structural work	
vii)	Grand total	

- 5.2 The total contract price offered at 5.1 (vii) above is exclusive of the total amount in respect of Goods & Service Tax (GST), Customs Duty on imported unit/equipment, local taxes and any other taxes or duties and Octroi at the site only imposed by law leviable on the plant and machinery supplied to the Purchaser. The total price offered is also exclusive of single point GST and octroi on finished bought out items supplied directly to site from Sub-contractors works. The taxes and duties applicable are as follows:-

PART- II

Name of Tax.	Rate of Tax	Amount of Tax
Total price for plant & machinery will be: Rs. 5.1 & 5.2		

Part-III of the contract price shall consist of excise duty for which the Cenvat benefits are to be given.

The increase or decrease in the amount of GST due to changes in the rates/structure in the GST will be on Purchaser's Account provided the material is supplied as per delivery/dispatch schedule (refer Article 5.3).

5.3 Income Tax

Income Tax, if applicable, will be deducted at source, while releasing the payment against R.A-Bill / Total Bill.

5.4 Changes in Tax structure: -

Any change in the GST structure will be in the scope of seller and change in the tax structure in respect of Part-I shall not be entertained by the purchaser as contract price is fix and firm.

5.5 The price is fixed & firm till the completion of work and performance trial.
No escalation paid on account of any reason.

5.6 Delivery period

Tenderer has to adhere to the period stipulated for delivery completion of work in all respect very strictly. Design, supply, erection, construction and mechanical & water commissioning of the plant & machinery should be completed within **eight months** from the date of signing the agreement of R.S. and Anhydrous ethanol plant should be commissioned & stabilized within **15 days period** & performance guarantee runs should be jointly conducted for **15 days period** after stabilization of the each unit.

Liquidated damages for late delivery shall be @ 2% of contract price per fortnight up to a maximum 10% the total contract price.

6.0 Responsibilities of The Seller

- 6.1 The seller shall furnish within 15 days of signing of this agreement, a PERT /CPM bar chart for approval of time bound programme by mutual discussion.
- 6.2 Seller shall strictly follow the pert / CPM /Composite bar chart and shall ensure that the machinery shall be delivered in sequence of priority for erection so that the items which should be as per the erection schedule shall be sent first and with the same order of priority, the progress of delivery shall be maintained thereafter accordingly. The said monthly delivery schedule shall also indicate the equipment wise breakup prices of the major equipments in section-II to be approved by his inspecting agency. The delivery be approved by purchaser / his inspection agency,
- 6.3 The seller shall agree to prepare and make available to the purchaser within 15 days from the effective date of the agreement preferential list of bought out, shop fabricated and site fabricated items of the plant and machinery, equipments and accessories including the controlling instrument which would be required for erection, commissioning and operation of the said plants as more particularly specified in Section II annexed to this agreement together with respective specifications and process thereon.
- 6.4 Not more than 15 days from the effective date of this agreement, the seller shall provide to the purchaser four sets drawings of layout plant & machinery foundation, structured work, piping diagram and electrical diagram with detailed project schedule. This will be followed by monthly progress reports on 10th day of each month -progress of activities listed on detailed project schedule and revision in schedule

- arising out of protracted activities. The project Incharge shall submit the copies of the progress report to the Chairman/Managing Director of the Sugar mill and Inspecting agency- **Vasantdada Sugar Institute, Pune** shall certify the actual progress report. The drawing shall be submitted to the purchaser and /or its inspection agency for approval and the purchaser has every right to scrutinize and modify the drawings.
- 6.5 Seller shall produce two sets of CD and two set of ZIP drive disc of all design, drawings, layouts related to fabricated items, bought out items, piping, structure, offsets etc.
- 6.6 The seller shall depute their representatives on site to take the delivery of the machinery and equipments who shall be fully responsible for handling, unloading, transport and proper storage. The deliveries of material shall be accompanied with clear details packing lists in triplicate mentioning therein gross weight of the packages as well as net weight of the concerned equipment. Store Officer and Engineer of the Seller shall record the details of delivered material in a joint register.
- 6.7 The purchaser shall provide the necessary godown facilities. However, supplier shall be responsible for use of godown at his own security.
- 6.8 Seller shall ensure that the design features and quality of workmanship of plant & machinery as per plant specification & shall be strictly as per the plant specification and standard. Section II- 2.1, 3.1, 4.1 and standard engineering practices. The purchaser shall have the right to appoint any inspection agency to visit place of manufacture assembly or machinery to inspect the same. The seller shall offer the plant and machinery for inspection during course of manufacture as well as before dispatch. The seller shall give at least 15 days clear notice by fax /mail followed by confirmation letter to the purchaser and inspection agency for inspection before dispatch of equipment to site. If within 15 days the inspection does not take place, the machinery and equipments will be dispatched in inspection waiver letter shall be issued by the purchaser /inspection agency. Such equipments /materials will be inspected at site provided inspection waiver letter is given by purchaser /inspection agency. The seller shall prepare the list of equipments, materials to be inspected in consultation with purchaser and inspection agency. The purchaser or their inspection agency shall have the right to reject any material or assemblies or sub-assemblies if these are not of the specified quality and workmanship on the ground that they cannot be rectified.

The purchaser or inspection agency shall within their rights to bring to the notice of the seller any deviation observed from the

specifications as per annexure or standard engineering practices and the seller shall be required to rectify such defects and deviations if any out of their own cost, such, inspection by the purchaser and /or inspection agency shall not absolve the seller for his responsibility of supply in the plant and machinery in accordance with the annexure and terms and conditions of this agreement.

The seller shall provide free of cost with necessary facility to the purchaser and /or its inspection agency for proper inspection and testing of the equipments at sellers or their sub-contractors work or at proposed factory site.

The assemblies or sub-assemblies /equipments not accepted by the purchaser and / or inspection agency have been rectified or altered; such parts/equipments assemblies or sub-assemblies shall be segregated for separate inspection and approval before being incorporated in the plant and machinery.

The purchaser and /or their inspection agency shall have the right to give their inspection mark on all items inspected by them.

Under no circumstances the seller shall absolve from the responsibilities of inspection unless waived by the purchaser.

- 6.9 The seller hereby agrees to take out excess material goods brought at site with the prior written permission of the purchaser only after successful commissioning of Plant & Machinery. However, the seller shall refund the taxes & duties paid by purchaser on such excess material.
- 6.10 Seller shall provide first filling of the oils and lubricants wherever necessary
- 6.11 Seller shall ensure that all pipelines shall be provided with flanges at length not exceeding running 6 meters to facilitate easy dismantling. Good quality jointing shall be made on all flange points to commensurate with pressure temperature and characteristics of the materials to be handled.

6.12 **Insurance -**

The seller shall be responsible at their own cost for comprehensive risk insurance including transit-cum-storage-cum-erection commissioning insurance of all machinery and equipments and other consumables directly dispatched to the purchasers plants site from the respective places of manufacture. The insurance policies in respect thereof shall be arranged by the seller and kept in full force and effective until commissioning. The seller shall supply replacement of machinery and equipments goods or parts lost or damaged in transit,

during storage or during erection and commissioning, free of cost at the site of the purchaser within the time so as to adhere to the date of commissioning mentioned in this agreement. The purchaser will be absolved from any responsibility or liabilities arise on account of accident.

- 6.13 All freight charges wharf age and demurrage shall be borne by the seller.
- 6.14 During and until commissioning and operation of the plant, the seller shall be fully responsible for any losses or damages to their persons and property resulting from any cause whatsoever connected with the erection and operation of the work and the seller shall provide the insurance at their own cost for the chief erector and their assistants and erection workmen deputed for the erection, for death or bodily injury suffered by the staff members or erection workmen or other staff members personally deputed by them for the purpose of erection and commissioning. In the event if the purchaser is obliged and required to pay any compensation to a workman employed by the seller or by any of their sub-contractors in the execution of the work, the seller shall reimburse to the purchaser the compensation so paid without prejudice to the rights of the purchaser.
- 6.15 The seller with prior permission of purchaser will engage if require the sub- contractor at site.
- 6.16 Foreign exchange -
Any foreign exchange required for import of raw material or the seller shall arrange equipments. Non-availability of foreign exchange shall not entitle the seller any extension of time for, commissioning of the plant.
- 6.17 **Approvals & Consents:**
The supplier shall obtain the necessary approvals/ consents, from State Excise, Central Excise, Weights and Measures including calibration /gauging of tanks, factory & electrical inspector, other authorities as per the statutory requirement in respect of plant to be supplied /erected by the supplier. Factory will pay necessary officials fees & issue letters/applications.
- a. Calibration /Gauging of Storage tanks:

Calibration /Gauging of all storage tanks shall be carried out by supplier/manufacturer and shall be responsible for obtaining approval of the calibration charts from all concerned statutory authorities.

b. Electrical Approvals

- i. All Flameproof equipments shall be certified by CMRS, Dhanbad.
- ii. CMRS certificate no. should appear on the nameplate of the equipment.
- iii. CPRI test certificate for the design & construction of MCC panel should be furnished by the supplier.
- iv. Type test certificate of CPRI Bhopal for short-circuit with standing capacity & degree of protection will be furnished by Supplier.
- v. The panels shall have Tariff Advisory Committee's Approval.
- vi. Other necessary approvals /certificates.

6.18 **Drawings, Codes & Standards & Testing:**

As specified earlier in tender document

7.0 Trials and Takeover

7.1 As soon as the plant is ready for commissioning after completion of the erection of entire plant and machinery, the seller shall notify in writing to the purchaser specifying the date and time, at least 30 days before so that the purchaser can arrange for steam, molasses, process water, power and operational staff and workmen. Unless otherwise agreed to by the purchaser and seller, the seller shall begin the said trials on the date and time so notified.

PROVIDED THAT the water trials shall be conducted by the seller for a period of a week before commissioning of the plant and machinery to the satisfaction of purchaser. The hydraulic trials will be conducted jointly to verify the leakages etc.

7.2 After the said, water, steam and vacuum trials have been completed to the entire satisfaction of the purchaser and on their furnishing a certificate to the effect that all the plant and machinery, mentioned in Section II- 2.1, & 3.1 of the plant will be certified as mechanically completed for commissioning.

7.3 The performance trials under clause 7.5 will be conducted in the presence of authorized representative of authorities like -

- a) Representative of purchaser
- b) Representative of seller
- c) Representative of the Vasantdada Sugar Institute, Manjari (Bk), Pune.
- d) Representative of the Commissioner of Sugar, Maharashtra State.

The performance parameters should be achieved on every day of 15 consecutive full working days for each final product. This should be fulfilled within not less than three months from start of the plant operation.

- 7.4 The seller shall give performance trial to the satisfaction of the Agency /committee appointed /constituted as per clause 7.3 and the committee /agency should minute the proceedings of their observations indicating clearly whether the performance parameters have been achieved or otherwise. For achievement of performance as per guaranteed norms the seller will make necessary modification, alteration in the process at their cost in consultation with purchaser.
- 7.5 In the event of failure of providing necessary facilities required for commissioning by the purchaser within 90 days from the mechanical completion. Then the commissioning trial period will be extended for another 90 days.

8.0 Purchaser's Responsibility

- 8.1 The purchase shall pay the statutory inspection and other fees and charges payable under the terms of any act or regulations in respect of the installation, operation or use of machinery and equipments. But follow-up work is to be done and approval is to be obtained by seller at their cost.
- 8.2 The purchaser shall provide free of cost to the seller or their sub-contractors suitable new godown for storage of the equipments, tools and tackles etc. in the premises of work for the erection, installation and commissioning work.
- 8.3 If required, available workshop facility will be provided at extra cost without disturbing the routine maintenance work for erection work and not for fabrication work.
- 8.4 The purchaser shall provide to the contractor electrical power at 440 volts, three phase 50 cycles, 100 HP load at one point for erection within one month from the date of signing of the agreement. Power consumed by the seller or their sub-contractors shall be chargeable for which a separate energy meter will be fitted by seller.

- 8.5 The purchaser shall provide at their cost for trial run to the seller and or their sub-contractors adequate water supply at factory site.
- 8.6 The purchaser shall provide at his cost adequate technical staff and labour including skilled and unskilled during steam and water trails and commissioning and operating the plant and machinery.
- 8.7 The purchaser agreed to assist the seller's requirement of steel under the prevailing SAIL scheme for priority allotment required for machinery and equipments to be supplied under this agreement but the responsibility of getting the required steel quantities shall be sellers alone. The inability on the part of the seller to procure supplies of Stainless steel, mild steel, D.O. Copper, brass, etc. will not absolve or release in any way the seller & seller will not be entitled to claim any compensation or any extension of time for that reason.

9.0 Patents, Copyright, Secrecy, Force-Major

Patent & Copyright:

- 9.1 The seller shall hold and save the purchaser their officers, agents, servants and employees harmless from liability of any nature or kind including the costs and expenses for or on account of breach of any copyright or invention or secret process patented or unpatented, articles manufactured or use in the performance of this contract including their use by the purchaser, unless otherwise specifically stipulated in this agreement. In the event of any claims so demand being made or an action being brought against the purchasers for infringement of the patent the seller will indemnify the purchaser against such claims or demand and all costs and expenses arising from or incurred by reason or such claim or demand.
- 9.2 Provided that the purchaser shall notify in writing to the seller immediately if any claim is made and that they shall be at liberty if they so desire with the assistance of the purchaser if required, but at the seller own cost, charges and expenses to conduct all negotiations for settlement of the same or any litigation that may arise there from and provided that in such motion or thing shall be used by the purchaser for any purpose or in any manner other than that for which they have been supplied by the seller as specified in this agreement.
- 9.3 **Secrecy:**
Any data, information, design, drawing, process know-how and other such documentation pertaining to design, manufacture, or plant and machinery being suggested by the seller under this agreement which the seller may discuss and / or elaborate and / or handover to the purchaser

from time to time are of proprietary nature and shall be kept confidential by the purchaser.

The purchaser shall not disclose information on design drawing, process know-how and such documentation to any other third party nor use it for any other purpose other than its intended use without prior written permission from the seller.

9.4 Force Majeure:

The right of the seller to proceed with the work shall not be terminated as provided in this agreement, because of any delay in completion of the work due to unforeseen cause beyond the control and without the fault or negligence of the seller or sub-contractors including act of God, or public action, Government in its sovereign capacity, floods, epidemics, quarantine, civil commotion and riots. In the event of any of the afore-said contingencies unusual or extraordinarily prolonged the purchaser shall be promptly informed by the seller by telegram/telex followed by confirmation in writing with documentary proofs within 7 days of the commencement and completion of force-Majeure circumstances. The seller for purchaser's information shall submit a list of sub-contractors to the purchaser. The force Majeure clause shall also be applicable to sub-contractors.

9.5 The seller shall not transfer their right and obligations arising out of or in relation to this agreement except with consent in writing from the purchaser.

10.0 Terms of Payment & Bank Guarantee & Security Deposit

Payment Terms:

The purchaser shall pay the contract price in the following manner:

10.1 10 % (Ten percent) advance of the contract price for plant and necessary facilities contained in Section III- 5.1 only of this agreement i.e. Rs. -----
-----/- (Rupees-----/-) within 15 (fifteen) days of signing of this agreement, on furnishing of Bank Guarantee by the seller for the said advance in the form annexed to this agreement.

After receipt of advance of 10 %, the seller should submit to the **Purchaser and the Inspection agency** the following within 15 (fifteen) days for approval:

- a. Billing schedule/price break-up and erection schedule
- b. Layout of plant & machinery
- c. Bar chart indicating activities

- d. Dispatch schedule
 - e. Bar chart indicating activities
- 10.2 5 % (Five percent) advance of the contract price for plant and necessary facilities contained in Section III- 5.1 only of this agreement i.e. Rs. -----/- (Rupees-----/-) shall be paid to the seller within 15 days, on furnishing bank guarantee by the seller for the said advance in the form annexed to this agreement
- After receipt of advance of 5 %, the seller should submit to the **Purchaser and the Inspection agency** the following within 15 (fifteen) days for approval:
- a. Piping, electrical and instruments particulars and drawings.
 - b. List of detailed specifications of bought out items
 - c. Utilization certificate of advance.
 - d. GA Drawings
 - e. Civil & Structural drawings

- 10.3 65 % (Sixty five percent) of the price referred to above for plant machinery i.e. Rs. -----/- (Rupees -----/-) and the reimbursement of actual amount of GST, octroi, (custom duty on imported goods if any) on documentary evidence, after the receipt of material at site and approval of the same. The advance paid under clause 10.1 & 10.2 (i.e. 15 %) will be adjusted in this amount. The bank guarantees for advance will be returned to supplier after satisfactory commissioning of plant.

In case of fabricated items at site etc. proportionate amount of the bill value will be paid only after completion of fabrication work at site.

In case of bought out items, etc. proportionate amount of the bill of individual item will be paid after receipt of total material and assembling all parts at site like cooling towers, pumps & motors, MS/SS plates, PCC & MCC panel, instrumentation, Water treatment plant, water hydrant system etc.

Submission of bills and payments:

- i. All the details of GST paid by the supplier shall be shown separately for own manufactured items and for bought out items & to be submitted to the purchaser along with bills by supplier for the reimbursement of the same.
 - ii. The amount shown in supplier's bill for payment of all such GST will be computed on the basis of all such relevant statutory provisions in force on the date of dispatch and shall the supplier pay the actual amount as.
 - iii. The payment shall be released by the purchaser within ten days from the date of submission of approved bills.
- 10.4 10 % against erection of plant & machinery and after Mechanical & Hydraulic trials certified by the inspection agency.

- 10.5 10 % after successful commissioning and performance trial each for 15 days for R.S. & Anhydrous ethanol plant against performance bank guarantee of 10% valid for 12 months from the date of successful performance trial.
(For more details please refer the draft agreement)

11.0 Penalties:

If the seller fails to complete and commission the plant within the stipulated time or fail to give satisfactory performance of the plant as per the agreed performance guarantees, the seller shall pay liquidated damages as specified below:-

(Total penalties will be max. 10 %)

11.1 Distillery (R.S. & Anhydrous ethanol plant):

The following penalties will apply individually & separately for above each unit.

11.1.1 Delayed Completion/Commissioning.

2 % of the contract price shall be deducted for delayed completion/commissioning every fortnight from scheduled programme maximum up to 10 % of the contract price of part-I as mentioned in clause 5 of contract price mentioned at clause 5.

11.1.2 Liquidated damages for failure of guaranteed performance.

11.1.2.1 5 % shall be deducted from the part-I of contract price for every 0.2 % drop in daily capacity or exceeding utilities 5 % of consumption of various utilities than guaranteed figures during the performance guarantee of continuous running of each plant for 15 days subject to maximum 5% of the contract price.

11.1.2.2 Supplier has to give guarantee towards requirement of nutrients, acids, antifoaming agents etc. required for fermentation based on cane molasses-based distillery. In case any of these items exceeds the guaranteed figure over & above the guaranteed figure will be considered for penalizing the supplier. The amount equivalent to working days of distillery for one year (300 days/year) will be considered towards the penalty. Supplier will have to give guarantee for quality of final product.

11.1.2.3 Supplier will give bank guarantee of Rs.10 lac against performance of spentwash production of not exceeding 5.5 lit/lit of total spirit

(based on molasses of 40% F.S.) The performance will be for the period of 15 days after stabilization of the plant.

11.1.2.4 In the unlikely event if the technical know-how and the plant and machinery mentioned in Section-II-2.1, 3.1 & 4.1 of this tender document does not work upto the performance limits and if the specified quality of product is not obtained, then the seller shall reimburse all the sum of money paid by the purchaser to the seller with 15% interest along with other expenses including civil work & other items in respect of this project. The seller may be entitled to take back at his own cost all plant and machinery, accessories and other items brought by him. In case the seller is new entrant in this field or the technology is new, then the seller shall give the purchaser bank guarantee for the entire total price of the plant. However, this clause will be applicable over & above the non -achievement of consumption norms of utilities guaranteed & capacity as per clause 11.1.2.1.

11.2 For Fermentation efficiency

If fermentation efficiency of 89-90 % (Article 2.2) is not achieved, a penalty of 0.5 % of the contract price as per article 5 will be levied for every 0.5 % drop in Fermentation efficiency subject to maximum of 5 % of the contract price as per article 5.

11.3 For Distillation efficiency

If distillation efficiency 98.5 % (Article 2.2, 3.2, & %2) is not achieved, a penalty of 0.5 % of the contract price as per article 5 will be levied for every 0.5 % drop in Distillation efficiency, subject to maximum of 5 % of the contract price as per article 5.

11.4 For Steam Consumption

If the steam consumption for R.S. – 2.2 kg/lit. of Rectified Spirit (F. wash to R.S.) and for Anhydrous ethanol -0.55 Kg/lit. (R.S. to Anhydrous ethanol) is not achieved, a penalty of 0.5 % of the contract price as per article 5 will be levied for every 0.5 % drop in Steam consumption, subject to maximum of 5 % of the contract price as per article 5.

12.0 Arbitration, Negligence, Packing Material

12.1 Arbitration:

If at any time, any question, dispute or difference, whatsoever, shall arise between the seller & purchaser arising out of or in connection with the stipulation of this contract except those which are expressly hereinafter excluded from the ambit of arbitration, the parties hereto shall use their best efforts to settle such question, dispute or difference amicably by mutual negotiations should the contract not be reached in respect therewith, either party may be giving to the other a notice in writing of the existence of such question, dispute or differences refer the same for Arbitration

Proceedings as per the provision of Arbitration Act 1940 and the rules there under inclusive of any modification or replacement thereof. Venue of Arbitration will be at **Indapur Dist. Pune (Maharashtra state)**

12.2 Jurisdiction: All court proceeding shall subject to jurisdiction of the **Indapur Dist. Pune** and that they shall have jurisdiction to try all disputes and matters arising out of and under the agreement.

12.3 Negligence of the seller:

If the seller shall neglect to manufacture or supply the plant and machinery or to erect and commission the same or to dismantle, modify strengthen, re-erect and commissioning the existing equipment or the dismantle and shift outside the factory building, the existing equipment to be discarded with due diligence and expedition or refuse or neglect to comply with any reasonable orders given to them in writing by the purchaser in connection therewith, the purchasers may give notice in writing to the sellers to make good within a reasonable specified time, the failure neglect or contravention complained and .if the seller still without reasonable cause fail to comply with the notice (to be reckoned from the date of receipt of notice by the sellers), the purchaser may take over the work of manufacture, supply, erection, dismantling and re-erection of existing machinery or commissioning of equipments as a whole or in part out of ." the sellers hand/or may give it to another person on contract at a reasonable price and entitled to recovery any excess cost thus incurred by the purchasers or make it good from any bills or dues of the sellers pertaining to this agreement or recover such amount from the seller.

12.4 Transferability Of The Contract:

The seller shall not transfer their right and obligations arising out of or in relation to this Agreement except with the consent in writing to the purchaser.

12.5 Packing Material:

Since the cost of packing material will be borne. By the purchaser, all containers (including packing cases, boxes, tins drums and wrappings, etc.) in which machinery and equipments and stores will be supplied shall be considered non-returnable to the seller.

12.6 Excess Materials:

To expedite erection work, seller may bring on the site materials such as piping, valves, fittings, consumptions and wires, hardware, insulation materials, refractory bricks, lubricants, paints, etc., more than actually required for completion of work as per this agreement. The seller, with the prior approval of the purchaser, shall take such material as are found surplus after the completion of erection back. Any materials including tools and tackles etc., brought by the sellers at the site and not paid for by the purchasers can be taken out by the sellers after the purchaser's approval.

13 MAINTENANCE /WARRANTY

- 13.1 For a period of 24 months from the date of commissioning of plant (called the warranty period) or the seller shall be liable to rectify / replace the plant and machinery or parts thereof, such as may be found to be defective or below the rated capacity under proper use according to seller's written instruction and arising due to faulty design, material workmanship or erection or otherwise In case may be the purchaser or it's inspection agency shall give the seller notice in writing setting out the particulars of the defects or failure and the seller shall thereupon rectify the defective or under-rated equipments or replace the same free of cost to make it comply with the requirement of the Agreement. If the seller fail-to do so within reasonable time the purchaser may rectify and / or replace by giving prior intimation at the cost of the seller the whole or any portion of the equipment, as the case may be which is defective or under-rated or fail to fulfill the requirement of this agreement and, may recover the actual cost thereof from the seller or adjust the same

from any balance payment to be made to the seller or by invoking the performance bank guarantee or recover the same by raising the debit note or otherwise.

- 13.2 In case of such rectification / replacement seller shall be liable to pay all the costs, charge, expenses of such rectifications / replacement done and the defective equipment on being replaced shall be taken away by the seller at its own cost. The purchaser shall have the right to operate any and all equipment after the commissioning date of the plant except that this shall not be considered to permit operation of any equipment which may be materially damaged by such operation before any required rectification alternation have been carried out.
- 13.3 If it becomes necessary according to the seller to replace or renew any defective part of the machinery under this clause, the provision of warrantee period shall apply to the parts of the plant and machinery so replaced or renewed within of six months from the date of completion until the end of the aforesaid warrantee period of as defined above whichever is later.
- 13.4 The rectification or new parts will be delivered F.O.R. Purchase factory site. The sellers shall also bear the cost of rectification / replacement carried out on their behalf by the purchasers as mentioned above at the site.

14 MISCELLANEOUS PROVISION

- 14.1 Inspection:
Purchaser or its agency shall make necessary inspection of equipments, machineries, assemblies etc. at the works of supplier or its sub contractor.
Seller or its sub contractors shall offer the plant, machinery and manufacturing activities for inspection fifteen days before dispatch. The visit for inspection will be confirmed by both the parties by clear notice by giving 15 days time if required; supplier shall supply necessary information / drawings for the verification of the details of specification.
- 14.2 Purchaser shall be entitled to bring the notice of seller, any deviation observed from the specification or standard engineering practice and seller at its cost shall rectify the same.
- 14.3 Purchaser shall have the right to give their inspection marks on items inspected by them.
- 14.4Improvements & modifications:

During the continuance of this agreement and for period of two years through seller undertake and agrees to provide the purchaser information and technical services including improvement and modification in respect of plant, process to the extent applicable and suitable in and to the said know how and technology for the use and benefit of the purchaser.

Purchaser shall in so far is free to do improvements & modifications in the plant on its own.

14.5 Training of purchaser's personnel

Seller shall arrange to train the purchaser's all personnel regarding the process, operation and maintenance of the plant being set up under the agreement on its own cost.

14.6 Changes:

- i. Purchaser without invalidating this agreement may order extra work or make changes by adding or deducting from the work, without affecting the cost. All such work shall be executed under terms & conditions of this agreement.
- ii. Except in an emergency endangering life or property, no change shall be made unless authorized in writing by the purchaser.
- iii. If supplier claims that any change requested by purchaser involving extra cost, supplier shall give purchaser written notice thereof, before proceeding to execute the work except in an emergency endangering life or property.

15.0 PURCHASERS RIGHT & CANCELLATION

Risk Purchase

- If the successful tenderer fails to execute the work as per order/schedule & after request of the purchaser, contractor fails to do so, then the purchaser shall be free to execute the work/purchase the required material on the risk & cost of the supplier without his consent.

Cancellation

- Purchaser reserve the right to cancel the contract forthwith upon or anytime after the happening of any of the following events:
- If seller commit a breach of any of the terms and conditions of the tender and fail to remedy such breach within 15 days of issuing of written notice from purchaser in regard thereto or within 7 days of receipt of...

- If seller do not adhere to the instructions which may be issued from time to time after mutual discussions in connection with the manufacture / supply of the material/erection.
- Purchaser's right to so terminate the contract shall be without prejudice to any of purchaser's rights and remedies against seller and in the event of purchaser so terminating the contract, purchaser shall not be obliged to pay for any loss or compensation in respect of such termination.

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SECTION - V

- A. DRAFT OF BANK GUARANTEE FOR PERFORMANCE**
- B. BANK GURANTEEE FOR EARNEST MONEY DEPOSIT**

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**FORMAT FOR BANK GUARANTEE
(For Advance & Performance)**

A. DRAFT OF BANK GUARANTEE FOR PERFORMANCE

This Guarantee made this --- / --- /2021, Rs.-----/- by the-----
----- Bank, having its branch office at ----- (hereinafter
called '**The Guarantor**' which expression shall, unless repugnant to the context or
contrary to the meaning thereof, include its successors and assignees) of the one part in
favour of ----- a Society registered under the
Maharashtra State Co-operative Societies Act, 1960 and having its registered office and
distillery plant located at **M/s. Nira Bhima S.S.K. Ltd. Shahaji Nagar, A/p
Redni, Tal. Indapur, Dist. Pune, Maharashtra State.** (Hereinafter called '**The
Purchaser**' which expression shall, unless repugnant to the context or contrary to the
meaning thereof include its successors and assignees) of the other part.

WHEREAS, M/s. ----- a company registered under the Indian
Companies Act, 1913 having its registered office at ----- and chief
place of business at-----hereinafter called '**The Seller**' which
expression shall unless repugnant to the subject or context include their legal
representatives, administrator, successors or permitted assignees) has entered into with
the Purchaser an Agreement dated ----/---- / 2021 (hereinafter called the said
Agreement) to design, manufacture, procure, supply Machinery and Equipment for the
Purchaser's proposed 75 KLPD Distillery plant for the production of Rectified spirit
and 110 KLPD Anhydrous ethanol, site at **M/s. Nira Bhima S.S.K. Ltd. Shahaji
Nagar, A/p Redni, Tal. Indapur, Dist. Pune, Maharashtra State.** in accordance
with the terms and conditions therein contained (hereinafter referred to as The Seller
has to supplied all the 'the said Plant & Machinery and related equipment' & all the
documentation required by Purchaser in respect of the said plant).

AND WHEREAS under clause _____ of the said Contract, the Seller
are required to furnish to the Purchaser a Bank Guarantee in respect of guaranteed
performance parameter of the Plant & Machinery and related equipment supplied by
the Seller as indicated in the agreement between Purchaser & Seller dated -----/ /
2021 of the said Contract for Rs.-----/- (Rs -----only)
representing 10 % of the contract price (value of the order) mentioned in the section –
III clause 5 – Contract price & clause 10-Terms of payments & Bank Guarantee.

AND WHEREAS the Guarantor has at the request of the Seller agreed to give
the guarantee as hereinafter appearing.

NOW THIS DEED WITNESSES AS FOLLOWS:

- 1.0 In consideration of the performance guarantee the Guarantor hereby undertakes
to pay to the Purchaser within 30 (Thirty) days of demand and without demur

such a sum not exceeding Rs. _____/- (Rupees _____ only) representing 10 % of the Contract Price as the Purchaser may demand, and if the Guarantor shall fail to pay the same within the said period, the Guarantor shall also pay on the sum demanded interest at the bank lending rate then prevailing reckoned from the said 30 days till the date of payment.

- 2.0 The Guarantor shall pay to the Purchaser on demand the sum under Clause 1 above without demur and without requiring the Purchaser to invoke any legal remedy that may be available to them, it being understood and agreed, FIRSTLY that the Purchaser shall be the sole judge of and as to whether the Seller have committed breach / or breaches, of any of the terms and conditions of the Agreement and to the extent of loss, damage, costs, charges and expenses caused to or suffered by the Purchaser from time to time shall be final and binding on the Guarantor and SECONDLY that the right of the Purchaser to recover from the Guarantor any amount due to the Purchaser shall not be affected or suspended by reasons of the fact that any dispute or disputes have been raised by the Seller with regard to their liability or that proceedings are pending before any Tribunal, Arbitrator(s) or Court with regard thereto or in connection therewith, and THIRDLY that the Guarantor shall immediately pay the aforesaid guaranteed amount to the Purchaser on demand and it shall not be open to the Guarantor to know the reasons of or to investigate or to go into the merits of the demand or to question or to challenge the demand or to know any fact affecting the demand and LASTLY that it shall not be open to the Guarantor to require proof of the liability of the Seller to pay the amount before paying the aforesaid guaranteed amount to the Purchaser.
- 3.0 This guarantee is in addition to and not in substitution for any other guarantee executed by the Guarantor in favour of the Purchaser on behalf of the Seller.
- 4.0 The Seller and the Purchaser will be at liberty to vary and modify the terms and conditions of the said Agreement without affecting this guarantee, notice of which modifications to the Guarantor is hereby waived and the same shall be deemed to have been done with the assent of the Guarantor.
- 5.0 This guarantee shall not be affected by any change in the constitution of the Guarantor or of the Seller nor shall the guarantee be affected by the change in the constitution of the Purchaser or by amalgamation or absorption with any other body corporate and this guarantee will be available to or enforceable by such body corporate.
- 6.0 The neglect or forbearance of the Purchaser in enforcing any payment of moneys, the payment whereas is intended to be hereby secured or the giving of

time by the Purchaser for the payment thereof shall in no way release the Guarantor from its liability under this deed.

- 7.0 This guarantee is irrevocable except with the written consent of the Purchaser.
- 8.0 This guarantee shall come into force from the date hereof and shall remain valid for 120 days from the date of submission of the tender i.e -----/---- /2021. The Guarantor shall pay to the Purchaser the said sum of Rs. ----- /- (Rs ----- /-) or such lesser sum as the Purchaser may demand.
- 9.0 This guarantee shall come into force from the date hereof and shall remain valid for 12 months from the date of performance trial, but if the period of the contract is for any reason extended and upon such extension if the seller fail to furnish a fresh or renewed guarantee for the said extended period, the Guarantor shall pay to the Purchaser the said sum of Rs. _____/- (Rupees _____ only) or such lesser sum as the Purchaser may demand.
- 10.0 The invocation of this guarantee shall be by a letter signed by the Purchaser and countersigned by the Director of Sugar, Maharashtra State.
- 11.0 Notwithstanding anything stated hereinbefore the liability of the Guarantor under this guarantee is restricted to Rs. _____/- (Rupees _____ only). This guarantee shall remain in force upto _____. Unless a demand or action under this guarantee is presented to the Guarantor in writing within one month from the date of expiry all rights of the Purchaser under this guarantee shall be forfeited and the Guarantor shall be released and discharged from all liabilities hereunder.

IN WITNESS WHEREOF _____ for and on behalf of
the Guarantor have signed this deed on the day and year above written.

Witness: _____

For and on behalf of the Guarantor

B. BANK GURANTEE FOR EARNEST MONEY DEPOSIT (EMD)

This guarantee made on ---- /---- / 2021, for Rs. -----/- (Rs----- /- only) by the -----Bank, the Bank having its branch office at -----, Tal.-----, Dist.----- (here-in-after called the Guarantor which expression shall, unless repugnant to the context or contrary to the meaning thereof, include it successor and assignees) of the one part in favour of **M/s. Nira Bhima S.S.K. Ltd. Shahaji Nagar, A/p Redni,Tal. Indapur, Dist. Pune, Maharashtra State.** a society registered under the Maharashtra State Co-operative Society Act, 1960 and having its registered office at **M/s. Nira Bhima S.S.K. Ltd. Shahaji Nagar, A/p Redni,Tal. Indapur, Dist. Pune, Maharashtra State** (Here-in-after called as Purchaser here-in-after called the Guarantor which expression shall, unless repugnant to the context or contrary to the meaning thereof, include it successor and assignees) of the other part.

Whereas ----- a company registered under the Indian Companies Act 1956 having its registered office at ----- and chief place of business at -----(here-in-after called as the Bidder which expression shall, unless repugnant to the subject or context include their legal representatives administrator, successor, or permitted assignees) is participating in a Tender (here-in-after called the said Tender) to design, manufacture, supply machinery and equipment for the purchaser proposed 75 KLPD plant to produce R.S. & 110 KLPD Anhydrous ethanol plant at **M/s. Nira Bhima S.S.K. Ltd. Shahaji Nagar, A/p Redni,Tal. Indapur, Dist. Pune, Maharashtra State** in accordance with the terms and conditions therein contain in the tender document (here-in-after referred to as the said machinery and equipment)

And whereas under section I-3 clause 4, TERMS and CONDITIONS of the said Tender document, the Bidder is required to furnish to the Purchaser a Bank Guarantee in respect of Earnest Money Deposit for Rs.-----/- Lacs (Rs. ----- /-) mentioned section I -3 clause 4- Earnest Money Deposit.

And Whereas the Guarantor has at the request of the Bidder agreed to give the guarantee as here-in-after appearing.

NOW THIS DEED WITNESSES AS FOLLOWS:

- 1.0 In consideration of the Earnest Money Deposit the Guarantor hereby undertakes to pay to the Purchaser within 30 (Thirty) days of demand and without demur such a sum not exceeding Rs. -----/- (Rs.----- /-) as the Purchaser may demand, and if the Guarantor shall fail to pay the same within the period, the Guarantor shall also pay on the sum demanded interest at the bank lending rate then prevailing reckoned from the said 30 days till the date of payment.
- 2.0 The Guarantor shall pay to the Purchaser on demand the sum under clause 1 above without demur and without requiring the Purchaser to invoke any legal

remedy that may be available to them, it being understood and agreed, FIRSTLY that the Purchaser shall be the sole judge of and as to whether the bidder have committed breach /or breaches, of any of the terms and conditions of the Agreement and to the extent of loss, damage, costs, charges and expenses caused to or suffered by the Purchaser from time to time shall be final and binding on the Guarantor and SECONDLY that the right of the Purchaser to recover from the Guarantor any amount due to the Purchaser shall not be affected or suspended by reason of the that any disputes have been raised by bidder with regard to their liability or that proceedings are pending before any Tribunal, Arbitrator(s) or Court with regard thereto or in connection therewith, and THIRDLY that the Guarantor shall immediately pay the aforesaid guaranteed amount to the Purchaser on demand and it shall not be open to the Guarantor to know the reason of or to investigate or to go into the merits of the demand or to question or to challenge the demand or to know any fact affecting the demand and LASTLY that it shall not be open to the Guarantor to require proof of the liability of the bidder to pay the amount before paying the aforesaid guaranteed amount to the Purchaser.

- 3.0 This Guarantee is in addition to and not in substitution for any other guarantee executed by the Guarantor in favor of the Purchaser on behalf of the bidder.
- 4.0 The bidder and Purchaser will be at liberty to vary and modify the terms and condition of the said Tender. Without affecting this guarantee, notice of which modifications to the Guarantor is hereby waived and the same shall be deemed to have been done with the assent of the Guarantor.
- 5.0 This guarantee shall not be affected by any change in the constitution of the Guarantor or of the bidder nor shall the guarantee be affected by the change in the constitution of the Purchaser or by amalgamation or absorption with any other body corporate and this guarantee will be available will be available by such body corporate.
- 6.0 The neglect or forbearance of the Purchaser in enforcing any payment of moneys, the payment whereas is intended to be hereby secured or the giving of time by the Purchaser for the payment thereof shall in no way release the Guarantor from its liability under this deed.
- 7.0 This guarantee shall be irrevocable except with the written consent of the Purchaser.
- 8.0 This guarantee shall come into force from the date hereof and shall remain valid for 120 days from the date of submission of the tender i.e. -----/ /2021.

The Guarantor shall pay to the Purchaser the said sum of Rs. ----- /-
(Rs ----- /-) or such lesser sum as the Purchaser may demand.

9.0 The invocation of this guarantee shall be by a letter signed by the Purchaser and countersigned by the Commissioner of Sugar, Maharashtra State, Pune.

10.0 Notwithstanding anything stated hereinbefore the liability of the Guarantor under this guarantee is restricted to Rs. -----/(Rs. -----/-). This guarantee shall remain in force up to ----/ /2021. Unless a demand or action under this guarantee is presented to the Guarantor in writing within one month from the date of expiry all rights of the Purchaser under this guarantee shall be forfeited and the Guarantor shall be released and discharged from all liabilities hereunder.

IN WITNESS WHERE OF..... for and
on behalf of the Guarantee have signed this deed on the day and year above
written.

Witness:.....
.....

For and on behalf of the Guarantor

LIST OF DISTILLERY PLANT SUPPLIERS

- ❖ Praj Industries Limited,
Praj Tower, 274/75,
Hinjawadi, Lonkar Chowk,
Phase-III, Pune.
Ph. No.- 020-22951511, 22952214
Fax – 020 – 22951515 / 22951718.
email-info@praj.net
- ❖ Mojj Engineering System Limited,
81-B/15, M.I.D.C., Bhosari,
Pune – 411026.
Ph. No. 020-27120835, 27122837, 27122838
Fax No. 020-27127198
email-mojjpune@vsnl.net
- ❖ KBK Chem Engg. Pvt. Ltd.,
KBK-House, I -Dot Complex, Survey No. 13/3/7
NDA Pashan Road, Near Maratha Mandir Hall
Bavdhan Khurd, Pune-411021
Ph. No. 020-22953685
Fax No. 020-22951939
email-kbk@vsnl.net
- ❖ Naran Lala Pvt. Limited,
Post Box No. 20,
Near Railway Station,
Navsari – 396445, (G.S.)
Ph. No. 02637-250371/256192
Fax No. 02637-252092
email-technical@naranlala.com
- ❖ Universal Forces Industries Ltd,
“Universal Center”
Plot No. 130C, Sec. No. 10, PCNTDA,
Bhosari, Pune-411026.
Ph. No. 020-66339672/27690744
Fax No. 020-66339673
email-ufisales1@gmail.com
p.dhokare@rediffmail.com
- ❖ Raj Process Equip. and Systems Pvt. Ltd.,
Jai Ganesh Vision, B wing, 3rd floor,
Jai Ganesh Fame Building, Akurdi, Pune
Ph. No.- 020- 40710010
Fax – 020- 40710009,
email-rajindustries@vsnl.net

- ❖ Meru Industries,
S-31, T Block, Near Pawana Industrial Complex
MIDC, Bhosari, Pune-411026
Ph. No.- 020- 27110181, 27119308
Fax – 020- 27122948.
email-meruindustries@gmail.com

- ❖ Excel Engineers & Consultants
604-605, Pride Kumar Senate, Phase-I, S.B. Road,
Shivajinagar, Pune - 411016 (India)
+91 9561096988 / sandeep@regreenexcel.com
+91 20 41070100 / www.regreenexcel.com