



AmulFed Dairy, Gandhinagar

(A unit of Gujarat Cooperative Milk Marketing Federation Ltd)

Plot No. 35, Nr. Indira Bridge,
Ahmedabad-Gandhinagar Highway

Village: Bhat, Dist: Gandhinagar

Gandhinagar, Gujarat

India-382428

Request for Bid (RFB) for "Modification of existing Ghee Plant for flavour enhancement with all required accessories" as per given scope of work.

AFD: PUR: PKS: GHEE/2019



Section I

Invitation for Bid

Invitation for Bids (IFB)

AmulFed Dairy Gandhinagar

(A Unit of Gujarat Cooperative Milk Marketing Federation Ltd)

Near Indira Bridge, Ahmedabad-Gandhinagar Highway, Bhat,

Gandhinagar 382428

Phone 23969055-56 Fax 079-23969059

We invite sealed bids from eligible bidders for the following works:

Modification of existing Ghee Plant for flavour enhancement with all required accessories as per given scope of work.

Bid Reference	AFD: PUR: PKS: GHEE/2019
Bid Start	Starts from 27.04.2019
Submission	Up to 02.00 pm of 11.05.2017
Pre-bid Meeting	06.05.2019 at 2.00 PM
EMD (Rs)	4, 00, 000/- in form of a/c payee DD/BG, drawn from any nationalised bank on the name of AMULFED DAIRY (A Unit of GCMMF Ltd). It should be payable at Gandhinagar.
Bid Opening	18.05.2017 at 2.30 PM
Completion period	5 months

1. Eligibility Criteria :

- 1) Bidder should be having minimum one successful installation in India of similar nature/capacity (butter oil plant/ghee plant).
- 2) The Bidder/Supplier shall have turnover, in each of the last three years, at least 50 crore and must have executed, in the last three years at least three contract of similar nature.

2. Submission of Bid

- 3.1 The bidders, who purchase the bidding document, are eligible for submission of bids in their name only.

3. Bid Security

- 4.1 All bids must be accompanied by bid security (Earnest Money Deposit – EMD) in the form specified in the bidding document. The bids not accompanied with EMD shall be summarily rejected. The bid security shall be denominated in Indian Rupees of value as specified and shall be in the form of Bank Guarantee from Nationalized or Scheduled Banks or Demand draft in favor of AmulFed Dairy, (A unit of GCMMF Ltd), payable at Ahmedabad.

The Bid security may be forfeited if

- ❖ A bidder or supplier withdraw its bid during the period of bid validity specified by the bidder/ supplier on the bid form or
- ❖ In case of successful bidder/ supplier, if the bidder/ supplier fails to sign the contract.

4. Rights Reserved by AFD

AmulFed Dairy, Gandhinagar at all its sole discretion and without assigning any reason thereof, reserves the right to accept and/or reject the whole or part of any or all the bids received.

5. Validity

The offer should be valid for 120 days from the date of tender opening.

- Interested bidders may obtain tender documents at the following address:

**AMULFED DAIRY
(A Unit of GCMMF Ltd.)
Plot no. 35, near Indira Bridge,
Village Bhat, Ahmedabad- Gandhinagar Highway
Dist. Gandhinagar 382 428
Tel. No.: (079) 23969055/23969056
Fax: (079) 23969059**

Table of Content

Section	Description	Page No
Section I	Invitation of Bids	3
Section II	Instructions to bidders/Suppliers	5
Section III	General Conditions of Contract	21
Section IV-Part I	Special Conditions of Contract	34
Section IV Part – II	Special Conditions of Contract for Erection & Commissioning	40
Section IV Part – III	Special Conditions of Contract for Mechanical Works	55
Section IV Part – IV	Special Conditions of Contract for Electrical Works	72
Section V	Technical Specification	92
Sub-Section-1	Technical Specification & Scope of Supply	92
Sub-Section-2	Responsibilities	109
Sub-Section-3	Project management	112
Sub-Section-4	Deviation from Technical Requirements	116
Sub-Section-5	Optional items	117
Sub-Section-6	Drawing Data & Documents	118
Sub-Section-7	Criteria for Technical Evaluation of Bids	122
Sub-Section-8	Process Performance & Consumption Guarantee	124
Sub-Section-9	Bidders Meeting	126
Section VI	Bidding Terms Deviation	128
Section VII	Bid Form & Price schedule Performa	129
Section VIII	Qualification Application	132
Section IX	Collaborators' Authorization Form	146
	Appendices 1	
1	Form of BG for Performance Security	149
2	Form of BG Against Advance Payment	152
3	Contract Form	154
4	Pro forma of Completion Certificate	158
5	Form of BG for Bid Security (EMD)	160
6	List of acceptable Banks for Bank Guarantees From Foreign /Nationalized / Scheduled Banks	

Section II
Instructions to Bidder/Suppliers

Contents

1. Cost of Bidding
2. Contents of Bidding Document
3. Clarification of Bidding Document
4. Amendment of Bidding Document
5. Pre Bid Meeting
6. Language of Bid
7. Documents Comprising the Bid
8. Bid Form
9. Bid Prices
10. Price Adjustment
11. Bid Currency
12. Documents Establishing Bidder/Supplier's Qualifications
13. Documents Establishing Goods' Conformity to Bidding Document
14. Bid Security (Earnest Money Deposit)
15. Period of Validity of Bids
16. Format and Signing of Bid
17. Sealing and Marking of Bids
18. Deadline for Submission of Bids
19. Late Bids
20. Modification and Withdrawal of Bids
21. Opening of Bids by Purchaser
22. Clarification of Bids
23. Preliminary Examination
24. Evaluation and Comparison of Bids
25. Contacting the Purchaser
26. Post-qualification

27. Right to Vary Quantities at the Time of Award
28. Right to Accept any Bid and to Reject Any or All Bids
29. Notification of Award
30. Signing of Contract
31. Performance Security
32. Import License
33. Turn-key Contract
34. Break-up prices
35. Delivery Schedule of items
36. Table 1 Check List of Bid Submission

1. Cost of Bidding

- 1.1 The Bidder/Supplier shall bear all costs associated with the preparation and submission of its bid, and the AmulFed Dairy, Gandhinagar. hereinafter referred to as "the Purchaser", will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

2. Contents of Bidding Document

- 2.1 The goods required, bidding procedures and contract terms are prescribed in the Bidding Document. The contents of the Bidding Document are organized in sections as given in the Table Contents at the beginning of this document.
- 2.2 The Bidder/Supplier is expected to examine all instructions, forms, terms and specifications in the Bidding Document. Failure to furnish all information required as per the Bidding Document or submission of a bid not substantially responsive to the Bidding Document in every respect will be at the Bidder/Supplier's risk and may result in the rejection of its bid.

3. Clarification of Bidding Document

- 3.1 A prospective Bidder/Supplier requiring any clarification on the Bidding Document may notify the Purchaser in writing by hardcopy/fax/mail at the Purchaser's mailing address indicated in the Invitation for Bids. The Purchaser will respond in writing to any request for clarification on the Bidding Document, which it receives not later than 5 days prior to the deadline for the submission of bids prescribed by the Purchaser. Written copies of the Purchaser's response (including an explanation of the query but without identifying the source of inquiry) will be sent to all prospective Bidder/Suppliers, which have received the Bidding Documents. However, the Bidder/Suppliers cannot consider delay in receipt of clarifications, as a cause for requesting extension in the due date of submission of the bids.

4. Amendment of Bidding Document

- 4.1 At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder/Supplier, modify the Bidding Document by amendment.
- 4.2 The amendment will be notified in writing or by fax or mail to all prospective Bidder/Suppliers, which have received the Bidding Documents and will be binding on them. The amendment will be attached to the bidding document sold subsequently.
- 4.3 In order to afford prospective Bidder/Suppliers reasonable time, in which to take the amendment into account in preparing their bids, the Purchaser may, at its discretion, extend the deadline for the submission of bids.

5. Pre Bid Meeting

The bidder or his official representative is advised to attend a pre bid meeting which will be convened at the office of AmulFed Dairy, Gandhinagar.

Venue of the meeting: AmulFed Dairy, Plot No. 35, Near Indira Bridge,
Ahmedabad-Gandhinagar Highway Village. - Bhat, Dist.- Gandhinagar - 382428

6. Language of Bid

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

7. Documents Comprising the Bid

- 7.1 The bid prepared by the Bidder/Supplier shall comprise the following Components:
- A Bid Form and a Price Schedule completed in accordance with Clauses 7, 8 & 9.
 - Documentary evidence established in accordance with Clause 10 that the Bidder/Supplier is qualified to perform the contract if its bid is accepted.
 - Documentary evidence established in accordance with Clause 11 that the goods and ancillary services to be supplied by the Bidder/Supplier conform to the Bidding Document.
 - Bid security (Earnest Money Deposit) furnished in accordance with Clause 12-14 along with the bid security details form.
 - A statement of deviation and exception to the provision of bidding documents.

8. Bid Form

- 8.1 The Bidder/Supplier shall complete the Bid Form and appropriate Price Schedule furnished in the Bidding Document, indicating for the goods to be supplied, a brief description of the goods, their country of origin, quantity and prices.

9. Bid Prices

- 9.1 The Bidder/Supplier shall indicate on the appropriate Price Schedule attached to this document the total bid prices of the goods it proposes to supply, install and commission under the contract. To this end, the Bidder/Suppliers are allowed the option to submit bids for anyone or more packs specified in the "Schedule of Requirement" and to offer discounts for combined packs. However, Bidder/Suppliers must submit a bid for the complete requirement of goods and services specified under each pack, failing which, such bids will not be taken into account for evaluation & comparison and will not be considered for award.
- 9.2 Prices indicated on the Price Schedule shall be entered separately in the following manner:
- **The total price is to be given for the total scope considering full duty as well as EPCG benefit. (Both In separate sheet-with mentioning imported components & their value in foreign currency)**
 - The price of the goods, quoted ex-factory, ex-showroom, ex-warehouse or off-the-shelf, as applicable, including all customs duties and other duties, sales and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of goods quoted ex-factory or on the previously imported goods of foreign origin quoted ex-showroom, ex-warehouse or off-the-shelf.
 - Any excise duty (Customs Duty, Countervailing Duty etc. for import) applicable and payable on the goods along with tariff numbers and the details of classification of the

goods, if this contract is awarded AS A PERCENTAGE OF EX-WORKS PRICE or otherwise indicating clearly in the price schedule format given.

- Any sales and other taxes applicable, which will be payable on the goods if this Contract is awarded AS A PERCENTAGE OF EX-WORKS, packed including ED PRICE or otherwise indicating clearly in the price, schedule format given.
- Charges for packing and forwarding, inland transportation, insurance and other local costs incidental to delivery of the goods to their destination; AS A PERCENTAGE OF EX-WORKS PRICE or otherwise indicating clearly in the price schedule format given.
- The cost of installation and commissioning as described in the technical specifications and in accordance with Special conditions of Contract with regard to erection, testing and putting the equipment into satisfactory operations, including successful completion of performance and guarantee tests to be performed at the destination by Bidder/Supplier and AS A PERCENTAGE OF EX-WORKS PRICE or otherwise indicating clearly in the price schedule format given.
- The cost of incidental services listed in Clause 13 of Special Conditions of Contract AS PERCENTAGE OF EX-WORKS PRICE or otherwise indicating clearly in the price schedule format given.

9.3 The Bidder/Supplier's separation of price components in accordance with above will be solely for the purpose of facilitating the comparison of bids by the Purchaser and will not in any way limit the Purchaser's right to contract on any of the terms offered.

9.4 **Price of spare parts** All the Bidder/Suppliers are required to submit the following details about the spare parts, along with their bids:

- Spare parts required for the items quoted by the Bidder/Suppliers, for 2 years normal operation.
- Item wise prices of all the spare parts valid, for acceptance by the Purchaser and placement of orders, for two year from the date of bid opening.
- The prices of the spares shall be optional for evaluation

10. **Price Adjustment**

10.1 Price quoted by the Bidder shall be subject to adjustment during the performance of the contract to reflect changes in the cost of labour and material components in accordance with the procedure specified in the special conditions of the contract. A bid submitted with a fixed price quotation will not be rejected but the price adjustment shall be treated as zero.

11. **Bid Currency**

Prices shall be quoted in Indian Rupees only for the goods and services, which the Bidder/Supplier will supply if a contract is awarded against this invitation for bid. For import, ceiling amount in respective currencies should be mentioned along with exchange rates considered. The price adjustment shall be allowed on account of any changes in the landed cost due to variation in the Exchange rates and / or Customs Duty (combined effect). For arriving at the variation in landed cost, the actual invoice value (from the foreign supplier) with bank certificate for Exchange Rates & bill of entry for Customs Duty paid has to be submitted as supporting documents. However, such

changes shall be allowed only within the ceiling amount quoted and within the period of the contract. The variation will be worked out on the difference between Customs Duty rate / exchange rate mentioned in the Bid and the actual respective rates levied during the time of actual imports multiplied by the actual CIF value and not the ceiling value. All claims shall be against the supporting documents.

12. Documents Establishing Bidder/Supplier's Experience and Qualifications

12.1 Pursuant to Clause 7 the Bidder/Supplier shall furnish, as part of its bid, documents establishing the Bidder/Supplier's qualifications to perform the Contract if its bid is accepted. The Bidder/Supplier should also give information in the format attached to the Bidding Document.

- The documentary evidence of the Bidder/Supplier's qualifications to perform the Contract if its bid is accepted, shall establish to the Purchaser's satisfaction
- That in the case of a Bidder/Supplier offering to supply goods and services under the Contract which the Bidder/Supplier did not manufacture or otherwise produce, the Bidder/Supplier has been duly authorised by the goods' manufacturer or producer to supply the goods. The bid shall include manufacturer's authorisation form given in the bidding documents.
- That the Bidder/Supplier has the financial, technical and production capability necessary to perform the Contract. To ascertain this, all bids submitted shall include the information as per the pro forma along with qualification application (Table 1, 2 & 3) in Appendices II.
- Copies of original documents defining the constitution or legal status, place of registration and principal place of business of the company or firm or partnership, etc;
- Details of experience and past performance of the Bidder/Supplier on equipment offered and those of similar nature and those of similar nature within the past 5 years and details of current contracts in hand and other commitments.
- Major items of plant and equipment available/ installed in the Bidder/Supplier's factory premises.
- Qualification and experience of key personnel for successful execution of the contract.
- Reports on financial standing of the Bidder/Supplier such as profit and loss statements, balance sheets and, auditor's report of the past three years, bankers' certificates etc.
- Information regarding any current litigation in which the Bidder/Supplier is involved

12.2 Bidder/Suppliers who meet the criteria given above are subject to be disqualified if they have made untrue or false representations in the forms, statements and attachments submitted in proof of the qualification requirements or have record of poor performance such as abandoning the work, not properly completing the contract, inordinate delays in completion or financial failures etc.

13. Documents Establishing Goods' Conformity to Bidding Document

13.1 Pursuant to **Clause 6** the Bidder/Supplier shall furnish, as part of its bid, documents establishing the conformity to the Bidding Document of all goods and services, which the Bidder/Supplier proposes to supply under the Contract.

- The documentary evidence of the goods' and services' conformity to the Bidding Document may be in the form of **literature, drawings and data**, and shall furnish:
- A detailed description of the goods' essential technical and performance characteristics
- A list giving full particulars, including available sources and current prices, of all spare parts, special tools, etc. necessary for the proper and continuing functioning of the goods for a period of two years, following commencement of the goods' use by the Purchaser; and
- A **clause-by-clause commentary on the Purchaser's Technical Specifications** demonstrating the goods and services' substantial responsiveness to those specifications or a statement **of deviations and exceptions** to the provisions of the Technical Specifications.

13.2 The purposes of the commentary to be furnished pursuant to above, the Bidder/Supplier shall note that standards for workmanship, material and equipment, and references to brand names or catalogue numbers designated by the Purchaser in its Technical Specifications are intended to be **descriptive only and not restrictive**. The Bidder/Supplier may substitute alternative standards, brand names and/or catalogue numbers in its bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions are substantially equivalent or superior to those designated in the Technical Specifications.

14. Bid Security (Earnest Money Deposit)

14.1 Pursuant to Clause 6 the Bidder/Supplier shall furnish, as part of its bid, bid security (Earnest Money Deposit) as specified in the NIT (Notice Inviting Tender).

14.2 The bid security is required to protect the Purchaser against the risk of Bidder/Supplier's conduct, which would warrant the security forfeiture.

14.3 The bid security shall be denominated in Indian Rupees of value as specified and shall be in the form of BG or a Demand draft in favour of AmulFed Dairy, A unit of Gujarat Co-operative Milk Marketing Federation, payable at Ahmedabad.

14.4 Any bid not accompanied with bid security in accordance with clause 14.1 and 14.3 above will be rejected by the purchaser as non-responsive.

14.5 Unsuccessful Bidder/Suppliers' bid security will be discharged/ returned as promptly as possible but not later than 30 days after the expiration of the period of bid validity prescribed by the Purchaser. The successful Bidder/Supplier's bid security will be discharged upon the Bidder/Supplier's executing the Contract agreement on acceptance of the order & furnishing the performance security, pursuant to Clause 29.

14.6 The bid security may be forfeited:

- If a Bidder/Supplier withdraws its bid during the period of bid validity specified by the Bidder/Supplier on the Bid Form; or
- In the case of the successful Bidder/Supplier, if the Bidder/Supplier fails:
 - To sign the Contract in accordance with Clause 28
 - To furnish performance security in accordance with Clause 29

15. Period of Validity of Bids

- 15.1 Bids shall remain valid for 120 days after the last date of submission of the bids prescribed by the Purchaser, pursuant to Clause 16. A bid valid for a shorter period may be rejected by the purchaser as non-responsive.
- 15.2 In exceptional circumstance, the Purchaser may prior to expiry of the initial validity period, solicit the Bidder/Suppliers' consent to an extension of the period of validity. The request and the responses thereto shall be made in writing (or by mail or fax). The bid security provided under Clause 12 shall also be suitably extended. A Bidder/Supplier may refuse the request without forfeiting its bid security. A Bidder/Supplier granting the request will not be required nor permitted to modify its bid.

16. Format and Signing of Bid

- 16.1 The Bidder/Supplier shall prepare two copies of the bid, clearly marking each "Original" and "Copy" as appropriate. In the event of any discrepancy between them, the original shall govern.
- 16.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by the Bidder/Supplier or a person or persons duly authorized to bind the Bidder/Supplier to the Contract. Written power-of-attorney must accompany the Bid to indicate the authorization. The person or persons signing the bid shall initial all pages of the bid, except for laminated printed literature.
- 16.3 The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder/Supplier, in which case, the person or persons signing the bid shall initial corrections.

17. Sealing and Marking of Bids

- 17.1 The Bidder/Suppliers shall seal the original and each copy of the bid in an outer envelope, duly marking the envelopes as "original" and "copy."
- 17.2 All the inner and outer envelopes shall be addressed to the Purchaser and must bear the Invitation for Bids (IFB) reference number.
- 17.3 All the envelopes should bear the word "DO NOT OPEN BEFORE (The time and date of opening as specified).
- 17.4 The inner envelopes shall indicate the name and address of the Bidder/Supplier to enable the bid to be returned unopened in case it is declared "late."

17.5 If the outer envelope is not sealed and marked as required, the Purchaser will assume no responsibility for the bid's misplacement or premature opening. A bid opened prematurely for this cause will be rejected by the Purchaser and returned to the Bidder/Supplier.

18. Deadline for Submission of Bids

18.1 The Purchaser at the address specified must receive bids not later than the time specified for receipt of the bids.

18.2 The Purchaser may, at its discretion, extend this deadline for the submission of bids by amending the Bidding Document in accordance with Clause 4 above in which case all rights and obligations of the Purchaser and Bidder/Suppliers previously subject to the deadline will thereafter be subject to the deadline as extended.

18.3 No mail/fax bids shall be considered. However, any amendment sent by a mail or fax to the bid already submitted/ received shall be considered provided it is received before the due date and time of opening of the bids and it is confirmed in writing by post.

19. Late Bids

Any bid received by the Purchaser after the deadline for submission of bids prescribed by the Purchaser, pursuant of Clause 16 will be rejected and returned unopened to the Bidder/Supplier.

20. Modification and Withdrawal of Bids

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

20.2 The Bidder/Supplier's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions of Clause15. A withdrawal notice may also be sent by fax or mail but followed by a signed confirmation copy, post marked not later than the deadline for submission of bids.

20.3 No bid may be modified subsequent to the deadline for submission of bids.

20.4 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder/Supplier on the Bid Form. Withdrawal of a bid during this interval may result in the forfeiture of the Bidder/Supplier's bid security, pursuant to Clause12.

21. Opening of Bids by Purchaser

21.1 The Purchaser will open the bids, in the presence of the Bidder/Suppliers' representatives who choose to attend, at the time and date specified in the Invitation for bids, at the office of the AmulFed Dairy, Gandhinagar, India. The Bidder/Suppliers' representatives who are present shall sign a register/ form evidencing their attendance.

21.2 The Bidder/Suppliers' names, bid prices, modifications, bid withdrawals and the presence or absence of the requisite bid security and such other details as the purchaser, at its discretion, may consider appropriate will be announce during the opening of the bids.

22. Clarification of Bids

To assist in the examination, evaluation and comparison of bids the Purchaser may, at its discretion, ask the Bidder/Suppliers for a clarification of its bid. The request for clarification and the response shall be in writing and no change in the price or substance of the bid shall be sought, offered or permitted.

23. Preliminary Examination

23.1 The Purchaser will examine the bids to determine:

- Whether they are complete,
- Whether any computational errors have been made,
- Whether required sureties have been furnished,
- Whether the documents have been properly signed,
- Whether the bids are generally in order.

23.2 Arithmetical errors will be rectified on the following basis:

- If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If the Bidder/Supplier does not accept the correction of the errors, its bid will be rejected. If there is a discrepancy between words and figures, the amount in words will prevail.

23.3 Prior to the detailed evaluation, pursuant to Clause 22, the Purchaser will determine the substantial responsiveness of each bid to the Bidding Document. For purposes of these clauses, a substantially responsive bid is one, which conforms to all the terms and conditions of the Bidding Document without material deviations. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.

23.4 If the prices of certain components/sub assemblies/spare parts are not included, the Purchaser will load the offer with the cost of these in evaluation if goods/equipment/plant is functional. If the Purchaser considers that without these the goods/equipment is not functional, then the bid will be treated as incomplete and non-responsive.

23.5 To facilitate loading incomplete bids, the highest cost of such components offered by other Bidder/Suppliers or the estimated cost of such components in the opinion of the Purchaser **or** other Purchases similarly made based on past experience shall be considered for loading incomplete bids.

23.6 Since the bid is invited for the complete job of design, supply, installation and commissioning of the equipment/plant, the incomplete or part bids submitted by any Bidder/Supplier may not be considered for evaluation and may be liable for rejection.

23.7 A bid determined as not substantially responsive will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder/Supplier by correction of the nonconformity.

23.8 The Purchaser may waive any minor informality or nonconformity or irregularity in a bid, which does not constitute a material deviation, provided such waiver, does not prejudice or affect the relative ranking of the Bidder/Supplier.

24. Evaluation and Comparison of Bids

24.1 The Purchaser will evaluate and compare the bids previously determined to be substantially responsive, pursuant to Clause 21. No bid will be considered if the complete requirement covered under this work is not included in the bid. However, the discounts offered by the Bidder/Suppliers, if any, will be taken into account in the evaluation of bids so as to determine the bid offering the lowest evaluated cost for the Purchaser in deciding award of contract/s.

24.2 The Purchaser's evaluation of a bid will include and take into account, in the case of goods manufactured in India or goods of foreign origin already located in India, sales and other similar taxes, which will be payable on the goods if a contract is awarded to the Bidder/Supplier. Also, applicable excise duty payable by the Purchaser will be added to the bid price for evaluation.

24.3 The comparison shall be of free delivery at site basis including unloading and inclusive of all taxes (sales, works contract etc.) and duties (customs, countervailing, excise etc.) of the goods offered from within India, such price to include all costs as well as duties and taxes paid or payable on components & raw material incorporated in the goods as well as taxes & duties payable on finished goods and the installation and commissioning costs as per the provisions in the technical specification.

24.4 The Purchaser's evaluation of a bid will take following into account:

- a) Preference will be given to bidder who can supply, install, test and commission whole plant (including all sections) mentioned in the tender, and quality and adaptability of the equipment offered.
 - b) Delivery schedule offered in the bid;
 - c) The availability of spare parts and after-sales services for the equipment offered in the bid;
 - d) Preference may be awarded for the foreign machine supplier, if they have own counterparts established in India on submission of related documents at the time of Bid.
- Cost of inland transportation, insurance and other costs within India incidental to delivery of the goods to their final destination and applicable excise duty payable by the Supplier;
 - The cost of components and service;
 - Deviation in payment schedule from that specified in the Special Conditions of Contract
 - The performance and productivity of the equipment offered

24.5 Pursuant to above of Clause 22, the following evaluation methods will be followed:

- Inland Transportation, ex-factory/ Insurance and Incidentals: For the goods offered, the Bidder/Suppliers must quote separately for inland transportation, insurance and other incidentals for delivery of goods to the project site as stated in Clause 8.

- Delivery Schedule: The Purchaser desires to have delivery of the goods covered under the invitation, at the time specified in the Schedule of Requirements. The estimated time of arrival of the goods at the project site/ destination should be calculated for each bid after allowing for reasonable transportation time.
- Bidder/Suppliers shall state their bid price for the payment schedule outlined in the Special Conditions of Contract. Bids will be evaluated on the basis of this base price.
- The goods/ plant offered shall have the guaranteed performance with regard to the rated capacity and operating parameters specified in the technical specifications related to Process performance and consumption guarantees.

24.6 If it is found that any Bidder/Supplier for any reason indicates impractical or impossible data to arrive performance guarantees, such data shall be corrected and all the calculations shall be based on the data furnished by the highest Bidder/Supplier for the purpose of comparison.

25. Contacting the Purchaser

25.1 Subject to Clause 21, **no Bidder/Supplier shall contact the Purchaser** on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded.

25.2 Any effort by a Bidder/Supplier to influence the Purchaser in the Purchaser's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidder/Supplier's bid.

26. Post-qualification

26.1 In the absence of pre-qualification, the Purchaser will determine to its satisfaction whether the Bidder/Supplier selected as having submitted the lowest evaluated responsive bid is qualified to satisfactorily perform the Contract.

26.2 The determination will take into account the Bidder/Supplier's financial, technical and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder/Supplier's qualifications submitted by the Bidder/Supplier, pursuant to Clause 10 as well as such other information as the Purchaser deems necessary and appropriate including details of experience and records of past performance.

26.3 An affirmative determination will be a prerequisite for award of the Contract to the Bidder/Supplier. A negative determination will result in rejection of the Bidder/Supplier's bid, in which event; the Purchaser will proceed to the next lowest evaluated bid to make a similar determination of that Bidder/Supplier's capabilities to perform satisfactorily.

26.4 Subject to Clause 26, the Purchaser will award the contract to the successful Bidder/Supplier whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid provided further that the Bidder/Supplier is determined to be qualified to perform the contract satisfactorily as per Clause 22 and 24.

27. Right to Vary Quantities at the Time of Award

The Purchaser reserves the right at the time of award of Contract to increase or decrease by up to 15% (Fifteen percent) the quantity of goods and services specified in the

Schedule of Requirements without any change in unit rates as specified in the price break – up or other terms and conditions.

28. Right to Accept any Bid and to Reject Any or All Bids

The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder/Supplier or Bidder/Suppliers or any obligation to inform the affected Bidder/Supplier or Bidder/Suppliers of the grounds for the Purchaser's action.

29. Notification of Award

29.1 Prior to expiration of the period of bid validity, the Purchaser may notify the successful Bidder/Supplier in writing by registered letter or mail or fax to be confirmed in writing by registered letter, that its bid has been accepted.

29.2 The notification of award will constitute the formation of the Contract.

29.3 Upon the successful Bidder/Supplier's acceptance of the Purchase Order and signing of the contract agreement, the Purchaser will promptly notify each unsuccessful Bidder/Supplier and will discharge its bid security.

30. Signing of Contract

30.1 At the same time as the Purchaser notifies the successful Bidder/Supplier that its bid has been accepted, the Purchaser will send the Bidder/Supplier the Contract Form /Purchase Order incorporating all agreements between the parties.

30.2 Within 30 days of receipt of the Contract, the successful Bidder/Supplier shall return the duplicate copy of the Order duly signed and sealed in token of acceptance of the order to the Purchaser.

31. Performance Security

31.1 Within 30 days of the receipt of the notification of award, the successful Bidder/Supplier shall furnish the performance security in accordance with the Conditions of Contract, in the Performance Security Form provided in the Bidding Document or another form acceptable to the Purchaser.

31.2 Failure of the successful Bidder/Supplier to comply with requirement of Clause 28 or Clause 29 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the Purchaser may make the award to the next lowest evaluated Bidder/Supplier or call for new bids.

32. Import License

For the goods of foreign origin, if any, offered on CIF/DAP/CIP basis, the import license shall have to be arranged by the Purchaser and the details of such license shall be notified to the successful bidder. In case of goods offered from within India and for which a contract is awarded, if any import is required the license shall be arranged by bidders themselves.

33. Turn-key Contract

All the Bidder/Suppliers should quote for the design, supply, installation, testing and commissioning of equipment as detailed in this bidding document on turn-key basis

within the scope specified in the technical specification. The Purchaser shall, however, be at liberty to award the contract for the part or whole of the work.

34. Break-up prices

All the Bidder/Suppliers shall furnish the cost separately for the supply and installation/commissioning along with detailed cost break-up (item-wise), which will be applicable for progressive payments. Items and works for which no break-up price is furnished by the Bidder/Supplier will not be paid for by the Purchaser when supplied/executed and shall be deemed covered by other break-up prices. Such break up cost should be based on ex-works cost and percentage of ex-works cost should be indicated separately for packing and forwarding, transportation, insurance and other incidental charges, erection, and commissioning on percentage basis for each item.

35. Delivery Schedule of items

Bidder/Suppliers should submit a detailed item wise delivery schedule keeping in view the completion period of the contract. Such items shall be grouped under monthly delivery schedule with total value of such items. This will facilitate for ensuring the cash flow requirement for the project.

Table 1
Check List of Bid Submission

SN	Requirement	Tick (✓)
1	Bid Form on your letterhead	
2	Qualification Application and supporting	
3	Price schedule summary sheet and item wise break-up sheet	
4	Manufacturers' Authorisation Form	
5	Technical Deviation Statement form	
6	Commercial Deviation Statement form	
7	Bid Security (Earnest Money Deposit)	
8	Power-of-attorney for authorised signatory	

Section III
General Conditions of Contract

Contents

1. Definitions
2. Application
3. Definition of Country of origin
4. Standards
5. Use of Contract Documents and Information
6. Patent Rights
7. Performance Security
8. Inspection and Tests
9. Packing and Marking
10. Delivery and Documents
11. Insurance
12. Transportation
13. Incidental Services
14. Spare Parts
15. Warranty/Guarantee
16. Payment
17. Prices
18. Change Orders
19. Contract Amendment
20. Assignment
21. Sub-contracts
22. Delays in the Bidder/Supplier's Performance
23. Liquidated Damage
24. Termination for Default
25. Force Majeure
26. Termination for Insolvency

27. Termination for Convenience
28. Governing Language
29. Applicable Law
30. Notices
31. Taxes and Duties
32. Right to use defective equipment
33. Income Tax and Other Taxes
34. Jurisdiction

1. Definitions

1.1 In this Contract, the following terms shall be interpreted as indicated:

1.2 "The Contract" means the agreement entered into between the Purchaser and the Bidder/Supplier, including all attachments and appendices thereto and all documents incorporated by reference therein.

1.3 "The **Contract Price**" means the **price payable** to the Bidder/Supplier under the Contract for the full and proper performance of its contractual obligations.

1.4 "The **Goods**" means all of the equipment, machinery, and/or other materials, which the Bidder/Supplier is required to supply to the Purchaser under the Contract.

1.5 "**Services**" means services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training and other such obligations of the Bidder/Supplier covered under the Contract.

1.6 "The **Purchaser**" means the Organization purchasing the Goods and services and would include the term "**Owner**".

1.7 "The **Bidder/Supplier**" means the individual or firm supplying the Goods and services under this Contract would include also the terms "**contractor**" or "**Bidder/Supplier**".

1.8 **Engineer-in-charge** means the Engineer designated as such or other Engineer appointed from time to time by the Purchaser and notified in writing to the Bidder/Supplier to act as Engineer-in-charge for the purposes of contract.

2. Application

2.1 These General Conditions shall apply to the extent that provisions in other parts of the Contract do not supersede them.

3. Definition of Country of origin

3.1 For purpose of this Clause "**origin**" means the **place** where the Goods were mined, grown or produced, or from which the Services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembling of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components. The origin of Goods and Services is distinct from the nationality of the Bidder/Supplier.

4. Standards

4.1 The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the latest Indian Standards.

5. Use of Contract Documents and Information

5.1 The Bidder/Supplier **shall not**, without the Purchaser's prior written consent, **disclose the Contract**, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Bidder/Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in

confidence and shall extend only so far as may be necessary for purposes of such performance.

5.2 The Bidder/Supplier **shall not**, without the Purchaser's prior written consent, make use of any document or information except for purposes of performing the Contract.

5.3 Any document, other than the Contract itself, shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Bidder/Supplier's performance under the Contract if so required by the Purchaser.

6. Patent Rights

6.1 The Bidder/Supplier shall **indemnify the Purchaser** against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof.

7. Performance Security

7.1 The Bidder/Supplier shall furnish performance security to the Purchaser in the amount specified in the Special Conditions of Contract.

7.2 The proceeds of the performance security shall be payable to the Purchaser as **compensation for any loss** resulting from the Bidder/Supplier's failure to complete its obligations under the Contract.

7.3 The **Performance Security** shall be denominated in **Indian Rupees** and shall be in one of the following forms:

- A bank guarantee issued by a Nationalized Bank in India or specified in approved banks in the form provided in the Bidding Document. Such bank guarantee shall be valid till the expiry of the warranty period.
- Demand Draft from a Nationalised Bank/specified banks in favour of AmulFed Dairy, Gandhinagar. Payable at Ahmedabad. No interest shall be paid on the security deposit, which shall be retained till the completion of the warranty period.

7.4 The performance security will be discharged by the Purchaser and returned to the Bidder/Supplier not later than **60** days following the date of completion of the Bidder/Supplier's performance obligations, including any warranty obligations, under the Contract.

8. Inspection and Tests

8.1 The Purchaser or its representative shall have the **right to inspect** and/or test the Goods to confirm their conformity to the Contract. The Special Conditions of Contract and/or the Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Bidder/Supplier in writing of the identity of any representatives, if retained for these purposes.

8.2 The inspections and tests may be conducted on the date of delivery and/or at the Good's final destination. Where conducted on the premises of the Bidder/Supplier or its subcontractors(s), all reasonable facilities and assistance including access to drawings and production data shall be furnished to the inspectors at no charge to the Purchaser. In case of any defects or deficiency notified by the Purchaser's inspection authority, the Bidder/Supplier will rectify and make good the same without delay and not proceed

with further processing of such item(s) of Goods without obtaining approval from the inspection authority.

- 8.3 Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject them and the Bidder/Supplier shall either replace the rejected Goods or make all alterations necessary to meet specification requirements free of cost to the Purchaser.
- 8.4 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at the destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment from the country of origin.
- 8.5 Nothing in **this clause** shall in any way release the Bidder/Supplier from any warranty or other obligations under this Contract.

9. Packing and Marking

- 9.1 The Bidder/Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to temperature, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.
- 9.2 The packing, marking and documents within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract and, subject to **Clause 18**, in any subsequent instructions ordered by the Purchaser.
- 9.3 Each package shall be marked to indicate a) Name of the Bidder/Supplier, b) Details of items in the package, c) Name of the Consignee, d) Purchase Order Number, e) Gross, net and tare weights of the item, f) Destination.

10. Delivery and Documents

- 10.1 Delivery of the goods shall be made by the Bidder/Supplier in accordance with the terms specified by the Purchaser in its Schedule of Requirements and the Special Conditions of Contract. For the purpose of the Contract, "**FOB**", "**C&F**", "**CIF**", "**FOR Destination**", "**Free delivery at site**" and other trade terms used to describe the obligations of the parties shall have the meanings as per the common trade practices.

11. Insurance

- 11.1 The goods supplied under the Contract shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the Special Conditions of Contract. Where the Purchaser requires delivery of the Goods on free delivery at site basis; the Bidder/Supplier shall arrange and pay for marine insurance naming the Purchaser as the beneficiary. The Bidder/Supplier shall provide a copy of the insurance policy along with invoice to the Purchaser who will make arrangements to extend the validity of the policy, if necessary. The Bidder/Supplier shall initiate and pursue claim till settlement and promptly make arrangements for repair and/or replacement of any damaged item/s irrespective of settlement of claim by the underwriters.

12. Transportation

12.1 The Bidder/Supplier is required under the Contract to deliver the Goods FOR destination, specified in the Schedule of Requirement. Transport of the Goods, up to the destination shall be arranged and paid for by the Bidder/Supplier and the cost thereof shall be included in the Contract Price. Where the Bidder/Supplier is required to effect delivery under any other terms, for example, by post or to another address in the source country, the Bidder/Supplier shall be required to meet all transport and storage expenses until delivery. In all the above cases, transportation of the Goods after delivery shall be the responsibility of the Purchaser.

13. Incidental Services

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

- Performance or supervision of on-site assembly and/ or start-up of the supplied Goods;
- Furnishing of tools required for assembly and/or maintenance of the supplied goods
- Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods; and manuals covering the operation and maintenance of automation software and control systems.
- Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Bidder/Supplier of any warranty obligations under this Contract and
- Conduct of training of the Purchaser's personnel, at the Bidder/Supplier's plant and/or on-site, in assembly, start-up operation, maintenance and/or repair of the supplied Goods.

14. Spare Parts

14.1 As specified in the Special Conditions of contract, the Bidder/Supplier may be required to provide any or all of the following materials and notifications pertaining to spare parts manufactured or distributed by the Bidder/Supplier:

- Such spare parts as the Purchaser may decide to purchase from the Bidder/Supplier, provided that this decision shall not relieve the Bidder/Supplier of any warranty obligations under the Contract; and
- In the event of termination of production of the spare parts:
- Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure its needed requirements.
- Following such termination, furnishing at no cost to the Purchaser, the soft-copies, the blueprints, drawings and specifications of the spare parts, if and when requested.

15. Warranty/Guarantee

- 15.1 The Bidder/Supplier warrants that the Goods and equipment supplied, installed and commissioned under the Contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Bidder/Supplier further warrants that the Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except in so far as the design or material is required by the Purchaser's Specifications) or from any act or omission of the Bidder/Supplier, that may develop under normal use of the supplied Goods in the conditions obtaining in the country of final destination. The Bidder/Supplier also guarantees that the Goods supplied shall perform satisfactorily as per the designed/rated/installed capacity as provided for in the Contract. The warranty will not cover normal wear and tear of consumables and minor spares.
- 15.2 This warranty/guarantee shall remain valid for not less than 24 months after the commissioning of the plant, or any portion thereof as the case may be, have been delivered and commissioned.
- 15.3 The Purchaser shall promptly notify the Bidder/Supplier in writing of any claims arising under this warranty.
- 15.4 Upon receipt of such notice, the Bidder/Supplier shall, with all reasonable speed, repair or replace the defective Goods or parts thereof, without costs to the Purchaser including cost of inland delivery of the repaired or replaced Goods or parts from the port of entry to the final destination.
- 15.5 If the Bidder/Supplier, having been notified, fails to remedy the defect(s) within a reasonable period, the Purchaser may proceed to take such **remedial action** as may be necessary, at the **Bidder/Supplier's risk and expense** and without prejudice to any other rights which the Purchaser may have against the Bidder/Supplier under the Contract.
- 15.6 This warranty/guarantee shall not cover any damage/s resulting from normal wear and tear or improper handling by the Purchaser or his authorized representatives.
- 15.7 The Bidder/Supplier shall guarantee the complete installation for satisfactory performance for a minimum period of 24 months from the date of commissioning. The Bidder/Supplier at his own cost shall rectify any defect arising out of faulty installation or use of substandard material or workmanship.

16. Payment

- 16.1 The method and conditions of payment to be made to the Bidder/Supplier under the Contract shall be specified in the Special Conditions of Contract.
- 16.2 The Bidder/Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and Services performed, and by shipping documents, submitted pursuant to Clause 10, and fulfillments of other obligations stipulated in the Contract.
- 16.3 Payments shall be made promptly by the Purchaser within thirty (45) days of submission of an invoice/claim by the Bidder/Supplier and shall be in Indian Rupees only.

17. Prices

17.1 Prices charged by the Bidder/Supplier for Goods delivered and Services performed under the Contract shall not, with the exception of price adjustments authorized by the special conditions of the contract, vary from the prices quoted by the Bidder/Supplier in its bid and the Contract shall be on fixed price basis. Variation due to changes in statutory levies and exchange rates (for imported items if quoted with foreign currencies multiplied by the exchange rates limited to the foreign currencies ceiling quoted) shall be acceptable within the contact period.

18. Change Orders

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

- Drawings, designs or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser
- The method of shipment or packing
- The place of delivery or
- The Services to be provided by the Bidder/Supplier.

18.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Bidder/Supplier's performance of any part of the work under the Contract, whether changed or not changed by the order, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Bidder/Supplier for adjustment under this clause must be asserted within thirty (30) days from the date of the Bidder/Supplier's receipt of the Purchaser's change order.

19. Contract Amendment

19.1 No variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

20. Assignment

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

21. Sub-contracts

21.1 The Bidder/Supplier shall notify the Purchaser in writing of all sub-contracts awarded under the Contract if not already specified in his bid. Such notification, in his original bid or later, shall not relieve the Bidder/Supplier from any liability or obligation under the Contract.

21.2 Sub-contracts must comply with the provisions of **Clause 5**.

22. Delays in the Bidder/Supplier's Performance

22.1 Delivery of the Goods and performance of Services shall be made by the Bidder/Supplier in accordance with the time schedule specified by the Purchaser in its Schedule of Requirements.

22.2 An unexcused delay by the Bidder/Supplier in the performance of its delivery obligations shall render the Bidder/Supplier liable to any or all of the following sanctions:

- Forfeiture of its performance security,
- Imposition of liquidated damages, and/or
- Termination of the Contract for default

22.3 If at any time during performance of the Contract, the Bidder/Supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Bidder/Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Bidder/Supplier's notice, the Purchaser shall evaluate the situation and may at its discretion extend the Bidder/Supplier's time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.

23. Liquidated Damages

23.1 Subject to **Clause 25**, if the Bidder/Supplier fails to deliver any or all of the Goods or perform the Services within the time period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages as under:

a. For the Supply Component:

A sum equivalent to **0.5%** of the delivered price of the delayed goods (As per the price break up furnished by the supplier and accepted by the Purchaser, which the supplier fails to supply within the time period specified in the contract for each week of delay.

b. For the Erection and Commissioning Component:

A sum equivalent to **0.5%** of the un – executed portion of each week of delay or part thereof beyond the time specified in the contract for the successful completion of the plant.

The total amount so deducted as per above, shall not exceed **5%** of the Contract value. Once the maximum is reached, the Purchaser may consider termination of the Contract.

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

24. Termination for Default

24.1 The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Bidder/Supplier, terminate the Contract in whole or in part:

- If the Bidder/Supplier fails to deliver any or all of the Goods within the time period(s) specified in the Contract, or any extension thereof granted by the Purchaser pursuant to Clause 22 or
- If the Bidder/Supplier fails to perform any other obligation(s) under the Contract.

24.2 In the event the Purchaser terminates the Contract in whole or in part, pursuant to **Clause 24**, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Goods similar to those undelivered, and the Bidder/Supplier shall be liable to the Purchaser for any excess costs for such similar Goods. However, the Bidder/Supplier shall continue performance of the Contract to the extent not terminated.

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

25. Force Majeure

25.1 Notwithstanding the provisions of Clauses 22, 23 and 24, the Bidder/Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

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

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

26. Termination for Insolvency

26.1 The Purchaser may at any time terminate the Contract by giving written notice to the Bidder/Supplier, without compensation to the Bidder/Supplier, if:

- The Bidder/Supplier becomes bankrupt or otherwise insolvent,
- The Bidder/Supplier being a Company is wound up voluntarily by the order of a Court receiver, liquidator or Manager appointed on behalf of the debenture holders or circumstances shall have arisen which entitle the court or debenture holders to appoint a receiver, liquidator or a Manager, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.

27. Termination for Convenience

27.1 The Purchaser, may by written notice sent to the Bidder/Supplier, terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination be for the Purchaser's convenience, the extent to which performance of work under the Contract is terminated, and the date upon which such termination becomes effective.

27.2 The Purchaser shall purchase the Goods that are complete and ready for dispatch within 30 days after the Bidder/Supplier's receipt of notice of termination at the Contract terms and prices. For the remaining Goods, the Purchaser may decide:

- To have any portion completed and delivered at the Contract terms and prices and/or

- To cancel the remainder and pay to the Bidder/Supplier an agreed amount for partially completed Goods and for materials and parts previously procured by the Bidder/Supplier.

Both Purchaser and Supplier shall mutually settle all terminations as per clause 24, 25, 26 and 27.

28. Resolution of Disputes

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

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

29. Governing Language

29.1 The Contract shall be written in the language of the bid, as specified by the Purchaser in the Instructions to Bidder/Suppliers. Subject to **Clause 30**, that language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in that same language.

30. Applicable Law

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

31. Notices

31.1 Any notice given by one party to the other pursuant to the Contract shall be sent in writing or by telegram or telex/cable and confirmed in writing to the address specified for that purpose in the Special Conditions of Contract.

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

32. Taxes and Duties

32.1 The **Bidder/Supplier** shall be **entirely responsible** for all taxes, duties, license fees, etc. incurred until delivery of the contracted Goods to and taking over of the works by the Purchaser. The onus of paying all the statutory levies as per the applicable tariff heads and norms shall be on the Bidder/Supplier.

33. Right to use defective equipment

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

34. Income Tax and Other Taxes

- 34.1 The Bidder/Supplier shall be liable to pay all corporate taxes, income tax and other taxes that shall be levied according to the laws and regulations applicable from time to time and the price bid by the Bidder/Supplier shall include all such taxes. Wherever the laws and regulations require deduction of such taxes at the source of payment, the Purchaser shall effect such deductions from the payment due to the Bidder/Supplier. The remittance of amounts so deducted and issuance of certificate for such deductions shall be made by the Purchaser as per the laws and regulations in force. Nothing in the Contract shall relieve the Bidder/Supplier from his responsibility to pay any tax that may be levied on income and profits made by the Bidder/Supplier in respect of the Contract. The Bidder/Supplier's staff, personnel and labour will be liable to pay personal income taxes in respect of such of their salaries and wages as are chargeable under the laws and regulations for the time being in force, and the Bidder/Supplier shall perform such duties in regard to such deductions thereof as may be imposed on him by such laws and regulations. The Purchaser shall not, in any way, be responsible for such payments by the Bidder/Suppliers' staff.

35. Jurisdiction

- 35.1 Settlement of any dispute out of the purchase order/ contract against this bid shall be subject to the courts at **Gandhinagar** only.

Section IV- Part I
Special Conditions of Contract

SPECIAL CONDITION OF CONTRACT

TABLE OF CLAUSES:

Clause Number	Topic
1	Definitions
2	Equivalency of Standards and Codes
3	Performance Security
4	Inspection and tests
5	Delivery and Documents
6	Insurance
7	Incidental services
8	Spare Parts
9	Warranty
10	Payment
11	Notices



Section II

PART: I

SPECIAL CONDITIONS OF CONTRACT:

The following special conditions of contract shall supplement the General conditions of contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General conditions of contract. The corresponding clause number of the General conditions is indicated in parentheses:

1. Definitions (Clause 2.1)

1.1 The Supplier is (Name of Supplier).

2. Equivalency of Standards and codes (Clause 2.4)

2.1 Wherever reference is made in the contract to the respective standards and codes in accordance with which goods and materials are to be furnished and work is to be performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly set forth in the contract. Where such standards and codes are national in character, or relate to a particular country or region, other authoritative standards and codes specified will be accepted subject to the purchaser's prior review and written approval. Difference between the standards specified described in writing by the supplier and submitted to the supplier desires the purchaser's approval. In the event the purchaser determines that such proposed deviations do not ensure equal or higher quality, the supplier shall comply with the standards set forth in the documents.

3. Performance Security (Clause 2.7)

2.1.1 The Performance Security shall be in the amount of 10% of the contract price up to sixty days after the date of completion of performance obligations including warranty obligations submitted immediately after signing of the contract with advance Bank Guarantee.

4. Inspection and tests (Clause 2.8)

4.1 The inspection of the goods shall be carried out to check whether the goods are in conformity with the technical specifications attached to the purchase order form and shall be in line with the inspection/test procedures laid down in the schedule of specifications and the contract conditions. The schedule for inspection is made by the supplier.

5. Delivery and Documents (Clause 2.10)

5.1 For imported goods

Upon shipment, the Supplier shall notify the purchaser and the Insurance Company by email or fax the full details of the shipment including purchase order number, description of goods, quantity, the vessel, the bill of lading number and date, port of loading, date of shipment, port of discharge, etc. The supplier shall mail the following documents to the purchaser, with a copy to the Insurance Company:

5.2 For imported goods: Original and three copies of:



- The Supplier's invoice showing purchase order no., Goods description, quantity, unit price, total amount;
- The negotiable, clean, on-board bill of lading marked freight prepaid and three copies of non-negotiable bill of lading;
- Packing list identifying contents of each package;
- Insurance certificate;
- Manufacturer's/Supplier's guarantee certificate;
- Inspection certificate, issued by the nominated inspection agency and the Supplier's factory inspection report; and
- Certificate for Country of origin.
- The Supplier's certificate certifying that the defects pointed out during inspection have been rectified.
- Custom clearance would done by supplier for imported items.

5.3 The Purchaser shall receive the above documents at least one week before arrival of the Goods at the port and, if not received, the Supplier will be responsible for any consequent expenses.

5.4 For Domestic Goods(Clause 10) :

Original and seven copies of :

- ix) The supplier's invoice showing purchase order no., Goods' description, quantity, unit price, total amount;
- x) Delivery note/packing list/lorry receipt;
- xi) Manufacturer's/Supplier's guarantee certificate;
- xii) Inspection Certificate issued by the nominated inspection agency, and the Supplier's factory inspection report;
- xiii) Certificate of origin;
- xiv) Insurance policy;
- xv) Excise gate pass/octroi receipts, wherever applicable, duly sealed indicating payments made; and
- xvi) Any other document evidencing payment of statutory levies.

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

6. Insurance (clause 2.11)

6.1 The marine/transit insurance shall cover an amount equal to 110% of the FOR , Gandhinagar value of the goods (including custom duty) from "warehouse to warehouse" on "All Risks"



basis including War Risks and Strike clauses valid for a period not less than 6 months after the date of arrival of Goods at final destination.

6.2 The Insurance charges shall be paid by Supplier towards all risks during storage, erection, testing, commissioning and up to acceptance of the plant.

7. Incidental services (Clause 2.13)

7.1 The incidental services shall be provided as per the requirements outlined in the Schedule of Specifications and as covered under Clause 2.13. The cost shall be included in the contract price, if provided for in the scope of the Contract.

8. Spare Parts (Clause 2.14)

8.1 A spare part packages is included in the scope of supply and will be defined approx. 2 months after starting the order. Suppliers shall carry sufficient inventories to assure ex-stock supply of consumable spares such as gaskets, plugs, washers, belts, etc. other spare parts and components shall be supplied as promptly as possible but in any case within three months of placement of order.

8.2 Spare part package should be included for 2 years of the operation which includes Spares of instruments, critical items etc. except consumables.

9. Warranty/Guarantee (Clause 2.15)

9.1 The warranty/guarantee shall be as per provision under Clause 2.15 of General Condition.

10. Payment (Clause 2.16)

10.1 Payment for supply, installation and commissioning contracts must be strictly as below:

1) 10% advance of total contract value (Supply + Erection & Commissioning) on submission of following:

(i) Acceptance of the order i.e.

a. Submission of the Duplicate copy of the order duly signed by the authorised signatory putting stamp of the Organisation.

b. Execution of the Contract Form.

(ii) Against a bank guarantee for equivalent amount valid for 60 days beyond the stipulated delivery (as per schedule of delivery/supply)/ completion period.

(iii) The Performance Security shall be in the amount of 10% of the Contract price up to sixty days after the date of completion of performance obligations including warranty obligations.

2) 10% of total contract value on first submission of Plant layout, and P&I Diagram for process and services. against submission of Bank guarantee valid for 60 days beyond the stipulated delivery (as per schedule of delivery/supply)/ completion period

3) Payment against Supply and erection of equipments/material:



- a. 65% progressive payment of supply value against safe receipt of goods at site.
 - b. 65 % payable on erection value on progression of erection as per Joint Measurement Sheet within 30 days of submission of JMS.
- 4) 15% balance payment within 30 days of satisfactory commissioning of the plant.

Notes: a) Payment shall be made on complete supply of an item/group of items specified in the contract. No payment specified in the contract. No payment shall be made if supply of an item/group of items is incomplete.

b) For all the payments to be made against bank guarantees, The Bank Guarantees should be obtained from Nationalized Bank or other schedule banks as per the attached list.

11

Notices (Clause 2.31)

11.1

For the purpose of all the notices, the following shall be the address of the purchaser and supplier.

Purchaser – Address as mentioned in Invitation for Bid

Supplier (To be filled in at the time of contract signature.)



Section IV- Part II
Special Conditions of Contract
For
Erection & Commissioning



Contents

1. Sufficiency of Tender
 2. Programme of Installation & Commissioning
 3. Preparation of Drawings for Approval
 4. Superintendence, Team and Conduct
 5. Purchaser's Instructions
 6. Right Of The Purchaser
 7. Bidder/Supplier's Functions
 8. Variations
 9. Duties of the Bidder/Supplier Vis-a-Vis the Purchaser
 10. Supply Of Tools, Tackles And Materials
 11. Protection Of Plant
 12. Unloading, Transportation And Inspection
 13. Storage Of Equipment
 14. Approvals
 15. Review & Co-Ordination of Erection Work
 16. Extension of Time for Completion
- Table 1 List of Drawings required Submission



SPECIAL CONDITIONS OF CONTRACT FOR ERECTION

1.0 SUFFICIENCY OF TENDER

The Supplier/Bidder by bidding shall be deemed to have satisfied himself as to all the conditions and circumstances affecting the contract Price, as to the possibility of executing the works as shown and described in the contract, as to the general circumstances at the site of the works, as to the general labour position at site and to have determined the prices accordingly.

2.0 PROGRAMME OF INSTALLATION AND COMMISSIONING

2.1 As soon as practicable after the acceptance of the bid, the Bidder/Supplier shall submit to the Purchaser for his approval a comprehensive programmed in the form of PERT network/ bar chart and any other form as may be required by the Purchaser showing the sequence of order in which the Bidder/Supplier proposes to carryout the works including the design, manufacture, delivery to site, erection and commissioning thereof. After submission to and approval by the Purchaser of such programmed, the Bidder/Supplier shall adhere to the sequence of order and method stated therein. The submission to and approval by the Purchaser of such programmed shall not relieve the Bidder/Supplier of any of his duties or responsibilities under the Contract. The programmed approved by the Purchaser shall form the basis of evaluating the pace of all works to be performed by the Bidder/Supplier. The Bidder/Supplier shall update the PERT Network every month, submit it to the Purchaser and shall inform the Purchaser the progress on all the activities falling on schedule for the next reporting date.

3.0 PREPARATION OF DRAWINGS FOR APPROVAL

The Bidder/Supplier should visit the site to acquaint himself in respect of existing site conditions and to know the details/information required for understanding the nature and type of civil construction works involved in the project, or, if the building will not be available at the time, when the information is required to generate the layout drawings, the purchaser has to provide drawings of the civil construction and to approve that the machine will fit in.

The Supplier shall submit to the Purchaser for approval:

- a. Within the time given in the specification or in the programme, such drawings, samples, patterns and models as may be called for therein, and in numbers therein required.
- b. During the progress of works and within such reasonable times as the Purchaser may require such drawings of the general arrangement and details of the works as the Purchaser may require.
- c. Wherever necessary, the Supplier would be provided with a set of architectural drawings for the buildings where the erection works would be carried out and also the equipment details/drawings for various equipment to be handed over to the Supplier by the Purchaser.
- d. The specifications/conditions concerning the submission of drawings by the Supplier are detailed as under :
- e. Within four weeks from the date of receipt of the order and down payment, Supplier shall furnish a list of all necessary drawings as briefly described which the Supplier shall submit for approval, identifying each drawings by a serial number and descriptive



title and expected date of submission. This list shall be revised and extended if necessary, during the progress of work depending on the nature of the contract also.

- f. The Purchaser shall signify his approval or disapproval of all drawings or such drawings that would affect progress of the contract as per the agreed programme.
- g. The purchaser shall issue, within four weeks of time in all circumstances, any drawing requested by the Bidder/Supplier and required to be provided by us. If the Bidder/Supplier suffers delay and/ or incurs costs due to delay on purchaser's part in this regard, then the Purchaser shall take such delay into account in determining any extension of time to which the Bidder/Supplier is entitled under Clause 15 hereof and the Bidder/Supplier shall be paid the amount of such cost as shall be reasonable.
- h. P&I Drawings, Plant Layout and GA Drawings submitted for approval shall be signed by responsible representative of Bidder/Supplier and shall be to any one of the following sizes in accordance with Indian Standards: " A0, A1, A2, A3 and A4"..

Brief list of drawings :

- i. Equipment drawings for fabricated items.
 - ii. Equipment layout for production and service blocks.
 - iii. Flow diagrams for various services. In the technical documentation of the machine various electrical and pneumatic routing diagrams of machine units will be contained. This documentation will be delivered together with the machines.
 - iv. Service piping layouts in production and service blocks.
 - v. Stainless Steel piping layout in production blocks.
 - vi. Electrical cable, conduit/ cable tray layout.
 - vii. Other miscellaneous drawings as required for erection work.
- 3.1 Drawings showing fabrication details, dimensions, layouts and bill of materials submitted for approval shall be signed by responsible representative of Supplier and shall be to any one of the following sizes in accordance with Indian Suppliers Standards: A0, A1, A2, A3 and A4.
- 3.2 All drawings shall show the following particulars in the lower right hand corner in addition to Supplier's name :
- i. Name of the Purchaser
 - ii. Project Title
 - iii. Title of drawing
 - iv. Scale
 - v. Date of drawings
 - vi. Drawing number
 - vii. Space for drawing number
- 3.3 In addition to the information provided on drawings, each drawing shall carry a revision number date of revision and brief description of revision carried out. A brief description of the revisions carried out will be given in a separate writing. Whenever any revision is carried out, correspondingly revision number must be up-dated.
- 3.4 All the dimensions on drawings shall be in metric units.
- 3.5 Drawings (three sets) submitted by the Supplier will be checked, reviewed by the Purchaser and comments, if any, on the same will be conveyed to the Supplier. It is the responsibility of the Supplier to incorporate correctly all the comments conveyed by the Purchaser on the Supplier's drawings as far as technically possible. The drawings, which are approved with comments, are to be re-submitted to the Purchaser for purpose of records. Although Supplier feels responsible for such drawings, they will not be checked/ reviewed by the Purchaser to verify whether all the comments have been



incorporated by the Supplier. If the Supplier is unable to incorporate any comments in the revised drawings, Supplier shall clearly state in his forwarding letter such non-compliance along with the valid reasons.

- 3.6 Drawings prepared by the Supplier and approved by the Purchaser shall be considered as a part of the specifications. However, the examination of the drawings by the Purchaser shall not relieve the Supplier of his responsibility for engineering design, workmanship, and quality of materials, warranty obligations and satisfactory performance on installation covered under the contract.
- 3.7 If at any time before completion of the work, changes are made necessitating revision of approved drawings, the Supplier shall make such revisions and proceed in the same routine as for the original approval. and these drawings will be send after the erection to the Purchaser.
- 3.8 Date of submission: In the event, the drawings submitted for approval require many revisions amounting to redrawing of the same, then the date of submission of the revised drawings would be considered as the date of submission for approval.
- 3.9 The Supplier/Bidder shall furnish to the Purchaser before the works are taken over, operating and maintenance instructions together with drawings of the work as completed, in sufficient detail to enable the Purchaser to maintain, dismantle, reassemble and adjust all relevant parts of the works. Unless otherwise agreed, the works shall not be considered to be completed for the purposes of taking over until such instructions and drawings have been supplied to the Purchaser.

4 SUPPLIER'S SUPERINTENDENCE (AND) DEPLOYMENT OF ERECTION TEAM AND CONDUCT OF PERSONNEL

- 4.1 The Supplier/Bidder shall employ one or more competent representatives, whose name or names shall have previously been communicated in writing to the Purchaser by the Supplier, to superintend the carrying out of the works on the site. The said representative or if more than one shall be employed, then one of such representatives shall be present on the site during normal working hours considering Italian employment and security laws.
- 4.2 The Supplier shall, execute the works with due care and diligence within the time for completion and employ Supplier's team comprising qualified and experienced engineers together with adequate skilled, semi-skilled and unskilled workmen in the site for carrying out the works. The Suppliers shall ensure adequate workforce to keep the required pace at all times as per the schedule of completion. Supplier shall also ensure availability of competent engineers during commissioning/start up/acceptance run, trial runs, operation of the plant/equipment till handing over of the plant. The Purchaser is responsible for providing sufficient skilled operators to attend to commissioning/start up/acceptance run.
- 4.3 The Bidder/Supplier shall furnish the details of qualifications and experience of their senior supervisors and engineers assigned to the work site including their experience in supervising erection and commissioning of plant and equipment of comparable capacity.
- 4.4 When the Bidder/Supplier or Suppliers representative is not present on any part of the work where it may be desired to give directions in the event of emergencies, orders may be given by the Purchaser and shall be received and observed by the supervisors or foremen who may have charge of the particular part of the work in reference to which



orders are given. Any such instructions, directions or notices given by the Purchaser shall be deemed to have been given to the Supplier/Bidder.

- 4.5 The Supplier/Bidder shall furnish to the Purchaser a fortnightly labour force report showing by classifications the number of employees engaged in the work. The Supplier's employment records shall include any reasonable information as maybe required by the Purchaser. The Supplier should also display necessary Purchaser. The Supplier should also display necessary information as may be required by statutory regulations.
- 4.6 None of the Supplier's supervisors, engineers, or laborers may be withdrawn from the work without notice to the Purchaser and further no such withdrawals shall be made if in the opinion of the Purchaser, it will adversely affect the required pace of progress and/or the successful completion of the work.
- 4.7 The Purchaser shall be at liberty to object to any representative or person, skilled semi-skilled or unskilled worker employed by the Supplier in the execution of or otherwise about the works who shall, in the opinion of the Purchaser, misconduct himself or be incompetent, or negligent or unsuitable, and the Supplier shall remove the person so objected to, upon receipt of notice in writing from the Purchaser and shall provide in that place a competent representative at Supplier's own expense within a reasonable time.
- 4.8 In the execution of the works no persons other than the Supplier, sub-Supplier and their employees shall be allowed on the site except by the written permission of the Purchaser.

5 PURCHASER'S INSTRUCTIONS

The Purchaser may in his absolute discretion, issue from time to time drawings and/or instructions, directions and clarifications, which are collectively referred to as Purchaser's instructions in regard to :

- Any additional drawing and clarifications to exhibit or illustrate details, which would be essentially for the erection of the machines.
- Variations or modifications of the design, quality or quantity of work or the additions or omissions or substitution of any work.
- Any discrepancy in the drawings or between the schedule of quantities and/or specifications.
- Removal from the site of any material brought there by the Supplier which are unacceptable to the Purchaser and the substitution of any other material thereof.
- Removal and/or re-execution of any work erected by the Supplier which are unacceptable to the Purchaser.
- Dismissal from the work of any persons employed there upon shall in the opinion of the Purchaser, misconduct himself, or be incompetent or negligent.
- Opening up for inspection of any work covered up.
- Amending and making good of any defects.

6 RIGHT OF THE PURCHASER

6.1 Right to direct works :

- The Purchaser shall have the right to question the manner in which all works under this contract shall be conducted. In so far as it may be necessary to secure the safe and



proper progress and specified quality of the works. All work shall be done and all materials shall be furnished as specified in the scope of supply and in this contract. to the satisfaction and approval of the Purchaser.

- Whenever in the opinion of the Purchaser, the Supplier has made marked departures from the schedule of completion or when circumstances or requirement force such a departure from the said schedule, the Purchaser, in order to ensure compliance with the schedule, shall in order to ensure compliance with the schedule, shall direct the order, pace and method of conducting the work, which shall be adhered to by the Supplier.
- If in the judgment of the Purchaser, it becomes necessary at any time to accelerate the overall pace of the plant erection work, the Supplier, when directed by Purchaser, shall cease work at any particular point and transfer Supplier's men to such other point or points and execute such works, as may be directed by the Purchaser and at the discretion of the Purchaser.

6.2 Right to order modifications of methods and equipment

If at any time the Supplier's methods, materials or equipment appear to the Purchaser to be unsafe, inefficient or inadequate for securing the safety of workmen or the public, the quality of work or the rate of progress required, the Purchaser may direct the Supplier to ensure safety, and increase their efficiency and adequacy and the Supplier shall carry out everything, within his possibilities to promptly comply with such directives. If at any time the Supplier's working force and equipment are inadequate in the opinion of the Purchaser, for securing the necessary progress as stipulated, the Supplier shall if so directed, increase the working force and equipment to such an extent as to give reasonable assurance of compliance with the schedule of completion. The absence of such demands from the Purchaser shall not relieve the Supplier of Supplier's obligations to secure the quality, the safe conducting of the work and the rate of progress required by the contract. The Supplier alone shall be and remain liable and responsible for the safety, efficiency and adequacy of Supplier's methods, materials, working force and equipment, irrespective of whether or not the Supplier make any changes as a result of any order or orders received from the Purchaser.

6.3 Right to inspect the work

- The Purchaser's representative shall be given full assistance in the form of the necessary tools, instruments, equipment and qualified operators to facilitate inspection.
- The Purchaser reserves the right to call for the original test certificates for all the materials used in the erection work.
- In the event the Purchaser's inspection reveals poor quality of work/materials, the Purchaser shall be at liberty to specify additional inspection procedures if required, to ascertain Supplier's compliance with the specifications of erection work.
- Even though inspection is carried out by the Purchaser or Purchaser's representatives, such inspection shall not, however, relieve the Supplier of any or all responsibilities as per the contract, nor prejudice any claim, right or privilege which the Purchaser



may have because of the use of defective or unsatisfactory materials or bad workmanship.

7. BIDDER/SUPPLIER'S FUNCTIONS

- 7.1 The Bidder/Supplier's shall provide everything necessary (including lifting, handling and transport tools) for proper execution of the works, according to the drawings, schedule of quantities and specifications taken together whether the same may or may not be particularly shown or described therein, provided that the same can reasonably be inferred there from and if the Supplier finds any discrepancy therein, Supplier shall immediately refer the same to the Purchaser whose decision shall be final and binding on the Supplier.
- 7.2 The Bidder/Supplier shall proceed with the work to be performed under this contract in the best and workman like manner by engaging qualified and efficient workers and finish the work in strict conformance with the drawings and specifications and any changes/modifications thereof made by the Purchaser.

8. VARIATIONS

- 8.1 The Purchaser shall make any variation of the form, quality or quantity of the works, or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion be desirable, he shall have power to order the Supplier to do and the Supplier shall do any of the following.
- Increase or decrease the quantity of any work included in the contract.
 - Omit any such work
 - Change the character or quality or kind of any such work Change the levels, lines position and dimensions of any part of the work. Layout and tower drawings are part of this contract. Changing anything concerning these drawings can only be carried out if technically feasible; the changes do not affect the installation schedule and the Purchaser takes over all costs for it.
 - Execute additional work of any kind necessary for the completion of the works and no such variation shall in any way vitiate or invalidate the contract, but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the contract price.
- 8.2 The Bidder/Supplier shall make no such variations shall be made by the Supplier without an order in writing of the Purchaser. Provided that no order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this clause, but is the result of the quantities exceeding or being less than those stated in the result of the quantities exceeding or being less than those stated in the contract/Bill of quantities. Provided also that if for any reason the Purchaser shall consider it desirable to give any such order verbally, the Supplier shall comply with such order and any confirmation in writing of such verbal order given by the Purchaser, whether before or after the carrying out of the order, shall be deemed to be an order in writing within the meaning of this clause. Provided further that if the Supplier shall within seven days confirm in writing to the Purchaser and such confirmation shall not be contradicted in writing by the Purchaser within 14 days, it shall be deemed to be an order in writing by the Purchaser.



- 8.3 All extra or additional work done or work omitted by order of the Purchaser shall be valued at the rates and prices set out in the contract if in the opinion of the Purchaser, the same shall be applicable. If the contract does not contain any rates or prices applicable to the extra or additional work, then suitable rates or prices shall be agreed upon between the Purchaser and the Bidder/Supplier. Any Extra Work, carried out by the Bidder/Supplier would be at mutually agreed cost (Landed cost + 15% service charge).
- 8.4 Provide that if the nature of amount of any omission or addition relative to the nature or amount of the whole of the works or to any part thereof shall be such that, in the opinion of the Purchaser, the rate or price contained in the contract for any item of the works is, by reason of such omission or addition, rendered unreasonable or inapplicable, then a suitable rate or price shall be agreed upon between the Purchaser and the Supplier. In the event of disagreement the Purchaser shall fix such other rate or price as shall, in his opinion, be reasonable and proper having regard to the circumstances.
- 8.5 Provided also that no increase or decrease mentioned above or variation of rate or price shall be made unless, as soon after the date of the order as is practicable and, in the case of extra or additional work, before the commencement of the work or as soon thereafter as is practicable, notice shall be given in writing.
- By the Supplier to the Purchaser of his intention to claim extra payment or a varied rate or price, or
 - By the Purchaser to the Supplier of his intention to vary a rate or price.
- 8.6 If, on certified completion of the whole of the works, it shall be found that a reduction or increase greater than 15 per cent of the sum named in the letter of acceptance results from the aggregate effect of all variation orders but not from any other cause, the amount of the contract price shall be adjusted by the Purchaser having regard to all material and relevant factors, including the Supplier's site and general overhead costs of the contract.
- 8.7 The Bidder/Supplier shall send to Purchaser's representative once in every month an account giving particulars, as full and detailed as possible, of all claims for any additional payment to which the Supplier may consider himself entitled and of all extra or additional work ordered by the Purchaser which the Supplier additional work ordered by the Purchaser which he has executed during the preceding month.
- 8.8 No final or interim claim for payment for any such work or expense will be considered which has not been included in such particulars. Provided always that the Purchaser shall be entitled to authorize payment to be made for any such work or expense, notwithstanding the Supplier's failure to comply with this condition, if the Supplier has, at the earliest practicable opportunity, notified the Purchaser in writing that he intends to make a claim for such work. All additional efforts and parts recommended by the Seller to the Purchaser or requested from Purchaser to the Seller will be given in writing in form of offers, which needs to be confirmed by the Purchaser in writing.
- 8.9 The work shall be carried out as approved by the Purchaser or his authorized representative/s from time to time keeping in view the overall schedule of completion of the project. The Supplier's job schedule must shall not disturb or interfere with Purchaser's or the other Supplier's schedules of day to day work. Purchaser's activities



- shall not interfere the supplier's work. This has to be coordinated by the Purchaser. The Purchaser will provide all reasonable assistance for carrying out the jobs.
- 8.10 Night work will be permitted only with prior approval of the Purchaser. The Purchaser may also direct the Supplier to operate extra shifts over and above normal day shift to ensure completion of contract as per schedule. Adequate lighting wherever required should be provided by the Purchaser Supplier at no extra cost but employment law has to be considered. The Supplier should employ qualified electricians and wiremen for these facilities. In case of Supplier's failure to provide these facilities and personnel, the Purchaser has the right to arrange such facilities and personnel and to charge the cost thereof to the Supplier.
- 8.11 In order to enable the **supplier** to arrange for insurance of all items received at the site including the items of supply covered under this contract, the Supplier shall furnish necessary details of all the equipment immediately on its receipt at site, to the Purchaser. Any default on the part of the Supplier due to which any item does not get covered under the insurance; the consequential losses shall be charged to the supplier. Supplier will arrange the insurance coverage of the delivered goods from warehouse to warehouse and during the installation & Commissioning period on site in addition.
- 8.12 The Purchaser shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Purchaser, his agents, or servants. The Supplier shall indemnify and keep indemnified the Purchaser against all such damages and compensation, save and except as aforesaid and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.
- 8.13 The Bidder/Supplier shall ensure against such liability with an insurer approved by the Purchaser, which approval shall not be unreasonably withheld, and shall continue such insurance during the whole of the time that any persons are employed by him on the works shall, when required, produce to the Purchaser or Purchaser's representative such policy of insurance and the receipt for payment of the current premium. Provided always that, in respect of any persons employed by any sub-Supplier the Supplier's obligations to ensure as aforesaid under this sub-clause shall be satisfied if the sub-Supplier shall have insured against the liability in respect of such persons in such manner that the Purchaser is indemnified under the policy, but the Supplier shall require such sub-Supplier to produce to the Purchaser or Purchaser's representative, when required such policy of insurance and the receipt for the payment of the current premium.
- 8.14 Whenever proper execution of the work under the contract depends on the jobs carried out by some other Supplier, the Supplier should inspect all such erection and installation jobs and report to the Purchaser regarding any defects or discrepancies. The Supplier's failure to do so shall constitute as acceptance of the other Supplier's installation/jobs as fit and proper for reception of Supplier's works except those defects which may develop after execution. Supplier should also report any discrepancy between the executed work and the drawings. Any works/ supplies are carried out under the scope of Purchaser; the Purchaser shall inspect and certify compliance with the requirements given by Supplier for such works/ materials/supplies. The Supplier shall extend all necessary help/co-operation to other Suppliers working at the site in the interest of the work.
- 8.15 Bidder/Supplier shall carryout final adjustments of foundations, leveling and dressing of foundation surfaces, bedding and grouting of anchor bolts, bedplates etc. required for



seating of equipment in proper position. The Bidder/Supplier shall be responsible for the reference lines and proper alignment of the equipment. However, all civil works like making cutouts in walls, floors and ceilings for pipelines shall be done by the purchaser. Adjustment & leveling are to be carried out by the Bidder/Supplier at no extra cost. The Purchaser shall arrange the necessary refilling/repairs of these cutouts and pockets. The Bidder/Supplier should arrange for laying the supports, cutouts, grouting of bolts, etc. When the civil works are in progress, so as to avoid refilling/repair works. The Purchaser at Bidder/Supplier's costs shall make the damages occurring to civil and other works good. For fixing of piping/equipment supports on wall/beams/roof floor etc., preferably anchor bolts shall be used by the Bidder/Supplier. Drilling of holes for fixing anchor bolts & supply of anchor bolts is in the scope of Bidder/Supplier without any extra cost.

- 8.16** The Supplier shall keep a check on deliveries of the equipment covered in the scope of erection work and shall advise the Purchaser well in advance regarding possible hold-up in Supplier's work due to the likely delay in delivery of such equipment/components to enable him to take remedial actions.

9 DUTIES OF THE SUPPLIER VIS-À-VIS THE PURCHASER

- 9.1 The equipment and the items, if any, to be supplied by the Purchaser for erection, testing and commissioning shall be as listed in the contract.
- 9.2 Besides the utilities/services as specified in battery limits according to attachment form of the supplier, following assistance/facilities shall also be provided to the Supplier by the Purchaser for carrying out the installation work:
- Plant building ready for installation of equipment/items.
 - Necessary temporary water for carrying out the installation shall be supplied at only one point within the project site by the Purchaser free of charge. All necessary distribution tappings from this point onwards shall be the Supplier's responsibility.
 - Necessary temporary power for carrying out the installation shall be arranged by the Supplier at Supplier's own cost. The Purchaser on written request by the Supplier will issue the necessary authorization letter.
- 9.3 If the power is provided by purchaser, the recovery @1% of total installation charges will be deducted from the erection bill of the Supplier. However, the Supplier shall supply all the items such as energy meter, switchgear etc. required for getting temporary power.
- 9.4 The details of temporary water and power requirements shall be furnished one month in advance by the Supplier to enable the Purchaser to take timely arrangement.
- 9.5 If the Bidder/Supplier suffers delay and/or incurs costs from failure on the part of the purchaser to give possession of the civil works in accordance with the mutually agreed schedule, the purchaser shall determine:
- Any extension of time to which the Bidder/Supplier is entitled under **clause 22 of GCC** (General Conditions of Contract) and
 - The amount of such costs, which shall be added to the contract price, and shall notify the Bidder/Supplier accordingly.



10 SUPPLY OF TOOLS, TACKLES AND MATERIALS

The Bidder/Supplier shall, at his own expense, provide all the necessary equipment, tools and tackles, haulage power, consumables necessary for effective execution and completion of the works during erection and commissioning.

11 PROTECTION OF PLANT

- 11.1 The Purchaser shall not be responsible or held liable for any damage to person or property consequent upon the use, misuse or failure of any erection tools and equipment used by the Supplier or any of Supplier's sub-Suppliers even through such tools and equipment may be furnished, rented or loaned to the Supplier or any of Supplier's sub-Suppliers. The acceptance and/or use of any such tools and equipment by the Supplier or Supplier's sub-Supplier shall be construed to mean that the Supplier accepts all responsibility for and agrees to indemnify and save the Purchaser from any and all claims for said damages resulting from the said use, misuse or failure of such tools and equipment's by the Supplier or Supplier's sub-Supplier shall be construed to mean that the Supplier accepts all responsibility for and agrees to indemnify and save the Purchaser from any and all claims for said damages resulting from the said use, misuse or failure of such tools and equipment's.
- 11.2 The Supplier and Supplier's Sub-Supplier shall be responsible, during the works, for protection of work, which has been completed by other Suppliers. Necessary care must be taken to see that no damage to the same is caused by the Supplier's men during the course of execution of the work.
- 11.3 All other works complete or in progress as well as machinery and equipment that are liable to be damaged by the Supplier's work shall be protected by the Supplier and protection shall remain and be maintained until its removal is directed by the Purchaser.
- 11.4 The Supplier shall effectively protect from the effects of weather and from damage or defacement and shall cover appropriately, wherever required all the works for their complete protection.
- 11.5 The work shall be carried out by the Supplier without damage to any work and property adjacent to the area of Supplier's work to whomsoever it may belong and without interference with the operation of existing machines or equipment.
- 11.6 Adequate lighting, guarding and watching at and near all the storage handling, fabrication, pre-assembly and erection sites for properly carrying out the work and for safety and security shall be provided by the purchaser at purchaser's cost. The Supplier should adequately light the work area during night time also. The Supplier should also engage adequate electricians/wireman, helper etc. to carry out and maintain these lighting facilities. If the Supplier fails in this regard, the Purchaser may provide lighting facilities as he may deem necessary and charge the cost thereof to the Supplier.
- 11.7 The Supplier shall take full responsibility for the care of the works or any section or portions thereof until the date stated and in taking over certificate issued in respect thereof and in case any damage or loss shall happen to any portion of the works not taken over as aforesaid, from any cause whatsoever, the same shall be made good by and at the sole cost of the Supplier and to the satisfaction of the Purchase. The Supplier shall also be liable for any loss of or damage to the works occasioned by the Supplier or the Supplier's sub-Supplier in the course of any operations carried out by the Supplier or by the Supplier's Sub-Suppliers for the purpose of completing any out standing work or complying with the Supplier's obligations.



12. UNLOADING, TRANSPORTATION AND INSPECTION

- 12.1 The Supplier shall be present during Purchaser's unloading required to unload all the materials/equipment from the carriers, those received at site after Supplier's team arrives at site. The Supplier Purchaser shall plan in advance, based on the information received from the Supplier Purchaser, Purchaser's Supplier's requirement of to unload the material/equipment promptly and efficiently. The Purchser Supplier shall ensure that adequate and all measures necessary to avoid any damage whatsoever to the equipment at the time of unloading are taken.
- 12.2 Any demurrage/detention charge incurred due to the delay in unloading the material/equipment and releasing the carries shall be charge to the Supplier's account.
- 12.3 The Supplier shall be responsible for the reception on site of all plant and Supplier's equipment delivered for the purpose of the contract.
- 12.4 The Supplier shall safely transport/shift the unloaded materials/ equipment by the Supplier to the storage area.
- 12.5 All the materials/equipment received by the Purchaser prior to arrival of the Supplier at site shall be handed over to the Supplier and there upon the Supplier shall inspect the same and furnish the receipt to the Purchase. The manner in which the inspection shall be carried out is enumerated below:
- 12.6 The materials/equipment would be carefully unpacked by opening the wooden cases/other modes of packing as the case may be.
- 12.7 Detailed inventory of various items would be prepared clearly listing out the shortages, breakages/damages after checking the contents with respect to the Supplier's packing list, the Purchaser's purchase order and approved equipment drawings. The Supplier shall also check every equipment for any shortage/shortcoming that may eventually create difficulty at the time of installation or commissioning.
- 12.8 All the information and observations by the Supplier shall be furnished in the form of 'INSPECTION REPORT' to the Purchaser with specific mention/suggestions which in the opinion of the Supplier should be given due consideration and immediate necessary actions of the Supplier.
- 12.9 The protection safety and security of the materials so taken over from the Purchase shall be the responsibility of the Supplier, until they are handed oven to the Purchaser after erection, commissioning and testing as per the terms of the Contract.

13. STORAGE OF EQUIPMENT

- 13.1 The Supplier shall be responsible for the proper storage and maintenance of all materials/equipment under Supplier's custody. Supplier shall take all required steps to carry out frequent inspection of equipment/materials stored as well as erected equipment until the same are taken over by the Purchaser. The following procedure shall apply for the same.
- 13.2 The Supplier's inspector shall check stored and installed equipment/materials to observe signs of corrosion, damage to protective coating to parts, open ends in pipes, vessels and equipment, insulation resistance of electrical equipment etc. The Supplier shall immediately arrange a coat of protective painting whenever required. A record of all observations made on equipment, defects noticed shall be promptly communicated to the Purchaser and Purchaser's advice taken regarding the repairs/recitations. The Supplier shall there upon carry out such repairs/rectification at Supplier's own cost. In case the Supplier is not competent to carry out such repairs/rectifications, the Purchaser



reserves the right to get this done by other competent agencies at the Supplier's responsibility and risk and the entire cost for the same shall be recovered from the Supplier's bills.

- 13.3 The Supplier's inspector shall also inspect and provide lubrication to the assembled equipment. The shafts of such equipment shall be periodically rotated to prevent rusting as well as to check freeness of the same.
- 13.4 The Inspector shall check for any signs of moisture or rusting in any equipment.
- 13.5 If the commuting of equipment is delayed after installation of the equipment, the Supplier shall carry out all protective measures suggested by the Purchaser during such period.
- 13.6 Adequate security measures shall be taken by the Supplier to prevent theft and loss of materials handed over to the Supplier by the Purchaser. The Supplier shall carry out periodical inventory checks of the materials received, stored and installed by the Supplier and any loss noticed shall be immediately reported to the Purchaser. A proper record of these inventories shall be maintained by the Supplier. The Supplier should not sell, assign, mortgage, hypothecate or remove equipment or materials which has been installed or which may be necessary for completion of the work without the written consent of the Purchaser.
- 13.7 A suitable grease recommended for protection of surface against rusting (refined from petroleum oil with lanolin minimum (70 deg C) and water in traces) shall be applied over all equipment as required once in every six months.
- 13.8 All equipment shall be stored inside a closed shed whether they are of indoor or outdoor design. The space heaters where provided into the electrical equipment shall be kept connected with power supply irrespective of their type of storage. Where space heaters are not provided adequate heating with bulb us recommended. For transformers heating of oil shall be done by giving 440 V supply and short circuiting the LT terminals. Frequent checks on insulation resistance is essential for ail electrical measure readings shall be maintained equipment wise. Such records shall be presented to the Purchaser whenever demanded.
- 13.9 All the necessary items/goods required for protection as described above shall be arranged by the Supplier and such cost shall be included in the Contract price.

14. **APPROVALS**

- The Supplier shall obtain the necessary approvals of the Factory Inspector, Boiler Inspector, Electrical Inspector, Weights & Measures Inspector, Explosive Inspector and any other state local authorities as may be required and the cost of obtaining such approvals shall be included in the contract price.
- Wherever necessary or required the Supplier shall furnish the necessary test and/or inspection certificate etc. from the appropriate authorities as per IBR, IER and other statutory regulations and the cost for obtaining these certificates shall be included in the contract price.

15. **Review and Co-Ordination of Erection Work**

The Bidder/Supplier shall depute **senior and competent personnel** to attend the site coordination meetings that would generally be held at **the site at regular interval**. The Bidder/Supplier shall take necessary action to implement the decisions arrived at such meetings and shall also update the erection schedule.

**16. Extension of Time for Completion**

Should the amount of **extra** or **additional work** of any kind or any cause of delay referred to in these conditions, or exceptional adverse climatic conditions, or other special circumstances of any kind whatsoever which may occur, other than through a default of the Bidder/Supplier, be such as fairly to entitle the Bidder/Supplier to an extension of time for the completion of the works, the Purchaser shall determine the amount of such extension and shall notify the Bidder/Supplier accordingly. Provided that the Purchaser is not bound to take into account any extra or additional work or other special circumstances unless the Bidder/Supplier has within **twenty eight days** after such work has been commenced, or such circumstances have arisen, or as soon thereafter as is practicable, submitted to the Purchaser full and detailed particulars of any **extension of time** to which he may consider himself entitled in order that such submission may be investigated at the time.

Table 1	
List of Drawings required Submission	
SN	Drawings
1	Equipment drawings for fabricated items.
2	Equipment layout for production and service blocks.
3	Flow diagrams for PROCESS/ CLEANING and various services.
4	Service piping layouts in production and service blocks.
5	SS piping layout in production blocks, WHEREVER REQUIRED.
6	Electrical cable, conduit/ cable tray layout.
7	Standard Installation Drawings for Equipment.
8	DCS networking drawings, Cabling drawings etc.
9	Automation logic write-up along with logical flow network.
10	Other miscellaneous drawings as required for erection work.



Section IV-Part III
Special Conditions of Contract
for
Mechanical Works



Contents

1. Scope
2. General Installation
3. Service Piping Installation
4. Special Instructions And Specifications
5. Insulation of Piping and Equipment
6. Interconnections of Services
7. Guidelines For Expansion Work
8. Cleaning Chemicals and Lubricants
9. Testing, Commissioning and Start-Up
10. Trouble shooting during the trial period
11. Painting
12. Training of Personnel
13. Code of Practice for Painting Service Pipe Lines

Table 1 Painting of Equipment & Structural Work

Table 2 Colour Code For Pipelines as per BIS 2379-1963

Table 3 Testing Pressures for Various Pipelines

Table 4 Makes of Bought Out Items



1. Scope

- 1.1 General installation i.e. positioning and installing all the production, miscellaneous and service equipment as per approved layout drawings and as per the contract.
- 1.2 Supply and installation of structural platforms and tables.
- 1.3 Supply and installation of all service and product piping including ancillary items.
- 1.4 Insulation and cladding of piping, equipment including supply of materials.
- 1.5 Interconnections of services and Electrical with equipment.
- 1.6 Guide line for expansion work.
- 1.7 Clean up of work site.
- 1.8 Supply of all cleaning chemicals and lubricants.
- 1.9 Testing, commissioning and start-up.
- 1.10 Painting including supply of paints as approved by the Purchaser.
- 1.11 Training of personnel.
- 1.12 Detailed specifications are given in the subsequent clauses.

2. General Installation

2.1 Positioning of Equipment

- The work involves preparation of access for moving of the plant and equipment including their fittings from the work site godown or from the place within the site where they have been unloaded, to the place of erection, de-crating and placing on the foundation wherever required. The Purchaser shall arrange all the civil foundations as per the manufacturer/Bidder/Supplier's drawings. The Bidder/Supplier shall place the equipment and carry out final adjustment of the foundations including alignment and dressing of foundation surface, embedding and grouting of anchor bolts and bedplates. The Bidder/Supplier shall be responsible for obtaining correct reference lines for the purpose of fixing the alignment of various equipments from master benchmarks provided. Tolerances shall be as specified in equipment manufacturer's drawings or as stipulated by the Purchaser's Engineer. No equipment shall be permanently bolted down to foundations or structure until the Bidder/Supplier has checked the alignment and witnessed by the Purchaser. The Bidder/Supplier shall carry out minor alterations in the anchor bolts, pockets etc., at no extra cost and set the equipment properly as per approved layout, drawings and manufacturer's instructions. The Bidder/Supplier shall supply all the necessary foundation/anchor bolts and bedplates if required without extra cost if these have not been provided with main equipment.



- The Bidder/Supplier shall supply, fix and maintain, at his own cost, during the erection work, all the necessary centering, scaffolding, staging required not only for proper execution and protection of the said work but also for protection of the surrounding plant and equipment. The Bidder/Supplier shall take out and remove any or all such centering, scaffolding, staging planking etc., as occasion shall require or when ordered to do so and shall fully reinstate and make good all things disturbed during execution of the work, to the satisfaction of the Purchaser. The Bidder/Supplier shall be not paid additional amount for the above.

Structural Platforms and Tables

- Structural platforms shall be required to provide access for various equipment. Tables shall be required for handling products. These platforms and tables shall be fabricated keeping stability and other functional as well as aesthetic requirements into consideration as approved by the Purchaser. The payment shall be made on the basis of the actual weight executed and the unit rates agreed upon or as per provisions made in the contract for such items.

3. Service Piping Installation

3.1 General Guidelines

- All piping systems shall comply with the **latest editions** of the following regulations wherever applicable:
 - Indian **Boiler** Regulations
 - Regulations of **explosives** inspectorate
 - All applicable Indian Standards
 - All applicable State Government/ Central Government Laws/ Acts

3.2 Scope of Supply

- The Bidder/Supplier shall supply all piping materials like pipes, fittings, flanges, measuring instruments and all other items as shown in the P&I diagram/specifications and schedule of quantities. All the pipes & fittings and insulation material etc. should be of class and make as approved by the Purchaser. The Bidder/Supplier, for the class and make of all materials, must obtain prior approval of the Purchaser. The Bidder/Supplier should furnish the details of makes selected by him, in the pro forma given in Table 5.

3.3 Scope of Piping Erection

- The scope of erection for piping, includes all system covered in the flow diagrams and specifications. The Bidder/Supplier's work commences/ terminates at the pipe connections with valves or flanges as specified in flow diagrams/ battery limits.



- The Bidder/Supplier shall also install necessary piping and any specialties furnished with or for equipment such as relief valves, built-in-bypass, primary elements for flow measurements, control valves and on-line metering equipment.
- The Bidder/Supplier shall perform necessary internal machining of pipes for installing orifices, flow nozzles, control valves etc. The Bidder/Supplier shall install all pipes, valves and specialties being procured from other sources.

3.4 Testing of Piping

- The Bidder/Supplier shall test all piping systems including valves and specialties and instruments as per procedure mentioned in Table 4.
- All piping shall be **internally cleaned and flushed** by the Bidder/Supplier after erection in a manner suited to the service and as directed by the Purchaser.
- For **hydrostatic testing and water flushing**, the Bidder/Supplier shall furnish necessary pumps, equipment, instruments and piping etc.

3.5 Other Guidelines

- **Color code** shall be used to identify pipe material. The Bidder/Supplier shall be able to identify on request all random piping prior to field fabrication.
- The Bidder/Supplier shall be responsible for the **quality of welding** done by them and shall conduct tests to determine the suitability of the welding procedure by him.
- All piping supports, guides, anchors, hangers, rollers with structural framework shall be supplied and erected by the Bidder/Supplier. The kinds of pipe supports like CI clamps, wooden saddles, roller supports and support framework shall be as per the design approved by the Purchaser prior to taking up the work.
- All piping shall be suspended, guided and anchored with due regard to general requirements and to avoid interference with other pipes, hangers, electrical conduits and their supports, structural members and equipment and to accommodate insulation and conform to buildings structural limitations. It is the responsibility to the piping Bidder/Supplier to avoid all interference while locating hangers and supports.
- Anchors and/or guides for pipelines or for other purposes shall be furnished, when specified, for holding the pipeline in position for alignment. Hangers shall be designed fabricated and assembled in such a manner that any movement of the support pipes cannot disengage them.
- All piping shall be **wire brushed** and **purged with air blast** to remove all rust, mill scale from inner surface. The method of cleaning shall be such that no material is left on the inner or on outer surfaces, which will affect the serviceability of the pipes.
- Effective precautions such as capping and sealing shall be taken to protect all pipe ends against ingress of dirt and damage during transit or storage. The outside of the steel



pipes (black) shall be painted with two coats of **red oxide paint** or as directed by the Purchaser.

4. Special Instructions and Specifications

4.1 Steam Piping

- Steam piping work can be classified into **two categories**:
 - **High-pressure** steam piping when the working pressure of steam is **more than 3.1 kg/cm² (50 psi)**.
 - **Low-pressure** steam piping when the working pressure of steam is **up to 3.1 kg/cm² (50 psi)**.
- All the pipes and fittings used for high pressure steam piping work should conform to **IBR** and they should be IBR certified and also to be **identified with number and mark** showing that they are tested by the Boiler Inspector and supported with duly **authentic certificates** to this effect. ALL HIGH PRESSURE STEAM PIPES SHALL BE **SEAMLESS** TYPE, **SCHEDULE 40**.
- The high pressure steam piping after installation should be hydraulically tested in presence of the Boiler Inspector for his approval.
- The high-pressure steam piping work should also include fabrication and installation of **pressure reducing stations** strictly conforming to **IBR**.

4.2 Other Piping

- ALL THE PIPING FOR CHILLED WATER, GLYCOL, AMMONIA, SOFT AND RAW WATER, H.P. AND L.P. STEAM, AIR AND FURNACE OIL/ LSHS PIPING SHALL GENERALLY BE OF **WELDED CONSTRUCTION**. Whenever welding is done for pipes of smaller size special care should be exercised to avoid clogging of flow area with the welding material.

5. Insulation of Piping and Equipment

5.1 Cold Insulation of Chilled Water, Glycol and Ammonia Pipeline

- All the chilled water, glycol & ammonia pipelines shall be insulated by **PUF** pipe sections. The insulation shall be carried out in the **following manner**:
- Before starting insulation work all pipelines shall be **tested** as specified.
- The surface of the pipes to be insulated should be properly **cleaned**.
- **Hot bitumen** of **85/40** or **85/25** conforming to **IS 702** should be applied uniformly @ **1.5 kg/m²** on the surface of the pipes.
- A similar layer of **bitumen** should be applied on the **inner surface** and on the **edges** of the **insulation sections**.



- The sections should then be stuck to the coated pipes with **joints staggered**. Adjacent sections should be tightly pressed together. All **joints** should be properly **sealed** with bitumen.
- A thick **vapour seal** with **hot bitumen @ 2.5 kg/m²** should be applied uniformly on the outer surfaces of the pipe sections and allowed to dry.
- In case the insulation **sweats** or the specified/required insulation properties are not attained, the entire insulation in such region shall be **redone** with fresh material, entirely at the **Bidder/Supplier's cost**.
- The **thickness** of insulation shall be as required.

5.2 Insulation of Chilled Water Tank

- The surfaces shall be **cleaned** with the help of brushes to remove any loose particles.
- A coat of **bitumen** of **85/40** or **85/25** conforming to **IS 702 @1.0 kg/m²** shall be applied over the **flooring** and **walkathon sheets** shall be press-laid to act as a **vapour barrier**.
- Bitumen shall then be applied on the walkathon sheets and one side and edges of the insulation slabs to ensure total rate of **2.00 kg/m²** between contacting surfaces. The slabs shall then be fixed in position, making sure that there shall be **no joints between slabs**.
- For **double layers** insulation bitumen shall again be applied on all contacting surfaces to ensure a total rate of **1.5 kg/m²** between contacting surfaces.
- A coat of bitumen at **1.5 kg/m²** shall be applied over the insulation surfaces.

5.3 Hot Insulation of Steam, Condensate & Hot Water Pipe Lines

- All the steam and hot water pipelines shall be insulated with **mineral wool** or equivalent of specified thickness. The insulation shall be carried out in the **following manner** and should be supplied in the form of properly required sizes.
- **Clean** the surfaces to be insulated. Apply a **coat of red oxide primer** and fix glass wool/mineral wool of specified thickness, tightly to the pipes, **butting all joints** and **tie with lacing wire**.
- It should then be covered with GI wire netting of 20 mm x 24 SWG.
- In case the insulation does not have the desired insulation properties, the entire insulation will have to be **redone** at the **Bidder/Supplier's cost** to give the desired results.
- In case of **condensate return piping** all the steps mentioned above shall be executed except that **thickness** of the insulation shall be **25 mm**.



5.4 Aluminium/ GI Cladding/ Cement Plaster

- The chilled water, glycol, ammonia, water, steam & hot water lines after insulations may be **covered by/GI cladding or cement plaster**. The payment will be made as per the executed items.
- Aluminium cladding will be done with 22 gauge aluminium sheet with proper grooves and overlaps and screwed in position with 12 mm self tapping parker screws.
- **GI sheet cladding** will be done with **22 gauge** sheet with proper **grooves** and **overlaps** and **screwed** in position with **12 mm self tapping parker screws**. The GI sheet cladding will finally **painting 2 (coats)** by approved shade and quality of paint.
- In case of cement plaster, the finishing will be done with 12 mm thick sand cement plaster (1:4) over chicken wire mesh.

6. Interconnections of Services

6.1 The Bidder/Supplier shall lay service piping and provide connections with the equipment complying strictly with the equipment manufacturers' instructions. The Bidder/Supplier shall also carry out all the interconnecting service piping with the various items of plant/system. The work shall be complete with **capillary piping** if required and **connections with instruments and controls** supplied with the equipment.

6.2 The Bidder/Supplier shall also carry out **electrical connections** for equipment with the control panels including equipment lighting as per the wiring diagrams of the equipment Bidder/Suppliers. Connection shall be made for small electrically operated devices on equipment installed as accessories to, or assembled with equipment. Connections regarding instruments, float switches, limit switches, pressure switches, thermostats and other miscellaneous equipment shall be done as per manufacturers' drawings & instructions.

7. Guidelines for Expansion Work

7.1 Shutdowns

- Plant shutdown shall be required for making **tapings/ interconnections** of the new equipment/ piping, to be installed under expansion, with the existing equipment/piping. These shut downs should be **planned** carefully well in advance to enable the Purchaser to take suitable actions for **ensuring normal Plant operations**. The details of shut downs, the numbers and duration should be worked out and intimated to the Purchaser for approval. The Bidder/Supplier should ensure completion of all the necessary works well within the allowed time so that no inconvenience is caused in regular operation and working of the existing plant.

7.2 Cleanliness

- Wherever the Bidder/Supplier is required to work in existing plant area he should take due care and extra precautions to ensure absolute cleanliness and minimum hindrance for proper working of the existing plant.



7.3 Change over

- The programmers for change over from existing plant system to new plant system should be prepared by the Bidder/Supplier and should be got approved by the Purchaser.

7.4 Modifications and rectification of existing plant and equipment and any other Extra Work not specified in the Original Contract.

- During expansion work, the Bidder/Supplier shall be required to carry out modifications, repairs/replacement of the existing equipment or any other extra work. The alterations/modifications not specified in the contract/order or any other Extra Work, will be carried out by the Bidder/Supplier at mutually agreed cost (Landed cost + 15% service charge).

7.5 Clean Up of Works Site

- All soils, filth or other matters of an offensive nature taken out of any trench, drain or other places shall not be deposited on the surfaces, but shall at once be carted away by the Bidder/Supplier from the site of work for proper disposal.
- The Bidder/Supplier shall not store or place the equipment, materials or erection tools on the drive ways and passages and shall take care that his work in no way restricts or impedes traffic or passage of men and materials during erection, the Bidder/Supplier shall without any additional payment, at all time keep the working and storage area used by him free from accumulation of dust or combustible materials, waste materials rubbish packing, wooden planks to avoid fire hazards and hindrance to other works.
- If the Bidder/Supplier fails to comply with these requirements in spite of written instructions from the Purchaser, the Purchaser will proceed to clear these areas and the expenses incurred by the Purchaser in this regard shall be payable by the Bidder/Supplier. Before completion of the work, the Bidder/Supplier shall remove or dispose off in a satisfactory manner all scaffolding, temporary structures, waste and debris and leave the premises in a condition satisfactory to the Purchaser. Any packing materials received with the equipment shall remain as the property of the Purchaser and may be used by the Bidder/Supplier on payment of standard charges to the Purchaser and with prior approval of the Purchaser. At the completion of his work and before final payment, the Bidder/Supplier shall remove and shall restore the site to neat workman like conditions at his cost.

8. Cleaning Chemicals and Lubricants

- 8.1 The necessary quantities of cleaning chemicals, lubricants etc., required for the installation, commissioning, testing and start-up of all the equipment till handing over are to be supplied the Bidder/Supplier and nothing extra would be paid for these.

9. Testing, Commissioning and Start-up

- 9.1 The Bidder/Supplier shall operate, maintain and give satisfactory trial run of the plant for the design product satisfactorily for a maximum period of one week or as mutually agreed by Bidder/Supplier/purchaser/Purchaser of the plant at the rated output. The



Bidder/Supplier should carry out all rectification of damages/defects and routine troubleshooting during commissioning with the help of purchaser's staff.

9.2 During this period, Bidder/Supplier shall incorporate/execute necessary minor modifications during the trial period for maximizing operational efficiency. The Bidder/Supplier should also execute minor modifications as may be suggested by the manufacturer/Purchaser, if required. The Bidder/Supplier shall suggest recommended log sheet proofread for recording necessary operating data and pass it on to the Purchaser in proof of satisfactory rated output and performance of the equipment/plant.

9.3 The **commissioning** shall also **include**, for all the equipments, the **following**:

- Field disassembly and assembly
- Clean out of lubrication system including chemical cleaning wherever required.
- Circulation of lubricant to check flow.
- Clean out and check out of all the service lines.
- Check out and commissioning of instruments, equipment and plants, filtering of transformer and other oils so that if deteriorated, they shall attain the required properties/standards, specified tests in this regard must be carried out by approved authorities and their satisfactory reports submitted to the Purchaser before start-up.
- Recharging or make-up filling of lubricant oil up to the desired level in the lubrication system of individual machine.
- Operation in empty condition to check general operation details wherever required and wherever possible.
- Closed loop dynamic testing with water wherever required.
- Operation under load and gradual load increase to attain maximum rated output.

10. Trouble shooting during the trial period

10.1 The Bidder/Supplier shall demonstrate proper working of all mechanical and electrical controls; safety and protective device, in presence of the Purchaser's engineer and the same should be duly recorded.

10.2 After conducting testing, in case a particular equipment is not working properly or not giving rated output the Bidder/Supplier will furnish a detailed report to the Purchaser stating therein the detailed account on the performance of the equipment with possible reasons for improper or not working of the same.

10.3 The Purchaser after receipt of report from the Bidder/Supplier would take up the matter with the manufacturers and if required would invite the representative of original manufacturers. In case the Purchaser considers that the non-performance of equipment is



only due to inexperience of the Bidder/Supplier, then the charges incurred for the manufacturer's representative visit would be debited to the Bidder/Supplier's account.

10.4 Further, before the commencement of testing or commissioning, the Purchaser reserves the right to invite the **original manufacturer's representative** at the cost of the Bidder/Supplier for start-up help, assist and guide the Bidder/Supplier during commissioning in the following cases:

- The Bidder/Supplier has **no previous experience** of commissioning and start-up of the similar equipment.
- The Purchaser is of the opinion that the **Bidder/Supplier is not capable** to commission and start-up of certain specific equipment.

10.5 However, in either of the cases the manufacturer's representatives would be called with prior information to the Bidder/Supplier and the Bidder/Supplier will have to extend all co-operation to such representatives in good spirit and in the interest of the work.

10.6 After satisfactory commissioning and start-up the Bidder/Supplier shall keep his representatives under whose **supervision** the **Purchaser's staff shall be operating and maintaining** the plant and equipment for a **minimum period of one month**. The Bidder/Supplier's representatives should be present at all times during the running and operation of plant and equipment. During this period the Bidder/Supplier shall ensure proper working of complete plant and equipment and attend any works required to be done and shall also take complete responsibility for proper operation and maintenance of the complete plant and equipment.

11. **Painting**

11.1 All the equipment/ machineries like motors, pumps, HT/ LT panel, transformer, switch boards, starters, junction boxes, isolators, storage tanks, supporting structures, pipe supports and MS/ GI pipes and all exposed and visible iron parts included in the scope of erection/ commissioning shall be given **double coat of paint of approved shade** over a **double coat of anticorrosive primer** wherever necessary irrespective of the condition of original paint of equipment/ machineries/ structures/ supports. All surfaces wherever required must be properly **cleaned from scale, dirt and grease** prior to painting. **Spray painting** must preferably be used on all the equipment/ machineries and wherever practicable. Suitable and necessary **cleaning/ wiping** of sight/ dial glasses, other non-metallic parts, flooring, walls and other surfaces which have been spoiled by paint during painting must also be carried out by the Bidder/Supplier.

11.2 **Lettering and other markings**, including capacity and flow direction markings, shall also be carried out by the Bidder/Supplier on the tanks, pipe lines, starters, motors, isolators and wherever else necessary, as directed and as per the standard practice of installation. **ISI colour codes** and colour charts as mentioned in Table 3 & Table 2 must be adhered to.

11.3 Supply of all paints and all other materials required is included in the scope of supply of the Bidder/Supplier under this contract/order.



12. Training of Personnel

12.1 The Bidder/Supplier for operating the plant as may be deputed by the Purchaser shall train necessary staff. The personnel will be associated for the training during the installation; testing, commissioning and start-up period and the training tenure shall be extended for a minimum period of one month from the date of commissioning and start-up.

13. Code of Practice for Painting Service Pipe Lines

13.1 On Non-insulated Pipe Line & Insulated Pipeline without Aluminium Cladding

- Ground colour to be applied throughout the length of the pipeline.
- Colour bands to be applied near every valve and branch connection as well as in every room near the entry.
- The 1st band should be 4" wide and the second band should be 1" wide.
- On the 1st band a white arrow to be put to indicate the direction of flow.
- The arrows should be put on the bottom of the pipelines so that the same are visible from below in case of horizontal bank of pipes and on sides in case of vertical bank of pipes.
- The valves should be painted with the same colour as the ground colour of the pipeline.

13.2 On Insulated Pipeline with Aluminium Cladding

- Ground colour to be applied in a length of 500 mm of the pipe all round near every valve and branch connections as well as in every room near the entry. The complete length of the pipeline should not be painted.
- **Colour bands** should be applied in the **middle** of every ground colour strip. The **1st colour** band should be **4"** wide and the **second** band should be **1"** wide.
- On the **1st band** a **white arrow** is to be put to indicate the **direction of flow** of the fluid.
- The **arrows** should be put on the **bottom** of the pipelines, so that the same are visible from below in case of **horizontal** bank of pipes and on **sides** in case of **vertical** bank of pipes.
- The valves should be painted with the same colour as the ground colour.
- The **ground colours** and the colours of the **1st** and **2nd** colour **bands** have been indicated on the **enclosed list** for the pipelines carrying various types of fluids and gases. The list also indicates the shade nos. of the colours to be used. In case the exact shade is not available, the nearest possible shade in the same colour may be selected.
- Only **synthetic enamel paint** should be used for the painting and band markings on the pipelines and it should be ensured that the finish should be **glossy**.



- Where no colour bands have been recommended, only the ground colour is to be applied as per the above procedure. If only one colour band is recommended the same should be 4" wide and applied on the ground colour. In case of 2 nos. colour bands, the 1st band should be 4" wide and second band 1" wide and should be applied on the ground colour.
- To avoid mixing of colours, it is recommended to apply the bands only after the ground colour paint is dry and subsequently to apply the arrow only after the 1st band paint is dry.



Table 1
Painting of Equipment & Structural Work

SN	Item	Painting Shade
1	All Milk Storage Tanks with outer MS	Pale Cream Shade no. 352 of ISI
2	All M.S. platforms/pipe supports/ pipe bridges and any other structures	Dark admiral gray shade No.632 of ISI
3	Water Pumps, Geared Motor of tanks and vats.	Original colour
4	HT & LT panels	Original colour
5	LT distribution switchboards	Dark admiral gray
6	Coal Handling Equipment	Black
7	Boiler Chimney, Powder Plant Chimney, & Generator Exhaust	Aluminium Paint
8	Refrigeration Compressor, air Compressor	Original colour
9	Air Handling Units of Cold Store, Deep Freeze, Butter Packing, Machine room & Laboratory including Ducting	Aluminium Paint
10	Can Washer	Original colour
11	Refrigeration Plant Receiver	Dark Red
12	Atmospheric Condensers	Bitumen Paint
13	Milk Weigh Scale	Original colour



Table 2
Colour Code For Pipelines as per BIS 2379-1963

SN	Services	Ground Colour	First Band	Second Band
1	Cooling Water	Sea Green 217	French Blue 166	-
2	Boiler Feed Water		-	-
3	Condensate		Light Brown 410	-
4	Hot Water		Light Brown 410	-
5	Drinking Water		French Blue 166	Signal Red 37
6	Treated Water		Light Orange 557	-
7	Cold Water		French Blue 166	Canary Yellow
8	Untreated Water		White	
9	Compressed Air	Sky Blue 101		
10	Vacuum		Black	
11	Steam	Silver Grey 628		
12	Diesel	Light Brown 410	Brilliant 221	
13	Lubricating Oil		Light Grey 631	
14	Drainage	Black		
15	Ammonia	Signal Red 537		



Table 3
Testing Pressures for Various Pipelines

Sr No	Name	Test Pressure kg/cm²	Test medium	Duration of Test (Hour)	Allowable pressure Drop (kg/cm²)
1	H.P.Steam pipe lines	27	Water	1/2	0
2	H.P.Steam pipe lines	8	Water	1/2	0
3	Water pipe lines ¹	8	Water	1/2	0
4	Furnace oil/ LSHS	16	Water	½	0
5	SS pipes for dairy	6	Water	1/2	0
6	Air	12	Air	8	0.1
7	Ammonia pipe lines				
7a	Suction	16	N ₂	24	0.2
7b	Discharge	24	N ₂	24	0.2
7c	Vacuum Test of Ammonia Lines	Absolute Zero	Vacuum	48	NIL
8	Molasses pipe lines	16	Water	1/2	0

Engineer-in-charge shall provide water at available supply point from which the Supplier shall connect temporary piping for testing water.

¹ Soft, Raw, Chilled and Glycol



Table 4
Makes of Bought Out Items

SN	Items	Makes
1	Steam piping	
1a	MS C class pipes (Seamless)	Tata zindal
1b	Cast steel globe valves	Spirex
1c	Bronze globe valves	Audco,klinger
1d	Non-return valves	Audco
1e	Pressure reducing valves, safety valves, expansion joints and other steam fittings.	Spirex,
1f	Pressure & temperature gauges	Forbes marshall
2	Furnace oil piping/ air piping	Tata
2a	MS C class pipes (seamless/ ERW as approved)	Tata
2b	Cast steel globe/bronze globe/ Gun metal gate valve	Audco
2c	Pressure gauges	Wari
3	Water piping	Tata-1239 erw
3a	GI `B' class pipe	Tata
3b	CI globe valve	Audco
3c	Gun metal gate valve	Intervolve
3d	Gun metal globe valves/ strainers/ non return valves	Sant
3e	Water pump	Kirloskar, ksb, jonson
4	Insulation materials	
4a	Expanded polystyrene	Lrb, rockwool
4b	Glass/ mineral wool	Beardsell,Modi foam,rockwool

Please select reputed established makes only. Actual supply shall be based on makes approved by us.



Section IV- Part IV
Special Conditions of Contract
For
Electric Works



Contents

1. Scope
2. Standards
3. Equipment And Accessories Specifications
4. Power Cables (HT)
5. Power Cables (LT)
6. Control Cables
7. Cable Trays
8. Cable Glands
9. Cable Connectors
10. Cable Route Markers
11. Cable Indicators
12. Pipes for Cables
13. Motor Isolators
14. Motor Junction Box / Control Junction box
15. Remote Push Button Stations (for other projects)
16. Erection Of Equipment
17. Power Control Centres, Distribution Boards, Control Panels & Bus Ducts
18. Seal Maintenance Free Batteries & Battery Charger
19. Erection and Testing of Motors
20. Installation of Cable Network
21. General Requirements for handling of Cables
22. Laying of Cable (Underground System)
23. Laying of Cable Under Floors
24. Laying of Cable in Masonry trenches
25. Laying of Cable in Cable Trays
26. Laying of Cables on Building Surface/Structure
27. Termination & Jointing of cables
28. Dressing of Cables Inside the Equipment
29. Identification of cables/wires/cores



30. Cable between Isolators/Junction Box and Motor/Control
31. Testing of cables
32. Earthing Network
33. Earth Pit with Electrode
34. Earth Bus, Earthing Lead and Earth Wire/Strip
35. Two/Four Pole Structure
36. Erection Procedure Guidelines for Instrumentation & Control System
 - Table 1 Bureau Indian Standards (BIS)
 - Table 2 Pro forma for PCC, DB, Motor Control Centres Test
 - Table 3 Pro forma for motor testing
 - Table 4 Pro forma for Testing Cables
 - Table 5 Sizing of Earthing Lead/ Wire



1. Scope

- 1.1 The intent of this specification is to define the requirements for the installation, testing and commissioning of the electrical system like high-tension switchyard with accessories and equipment, transformers, HT. Panels, oil circuit breakers, LT. Panels and power control centers, distribution boards, capacitor banks & panels, power & control cables, remote push button stations, motors, earthing network, etc. Requirement of a particular project shall be as specified in schedule of quantities/approved drawings or as per the battery limits fixed in the contract.

2. Standards

- 2.1 The work shall be carried out in the best workmanship in conformity with this specification, the relevant specification/codes of practice of the Bureau of Indian Standards, approved drawings and the instructions issued by the Engineer-in-charge or his authorized representative, from time to time. Some of the relevant Bureau of Indian Standards is listed in Table 1.
- 2.2 In addition to these standards, all works shall also confirm to the requirements of the followings:
- Indian Electricity Act and Rules framed there under.
 - Fire Insurance Regulations.
 - Regulations lay down by the Chief Electrical Inspector of the State/State Electricity Board.
 - Regulations lay down by the Factory Inspector of the State.
 - Any other regulations lay down by the local authorities.
 - Installation & operating manuals of original manufacturers of equipment.

3. Equipment and Accessories Specifications

- 3.1 This defines specifications and requirements mainly for the equipment and accessories which are generally supplied by the erection agency and do not cover the specification of main electrical equipment such as Transformers, HT and LT panels, switchboards and motors etc which may be supplied by the Owner.
- 3.2 All materials, fittings and appliances to be supplied by the Bidder/Supplier shall be of best quality and shall conform to the specification given hereunder. The equipment shall be manufactured in accordance with current Bureau of Indian Standard Specifications wherever they exist or with the BS or NEMA specifications, if no such BIS are available. In the absence of any specification, the materials shall be as approved by the Owner or his authorized representative.
- 3.3 All similar materials and removable parts shall be uniform and interchangeable with one another.
- 3.4 You must furnish makes of bought out items.

4. Power Cables (HT)

- 4.1 Specifications as per [Section V](#)

5. Power Cables (LT)



5.1 Specifications as per Section V

6. Control Cables

6.1 Specifications as per Section V

7. Cable Trays

7.1 Specifications as per Section V

8. Cable Glands

8.1 These shall be provided at both ends of armoured/ unarmoured electrical cables. Cable glands to be manufactured as per performance requirements of BS 6121 amended as on date, with BRASS material accurately machined and NICKEL finish. Single compression cable glands to be complete with checkout, gland body, 3 nose metal washers, and outer seal rubber ring and compression nut. Double compression glands to be complete with checkout, gland body, neoprene outer ring, Armour clamping cone, Armour clamping ring, Armour clamping nut, neoprene outer ring, skid washer & outer seal nut. Sample of cable gland to be got approved from the Site In charge before supply. For instruments MOC of cable gland shall be polyamide.

9. Cable Connectors

9.1 Cable connectors, lugs/sockets, shall be of copper/Aluminium alloy, suitably tinned, soldering less, crimping type. These shall be suitable for the cable being connected and type of function (such as power, control or connection to instruments, etc.)

10. Cable Route Markers

10.1 These shall be galvanized Cast Iron plate with marking (LT/HT) diameter 150 mm with 600 mm long 25x25 mm MS. angle riveted/bolted with this plate. Sample to be got approved before use.

11. Cable Indicators

11.1 Individual symbols / numbers printed on yellow strips of glossy PVC should be used for cable indicator.

12. Pipes for Cables

12.1 For lying of cables under floor, G.I. class 'A' pipes shall be used. MS. conduits are not acceptable for this purpose. For laying cable in air whereas cable trays are not being used, MS 'B' class pipe shall be used. Size of pipe shall depend upon the overall outer diameter of cable to be drawn through pipe. To determine the size of pipe, assume that 40% area of pipe shall be free after drawing of cable. In dairy's process area and powder plant wherever required SS-304 pipe, 1.6 mm thick shall be used.



13. Motor Isolators

13.1 These shall be in Aluminium cast housing, completely dust, vermin and weather proof (IP 55), suitable for 30/25 A, 415 volts, 50 Hz with rotary type switch complete with cable gland for incoming and outgoing cables. For dairy's process area and powder plant SS-304 motor isolator shall be used. Final finish of housing to be buffer mirror for SS and powder coated gray for Aluminum housing. Sample to be got approved before supply.

14. Control Junction Box

14.1 These shall be in Aluminium cast housing, completely dust, vermin and weather proof (IP 55). For dairy's process area and powder plant SS-304 junction box shall be used. Final finish of housing to be buffer mirror for SS and powder coated gray for Aluminum housing. Sample to be got approved before use.

15. Remote Push Button Stations

15.1 These shall be used for remote OFF for motors, away from MCC. These shall be suitable for surface/structure mounting in Cast Aluminium housing having IP-55 class of protection i.e. completely weather proof. For dairy's process area and powder plant SS- 304 push button shall be used. Final finish of housing to be buffer mirror for SS and powder coated gray for Aluminum housing. Sample to be got approved before supply.

15.2 Riveted type bi-color plastic nameplate to be provided for each feeder.

15.3 For out door installation suitable canopy to be provided.

16. Erection of Equipment

16.1 The cases containing the equipment (being supplied by the purchaser shall be handed over to the Bidder/Supplier. The Bidder/Supplier shall make his own arrangements for safe transportation of all the items to the erection site and also carry out complete loading/unloading during transportation. Equipment shall not be removed from packing cases unless the floor has been made ready for installing them. The cases shall be opened in presence of the Engineer-in-charge or his authorized representative. These empty packing cases shall be returned to the storage space identified by engineer in charge and any document if found with the equipment shall be handed over to the Engineer-in- charge. Any damage or shortage noticed shall be reported to the Engineerin- charge in writing immediately after opening of packing cases.

17. Power Control Centers, Distribution Boards, Control Panels & Bus Ducts

17.1 Erection: The manufacturers shall deliver electrical panels and bus duct in convenient shipping section. The Bidder/Supplier shall be responsible for final assembly and interconnection of bus bars/wiring. The Bidder/Supplier shall grout foundation channel in the flooring. Switchgears shall be aligned and leveled on their base channels and bolted or tack welded to them as per the instructions of the Engineer-in-charge. The earth bus shall be made continuous throughout the length. Loosely supplied relays and instruments shall be



- mounted and connected on the switchgears. The contacts of the draw out circuit breakers shall be checked for proper alignment and inter-changeability.
- 17.2 After erection the switchboard shall be inspected for dust and vermin proofness. Any hole, which might allow dust or vermin etc. to enter the panel, shall be plugged suitably at no extra cost.
 - 17.3 If the instrument transformers are supplied separately they shall be erected as per the direction of the Engineer-in-charge. The Bidder/Supplier shall fix the cable glands after drilling the bottom top plates of all switchboards with suitable holes at no extra cost.
 - 17.4 Range of overload relays/timers etc. shall be checked with requirement of motor/systems actually to be connected at site and if the same is under-sized/oversized, it shall be brought to the notice of Engineer-in-charge, who shall arrange procurement of correct rated components. However, the Bidder/Supplier shall not charge anything extra for labour for such replacements.
 - 17.5 The bus duct shall be suitably supported between switchgear and transformer. The opening in the wall where the duct enters the switchgear room shall be sealed to avoid rainwater entry. The foundation of the switchgear shall be raised suitably for minor adjustment to ensure proper alignment and connection of the bus duct at no extra cost. Expansion joints, flexible connection, etc. supplied by the manufacturer of the bus duct shall be properly connected.
 - 17.6 Testing: Before electrical panel is energized, the insulation resistance of each bus shall be measured from phase to ground. Measurement shall be repeated with circuit breakers in operating positions and contact open. Before switchgear is energized, the insulation resistance of all DC control circuits shall be measured from line to ground. Tests shall be performed on all circuit breakers during erection as per Table 2.
 - 17.7 Contact alignment and wipe shall be checked and adjusted where necessary in accordance with the breaker manufacturer's instructions. Each circuit breaker shall be drawn out of its cubicle, closed manually and its insulation resistance measured from phase to phase and phase to ground. All adjustable direct acting trip devices shall be set using values given by the Engineer-in-charge / manufacturer. The dielectric strength of insulating oil wherever applicable shall be checked. Before switchgear is energized tests shall be performed on each circuit breaker in its test position as per Table.
 - 17.8 Close and trip the circuit breaker from its local control switch, push button or operating handle. Switchgear control bus may be energized to permit test operation of circuit breaker with AC closing with prior permission of the Engineer-in-charge.
 - 17.9 Carry out tripping test of the electrically operated circuit breaker by operating mechanical trip device. Test operation of circuit breakers latch, check carriage limit switch if provided. Test proper operation of lockout device in the closing circuit, wherever provided by simulating conditions that would causes a lockout to occur. Trip breaker either manually or by applying current or voltage to each of its associated protective relays. Before switchgear is energized, the test covered above shall be repeated with each breaker in its normal operating position.
 - 17.10 Capacitor banks in capacitor control panel shall be tested as per manufacture's instructions. In addition, test for output and/or capacitance, insulation resistance test and test for efficiency of discharge device shall be carried out.
 - 17.11 All electrical equipment alarms shall be tested for proper operation by causing alarms to sound under simulated abnormal conditions.



17.12 The Bidder/Supplier shall arrange testing and calibrations of relays. The testing equipment including primary and secondary injection sets (if required) etc shall also have to be arranged by the Bidder/Supplier. Payment for above work shall be deemed to have been included in the erection of switch boards/ control panels.

18. Sealed Maintenance Free Batteries & Battery Charger

18.1 Batteries shall be erected on stands and insulators supplied by the manufacturer of the batteries. Interconnections shall be made with leads supplied by the manufacturer. Filling of electrolyte (supplied by the manufacturers), charging, discharging and recharging shall be carried out under the supervision of the Engineer-in-charge or his authorized representative. The Bidder/Supplier under the supervision of the Engineer-in-charge or his authorized representative will carry out erection of battery charger and DC board. The Bidder/Supplier shall also offer such facilities as may be required for carrying out tests on the complete battery charger and DC board/AC board.

18.2 Battery charger shall be tested for proper operation and to verify the charger delivers its maximum rated output. The Bidder/Supplier shall supply skilled/unskilled labour for carrying out the test by the engineer-in-charge. Batteries shall be given a boost charge in accordance with the manufacturer's instructions and adjusted for float operation before being placed for regular service.

19. Erection and Testing of Motors

19.1 Erection and coupling of motors with machines will be done under the mechanical erection. However, earthing, cable termination, testing and commissioning are covered under this section. Before starting, the alignment and coupling of motors with machines and the insulation resistance of the motors will be measured and recorded by the Bidder/Supplier. The direction of the rotation of the motor shall also be checked before the driven equipment is finally coupled. Motor bearings are to be checked and rectified including supply and changing of grease if required, checking of fans coupling with bodies etc. The Bidder/Supplier shall take adequate precaution and care while executing the work. For all damage due to negligence etc. the Bidder/Supplier shall be responsible to replace/repair at his own cost.

19.2 Before connecting power cables to motors the insulation resistance of all motor windings shall be measured. Measurement shall be repeated after power cable terminations are completed and before first charging.

19.3 **Motors** shall be **operationally tested** together with the **starting gear** and **auxiliary apparatus** such as push button stations, the contractors, level and pressure controls, signal and alarm apparatus, power and control circuits etc.

19.4 Check the anti-condensation heater and its circuit (if installed).

19.5 Check the setting of the thermal overload protection / single phase prevent or. Testing of these devices is to be done wherever required as per the instructions of the Engineer-in-charge?

19.6 **Run all motors uncoupled for a maximum period of 4 hours** before the driven equipment is placed in regular service. Fill up Test Certificate as per Table 3.

19.7 All outdoor-installed motors must be shrouded with cover made out of 14 gauge GI sheet with lifting hook and louvers as approved by purchaser.



20. Installation of Cable Network

- 20.1 Cable network shall include power, control and lighting cables which shall be laid in underground trenches, home pipes, open trenches, cable trays, GI pipes, or on building structure surfaces as detailed in the relevant drawings, cable schedules or as per the Engineer-in-charge's instructions. Supply and installation of cable trays, GI pipes/ conduits, cable gland sockets at both ends, isolators, junction boxes, remote push buttons stations, etc shall be under the scope of the Bidder/Supplier. For selection of cable size please refer to Table 5.

21. General Requirements for Handling of Cables

- 21.1 Before laying cables, these shall be tested for physical damage, continuity absence of cross phasing, insulation resistance to earth and between conductors. Insulation resistance tests shall be carried out with 500/1000 volt Meggar.
- 21.2 The cables shall be supplied at site, wound on wooden drum as far as possible. For smaller length and sizes, cables in properly coiled form can be accepted. The cables shall lie by mounting the drum of the cable on drum carriage. Where the carriage is not available, the drum shall be mounted on a properly supported axle, and the cable laid out from the top of the drum. In no case the cable will be rolled on, as it produces kinks, which may damage the conductor.
- 21.3 Sharp bending and kinking of cables shall be avoided. The bending radius for PVC insulated and sheath armoured cable shall not be less than 10 D Where 'D' is overall diameter of the cable.
- 21.4 While drawing cables through GI pipes, conduits, RCC pipe, ensure that size of pipe is such that, after drawing cables, 40 % area is free. After drawing cable, the end of pipe shall be sealed with cotton/bituminous compound.
- 21.5 High voltage (11 kV and above), medium voltage (230 V and above) and other control cables shall be separated from each other by adequate spacing or running through independent pipes/trays.
- 21.6 Armoured cables shall never be concealed in walls/floors/roads without GI pipes, conduits RCC pipes.
- 21.7 Joints in the cable throughout its length of lying shall be avoided as far as possible and if unavoidable, prior approval of site engineer shall be taken. If allowed, proper straight through epoxy resin type joint shall be made, without any additional cost.
- 21.8 A minimum loop of 3 M shall be provided on both ends of the cable, or after every 50 M of uncounted length of cable and on both ends of straight through cable joint. This additional length shall be used for fresh termination in future. Cable for this loop shall be paid for supply and lying.
- 21.9 Cable shall be neatly arranged in the trenches/trays in such a manner so that crises crossing are avoided and final take off to the motor/switchgear is facilitated. Arrangement of cables within the trenches/trays shall be the responsibility of the Bidder/Supplier.
- 21.10 All cable routes shall be carefully measured and cable cut to the required lengths and undue wastage of cables to be avoided. The routes indicated in the drawings are indicative only and the same may be rechecked with the Engineer-in-charge before cutting of cables. While selecting cable routes, interference with structures, foundations, pipeline, future expansion of buildings, etc. should be avoided.



- 21.11 All temporary ends of cables must be protected against dirt and moisture to prevent damage to the insulation. For this purpose, ends of all PVC insulated cables shall be taped with an approved PVC or rubber insulating tape. Use of friction type or other fabric type tape is not permitted. Lead sheathed cables shall be plumbed with lead alloy.
- 21.12 Wherever cable rises from underground/concrete trenches to motors/switchgears/push buttons, these shall be taken in G.I./MS pipes of suitable size, for mechanical protection upto 300 mm distance of concerned cable gland or as instructed by the Engineer-incharge.
- 21.13 Where cables pass through foundation/walls of other underground structures, the necessary ducts or openings will be provided in advance for the same. However, should it become necessary to cut holes in existing foundations or structures the electrical Bidder/Supplier shall determine their location and obtain approval of the Engineer-incharge before cutting is done.

22. Laying of Cables (Underground System)

- 22.1 Cables shall be so laid in ground that these will not interfere with other underground structures. All water pipes, sewage lines or other structures, which become exposed by excavation, shall be properly supported and protection from injury until the filling has been rammed solidly in places under and around them. Any telephone or other cables coming in the way are to be properly shielded diverted as directed by the Owner.
- 22.2 Cables shall be laid at minimum depth of 750 mm in case of LT & 1200 mm in case of HT, from ground level. Excavation will be generally in ordinary alluvial soil. The width of the trench shall be sufficient for lying of required number of cables.
- 22.3 Sand bedding 75 mm thick shall be made below and above the cables. A layer of bricks (full size) shall be laid on the edge, above sand bedding on the sides of cables and a flat brick to cover cable completely. More than one cable can be laid in the same trench by providing a brick on edge between two cables. However the relating location of cables in trench shall be maintained till termination. The surface of the ground after back filling the earth shall be made good so as to conform in all respects to the surrounded ground and to the entire satisfaction to the Engineer-in-charge.
- 22.4 For all underground cables, route markers should be used
- 22.5 Separate cable route markers should be used for LT, HT and telephone cables.
- 22.6 Route markers should be grounded in ground with 1:2:4 cement concrete pedestal size 230 x 230 x 300 mm.
- 22.7 Cable markers should be installed at an interval not exceeding 50 M along the straight routes of cables at a distance of 0.5 M away from centre of cable with the arrow marked on the cable markers plate indicating the location of cable. Cable markers should also be used to identify change in direction of cable route and for location of every joint in underground cable.
- 22.8 RCC Hume pipe for crossing road in cable laying shall be provided by Owner. No deduction shall be made for cable lying in home pipe for not providing bricks, sand and excavation. RCC home pipe at the ends shall be sealed by bituminous compound after laying and testing of cable by electrical Bidder/Supplier without any extra charge.

23. Laying of Cables under Floors

- 23.1 GI class a pipe shall be used for lying of outgoing cables under floors from distribution boards to motors, isolators/junction boxes of motors, starter of motors and push button stations. Preferably one cable shall be drawn through one pipe. Size of pipe shall be such that



after drawing of cable 40 % area is free. If length of pipe is more than 30 M, free area may be increased to 50 %.

- 23.2 Use of elbows is not allowed at all and number of bends shall be kept minimum. Instead of using bends with sockets, pipe-bending machine shall be used for making long smooth bends at site.
- 23.3 Ends of pipe shall be sealed temporarily while laying with cotton/ jute/ rubber stopper etc to avoid entry of building material.
- 23.4 Exact location of equipment motor/ isolator/ push buttons etc shall be ascertained prior to laying of pipe.

24. Laying of Cable in Masonry Trenches

- 24.1 Masonry/ concrete trenches for laying of cable shall be provided by Owner. However steel members such as MS angles/ flats etc shall be provided & grouted by electrical Bidder/Supplier to support the cables without any extra charge. Cables shall be clamped to these supports with Aluminium saddles/ clamps. More than one tier of cables can be provided in the same trench if the number of cables is more. If required cable trays can also be provided in trenches.
- 24.2 Entry of cables in trenches shall be sealed with bituminous MASTIC compound to stop entry of water in trenches.

25. Laying of Cables in Cable Trays

- 25.1 Cable trays and supporting steel members such as MS angle/ channel/ flats etc shall be provided and fixed by the Bidder/Supplier.
- 25.2 Cables shall be fixed in cable trays in single tier formation and cables shall be clamped with Aluminium flat clamps and galvanized bolts/unit.
- 25.3 Earthing flat/ wire can also be laid in cable tray along with cables.
- 25.4 After laying of cables minimum 20 % area shall be spare.

26. Laying of Cables on Building Surface/ Structure

- 26.1 Such type of cable laying shall be avoided as far as possible and will be allowed only for individual cables or small group of cables, which run along structure.
- 26.2 Cables shall be rigidly supported on structural steel/masonry using individual cast/malleable iron galvanized saddles and these supports shall be approximately 400 to 500 mm for cables upto 25 mm overall diameter and maximum 1000 mm for cables larger than 25 mm. Unsightly sagging of cables shall be revenged. Only/GI clamps with GI bolts/nuts shall be used.
- 26.3 If drilling of steel structure must be resorted to, approval must be secured from the Engineer-in-charge and steel must be drilled where the minimum weakening of the structure will result.

27. Termination & Jointing of Cables

- 27.1 Use of Glands: All PVC cable upto 1.1 kV grade, armoured or Unarmoured shall be terminated at the equipment/junction box/ isolators/push buttons/control accessories, etc. by means of suitable size single/double compression type cable glands. Armour of cable



shall be connected to earth point. The Bidder/Supplier shall drill holes for fixing glands wherever necessary. Wherever threaded cable gland is to be screwed into threaded opening of different size, suitable galvanized threaded reducing bushing shall be used for approved type.

- 27.2 In case of termination of cables at the bottom of the panel over a cable trench having no access from the bottom, a close fit holes should be drilled in the bottom plate for all the cables in one line, then bottom plate should be split in two parts along the centre line of holes. After installation of bottom plate and cables with glands, it shall be sealed with cold sealing compound.
- 27.3 Use of Lugs/ Sockets: All cable leads shall be terminated at the equipment terminals, by means of crimped type solder less connectors unless the terminals at the equipment ends are suitable for direct connecting without lugs/sockets.
- 27.4 The following is the recommended procedure for crimped joints and the same shall be followed:
- Strip off the insulation of the cable end with every precaution, not to sever or damage any strand. All insulation to be removed from the stripped portion of the conductor and ends of the insulation should be clean and square.
 - The cable should be kept clean as far as possible before assembling it with the terminal/socket. For preventing the ingress of moisture and possibility of reoxidation after crimping of the aluminum conductors, the socket should be fitted with corrosion inhibiting compound. This compound should also be applied over the stripped portion of the conductor and the palm surface of socket.
 - Correct size and type of socket/ ferrule/ lug should be selected depending on size of conductor and type of connection to be made. Make the crimped joint by suitable crimping tool. If after crimping the conductor in socket/ lug, some portion of the conductor remains without insulation the same should be covered sufficiently with PVC tape.

28. Dressing of Cable inside the Equipment

- 28.1 After fixing of cable glands, the individual cores of cable shall be dressed and taken along the cableways (if provided) or shall be fixed to the panels with polyethylene straps. Cable shall be dressed in such a manner that small loop of each core is available inside the panel.
- 28.2 For motors of 20 HP and above, terminal box if found not suitable for proper dressing of Aluminium cables, the Bidder/Supplier shall modify the same without any additional cost. Cables inside the equipment shall be measured and paid for.

29. Identification of Cables/ Wires/ Cores

- 29.1 Power cables shall be identified with red, yellow & blue PVC tapes for trip circuits identification, additional red ferrules shall be used only in the particular cores of control cable at the termination points in the switchgear/control panels and control switches.
- 29.2 In case of control cables all cores shall be identified at both ends by their wire numbers by means of PVC ferrules or self-sticking cable markers, wire numbers shall be as per schematic/connection drawing. For power circuit also wire numbers shall be provided if required as per the drawings of switchgear manufacturer.



30. Cable between Isolators/ Junction box & Motors/ Controls

30.1 Wherever possible Copper cables with glands shall be used between isolator/junction box (installed near motor/controls) and motors/controls. If terminal box of the motor or control switch is not suitable for accepting armoured cable or it is difficult to lay, copper conductor, multi-core, Unarmoured flexible cable in PVC flexible conduit steel (reinforced) with flexible conduit glands shall be used.

31. Testing of Cables

31.1 Before energizing, the insulation resistance of every circuit shall be measured from phase to phase and from phase to ground. This requires 3 measurements if one side is grounded and 6 measurements for 3 phase circuits.

31.2 Where splices or terminations are required in circuits rated above 650 volts, measure insulation resistance of each length of cable before splicing and/or terminating. Report measurements after splices and/or terminations are complete.

31.3 DC High Voltage test shall be made after installation on all 1100 Volts grade cables in which straight through joints have been made and all cables above 1100 V grade.

31.4 For record purposes test data shall include the measured values of leakage current versus time. The DC High Voltage test shall be performed as detailed below:

31.5 Cables shall be installed in final position with the entire straight through joints complete. Terminations shall be kept unfinished so that motors, switchgear, transformer etc are not subjected to test voltage.

31.6 The test voltage and duration shall be as per relevant codes and practices of Indian Standards Institution. Fill up the Test Certificate as per Table 4.

32. Earthing Network

32.1 The entire earthing installation shall be done in accordance with the earthing drawings, specification and instructions of the Engineer-in-charge. The entire earthing system shall fully comply with the Indian Electricity Act and Rules framed thereunder. The Bidder/Supplier shall carry out any changes desired by the electrical inspector or the Owner in order to make the installation conform to the Indian Electricity Rules, at no extra cost. The exact location of the earth pits, earth electrode and conductors and earthing points of the equipments shall be determined at site, in consultation with the Engineer-in-charge. Any change in the methods, routing, size of conductor etc. shall be subject to approval of the owner/engineer-in-charge before execution.

33. Earth Pit with Electrode

33.1 Plate or pipe type earth electrode with earth pit shall be provided for this work unless otherwise advised by the Engineer-in-charge due to typical site conditions. Earthing electrode and pit shall be as per IS: 3043-1966 (code of practices for Earthing). All earth electrodes shall preferably be driven to a sufficient depth to reach permanent moist soil.

33.2 Prior approval of the engineer-in-charge shall be taken for selecting type of earth electrode (pipe or plate).



- 33.3 Earth pit centre shall be at a minimum distance of 2 m from nearest building, unless otherwise advised. The minimum 3 m distance shall be maintained between centres of 2 earth pits.

34. Earth Bus, Earthing Lead & Earth Wire/ Strip

- 34.1 All electrical equipment is to be doubly earthed by connecting two-earth strip/ wire conductor from the frame of the equipment to an earthing pit/ main earthing ring. The earthing ring will be connected via links to several earth electrodes. The cable armoured will be earthed through the cable glands. Conductor size for connection to various equipments shall be as specified in the drawing or as instructed by the Engineer-in-charge. However, the length of the branch leads from equipment to earthing grid/ ring shall not be more than 10 to 15 meters.
- 34.2 All hardware for earthing installation shall be hot dip galvanized. Spring washers shall be used for all earthing connections of equipment having vibrations.
- 34.3 Size of earthing lead/ wire shall be as specified in schedule of quantities/ drawings. Table 6 may be considered as general guidelines.
- 34.4 When earthing wire is to be drawn under floor/in underground, Aluminium wire 10 mm dia. With PVC insulation shall be used. Instead of GI wire, PVC insulated copper conductor wires can also be used.
- 34.5 However, while deciding type & size of earth lead, the resistance between the earthing system and the general mass of the earth shall be as per IS code of practice. The earth loop impedance to any point in the electrical system shall not be in excess of 1.0 ohms in order to ensure satisfactory operation of protective devices.
- 34.6 G.I. wire/ Aluminium wire shall be connected to the equipment by providing crimping type socket/ lug.
- 34.7 Wherever earthing strip to be provided in cable tray, it shall be suitably bolted on cable tray and electrically bonded to the cable tray at regular interval.
- 34.8 Excavating & refilling of earth, necessary for laying underground earth bus loops shall be the responsibility of the Bidder/Supplier.
- 34.9 Wherever earth leads/ strips/ wire are laid in cable trenches, these shall be firmly and suitably cleared to the walls/ supporting steel structure on which cable is clamped.
- 34.10 The neutral of the transformer shall be connected to earth pit independently and earth pit shall have copper earth plate.
- 34.11 Long runs of GI strip shall be connected at each end with lap type welding to ensure continuity.

35. Two/Four Pole Structure

- 35.1 **ISMB 200 x 100 mm** to be grounded in **concrete 1:2:4** for at least **1/5th length** i.e. **2 meters** size of concrete **pedestal 500 x 500 mm**. All necessary civil works such as excavation, centering, concreting and back filling is included in Bidder/Supplier's scope of work.
- 35.2 Interconnecting by Aluminium conductor jumpers with connectors/ PG clamps etc.
- 35.3 Installation, testing and commissioning of complete two/four pole structure including ISMB & cross channels, G.O. switch, insulators and other items mentioned under equipment supply for two-pole structure.
- 35.4 Complete structure to be provided with two coats of Aluminium paint.



36. Erection Procedure Guidelines of Instrumentation & Control System

The erection of Instrumentation & Control System shall be carried out generally conforming to General Technical Standards as described herein. However, the Bidder shall select and adopt methods and procedures for equipment erection to suit the nature of equipment and erection work, involved according to the best modern practice and his own experience. Shop tests as well as Site tests shall be performed to ensure that all equipment / subsystems / systems furnished are manufactured and tested conforming to the requirements of the specification and approved Quality Assurance Program. All assembly and erection procedures adopted by the supplier shall be open for inspection and approval by the Client. Acceptance of erection procedures shall not in any way relieve the supplier of his responsibility for proper erection of the equipment. Transmitters, converters and pressure & temperature switches shall generally be installed on Instrument Stands made of 2" SS pipes located at convenient points. Level transmitters shall normally be flanged for direct mounting in the tank / equipment. Temperature / Pressure Stub on equipment and pipelines shall preferably be of same material or higher grade of material Suitable Root Valves shall be provided with every tap-off point. Installation of Pressure and Differential Pressure Transmitter shall be as per standard engineering practice incorporating Drain Valves, Isolation Valves, 2/3-Valve Manifold, Syphon etc. as applicable. For instrument air, SS. Pipe shall be used for air distribution from Battery Limit to the designated point of use. Take-off connections to instruments / actuators shall be with suitable size nipples and shut-off valves. Individual air supply shall be provided by 6 mm OD PU tube through an isolating needle valve and air filter regulator. Perforated Aluminum Trays (minimum 2 mm thick) shall be utilized for routing of signal tubing / cables in field. All cables / tubes in the supporting trays / channels shall be tagged properly. The loading of the cable trays shall not exceed 60 % of the available space. Proper gap between the electrical trays, as per the voltage level, shall be maintained in the cable tray layout. Tray numbers shall be provided at suitable intervals. Rigid and flexible conduits along with necessary fittings shall be used for cable laying from instrument to JB or instrument to trays etc.



SN	Description	BIS
1	PVC insulated cables (light duty) for working voltage upto 1100 volts	694-1977 Part I & II
2	PVC insulated cables (heavy duty) for voltage upto 1100 volts	1554-1976 Part I
3	-- Do -- for voltage 3.3 kV to 11 kV	1554-1976 Part II
4	Specification for polyethylene insulated PVC sheathed heavy duty electric cables, voltage not exceeding 1100 V	5959-1970 Part I
5	-- Do -- voltage 3.3 kV to 11 kV	5959-1970 Part II
6	Guide for marking of insulated conductors	5578-1970
7	Code of practice for installation and maintenance of paper insulated power cables	1255-1967
8	Code of practice for earthing	3043-1966
9	Guide for safety procedures and practices in electrical work	5216-1969
10	Code of practice for installation and maintenance of AC induction motor starters	5214-1969
11	Code of practice for installation and maintenance of induction motors	900-1965
12	Code of practice for installation and maintenance of switchgears	372-1975
13	Code of practice for installation and maintenance of transformers	1886-1967
14	Code of practice for electrical wiring installation, voltage not exceeding 650 V	732-1963
15	Code of practice for electrical wiring installation (system voltage exceeding 650V)	2274-1963
16	Guide for testing three phase induction motor	4029-1967



Table 2
Pro forma for PCC, DB, Motor Control Centres Test

SN	Test	Report
1	Circuit (Breaker/Bidder/Supplier Module Designation/Bus	
2	Insulation resistance (Contacts open, breaker Racked in position)	
A	Between each Phase & Bus (Mega Ohm)	
B	Between each phase and earth (Mega Ohm)	
C	DC and AC control & auxiliary circuits (Mega Ohm)	
D	Between each phase of CT/PT and between CT & PT circuit if any (Mega Ohm)	
3	CT Checks	
A	CT ratio	
B	CT secondary resistance	
C	CT polarity check	
4	Check for contact alignment and wipe	
5	Check/test all releases/ relays	
6	Check mechanical interlocks	
7	Check electrical interlocks	
8	Check switchgear/control panel wiring	
9	Checking breaker/Bidder/Supplier circuits for	
A	Closing- local and remote (wherever applicable)	
B	Tripping-local and remote (wherever applicable)	
10	Opening time of breaker/ contactor	
11	Closing time of breaker/ contactor	
Signature and seal of Engineer-in-charge of Purchaser		Signature and seal of Engineer-in-charge of Bidder/Supplier



Table 3		
SN	Test Report	
1	Name plate details	
A	Voltage	
B	HP / KW	
C	Mounting	
D	Current	
E	RPM	
F	Frame size	
G	Make	
H	Sr No	
I	Others	
2	Insulation test (before cable connection)	
A	Between Phase and Earth (Mega Ohms)	
B	Between each Phase (Mega Ohms)	
3	Insulation test (after cable connection)	
A	Between Phase and Earth (Mega Ohms)	
B	Between each Phase (Mega Ohms)	
4	No load current	
A	R Phase Amps	
B	Y Phase Amps	
C	B Phase Amps	
5	Full load current	
A	R Phase Amps	
B	Y Phase Amps	
C	B Phase Amps	
6	Temperature rise after 4 hours run	
A	On no load degree C	
B	On full load degree C	



C	Ambient temperature during test degree C	
7	Operation of thermal overload relay	
A	At normal Full Load current of motor	
B	At twice Full Load current of motor trips	
Signature and seal of Engineer-in-charge of Purchase		Signature and seal of Engineer-in-charge of Bidder/Supplier
Table 4		
Pro forma for Testing Cables		
Sr No	Test Report	
1	Date of Test	
2	Drum Number (from which cable is	
3	Cable From -> To	
4	Length of run of this cable (meter)	
5	Insulation resistance test (In Mega Ohm)	
A	Voltage of Megger Volts	
B	Between core-1 to earth	
C	Between core-2 to earth	
D	Between core-3 to earth	
E	Between core-1 to core-2	
F	Between Core-2 to Core-3	
G	Between Core-3 to Core-1	
6	High Voltage Test (Voltage Duration)	
A	Between Cores and Earth	
B	Between Individual Cores	
Signature and seal of Engineer-in-charge of Purchaser		Signature and seal of Engineer-in-charge of Bidder/Supplier



Table 6		
Sizing of Earthing Lead/ Wire		
Sr No	ITEM	Size
1	Control switches	G.I./copper. wire 14 SWG
2	Motor upto 10 HP	G.I./copper wire 8 SWG
3	Motor above 10 HP upto 125 HP	G.I./copper strip 25 x 3 mm
4	Motor above 125 HP	G.I./copper strip 25 x 6 mm
5	Switch Board	G.I./copper strip 25 x 6 mm
6	Power control centre/ LT panel of sub-station	G.I./copper strip 40 x 6 mm



SECTION V

Technical Specifications



**Scope of Supply
&
Technical Specifications**

Design Basis

Subject: Ghee aroma development in existing Butter Oil plant

INTRODUCTION :

AmulFed Dairy Plant shall receive pasteurized/raw chilled milk in tankers. The tankers (either filled or empty) shall be weighed with one weigh bridge. After weighment, the tankers would be unloaded at any of four unloading bays on acceptance of the raw milk through the system, based on measurement of Fat/SNF/Temp./acidity etc. Chilling of raw milk would be done during unloading process through chillers & stored in Raw Milk silos and milk from this Raw Milk silo passes through 4*30 KLPH Milk processing lines and then stored in to pasteurised Milk Silos.

AmulFed Dairy has fully automatic Butter Oil Plant of Capacity 75 MT/Day operated from Central control room

Excess Raw cream shall go to Butter Oil plant of to produce B Oil from cream of 40%

Butter Oil is produced from 40% cream. Raw Cream of 40% passes through Cream treatment, Cream Concentrator, Homogenizer, Oil concentrator, Oil Heater (up to 90C – Regenerative), Oil polisher and then through Vacuum system. Finally Butter oil stored in to two storage tank of 20 KL capacity.

CIP of Complete Butter oil plant done in a single pass through only one route except storage tank.

Pneumatic valves in existing B Oil plant is on 24 VDC Digital network.

Now AmulFed Dairy wish to develop aroma in Butter Oil (Ghee) produced by this existing Butter oil plant without affecting its existing capacity and it should be integrated with existing automation system and operate from Central control room through existing Operating Stations.

AmulFed dairy also wish to keep butter oil production facility as it is in addition to above modification.

Bidder has to consider that CIP of complete modified plant should be done from existing CIP Kitchen and CIP of heated surfaces shall be done separately by automatic Local CIP System. It is required that not a single residue of Ghee shall return in existing CIP kitchen.

Concentrated Acid and lye dosing system for local CIP shall be provide from existing Bulk acid and lye tank. Bidders have to consider complete transfer system for it considering all safety aspect.

Bidders to supply a system in such a way that ghee production should remain continue except CIP. No any machine should remain ideal during CIP/Production.



Complete system is required to Collect, recover, filter, transfer and re process of desludge of Ghee clarifier.

Complete system required to Collect, recover, filter, transfer and re process of Ghee residue.

Proper system is required for boiler bottom unloading considering all safety aspects.

Bidders have to consider mix proof valves at filling and emptying header at all tanks/boilers. Collection tray is to be considering below valve cluster and drain up to up to nearest drain.

Bidder has to modify/change existing process and CIP logic if required.

Bidders to consider addition of new logic in the existing system and removal of old logic from the system which is not required.

New process and CIP logic shall be incorporated in existing system considering safety of product and equipments.

Bidders to consider all mechanical, electrical, instrumentation and automation work related to Ghee flavour development.

A Bidder has to consider all required equipments/ Instrument/accessories to meet the process requirement of their equipment.

Bidders can use or modify the existing plant by their own design and process to get desire aroma and quality from the existing plant.

Bidders have to submit all drawings and P and I Diagram for Approval to AmulFed Dairy before any installation.

Bidders can visit the existing Butter oil plant to understand the existing process for further modifications to make Ghee. Bidders have to consider whatever is required to produce flavoured Ghee from existing Butter oil plant irrespective of mentioned in tender.

Platform/ Ladder is required for proper approach in the plant.

If required Removal of existing equipment, pipeline, supports etc shall be in bidder's scope. Required shutdown for the same shall be provided by AFD

Individual air isolation required at all valves. Minimum air tube usage required in plant.

Proper filtration system is required for ghee to avoid any migration in product.

Bidders to consider proper heating and cooling arrangement which is required for their process.

Bidders shall be responsible for final Quality of Ghee as per AFD/ GCMMF standards

**Specification for Ghee****Specifications of GHEE**

	Unit	Min	Max		Reference Method	Remarks
Physical						
Colour				Yellowish	Agmark General Grading and Marking Rules,1988	As per MDG and GCMMF requirement
Texture				Granular in solid phase	Agmark General Grading and Marking Rules,1988	As per MDG and GCMMF requirement
Sensory						
Flavour and Taste				Clean and Pleasant	Agmark General Grading and Marking Rules,1988	As per MDG and GCMMF requirement
Chemical						
Moisture	%m/m		0.3		IS:3507:1966	
Free Fatty Acid as Oleic Acid	%m/m		0.4		IS:3508:1966	
BR reading at 40 degree C		40	43		IS:3508:1966	
Reichert Meissl Value		28			IS:3508:1966	
Polenske Value		1	2		IS:3508:1966	
Baudouin Test				Negative	IS:3508:1966	
Peroxide Value (per Kg Fat)	meq O2		0.5		IS:3508:1966	
Microbiological						
Aerobic Plate Count	cfu/gm		5000		IS:5402:2005	
Coliforms	per gm			Absent	IS:5401(Part 1/2):(2002/2012)	
Yeast and Mould	per gm			Absent	IS 5403:1999	
E. Coil	per gm			Absent	IS:5887/Part 1:1976	
Salmonell and shigella	per 25 gm			Absent	IS:5887:(Part 3):1999 and (Part 7):1999	
S. aureus(coag. Pos.)	per gm			Absent	IS:5887:(Part 2):1976 and (Part 8):2002	
Anaerobic Spores	per gm			Absent	SP:18(Part 11):1981	
Listeria Monocytogenes	per gm			Absent	IS:14988(Part 2):2002	

Ghee should be optically clear and without any haziness (As per Amulfed Dairy's/ GCMMF/ AGMARK) Standards.



Technical Specification:

Pneumatic valves(2 way,3 way, butter fly) with Open/ close Feedback

Type : Two way / three way pneumatically operated sanitary valves of mix-proof (self cleaning, O N-OFF seat valves, flow diversion valves, etc. shall be provided with ASI connectivity
All the valve battery valves shall be of self cleaning type mix proof valves having 3 solenoid (each) and double seat with ASI connectivity

Valves shall be spillage free and capable of pressure surge. SS collection tray below each valve battery shall require. Valve battery design is to be approved by purchaser.

Material: AISI 316

Controls: Electrically/electronically operated (ASI connectivity)

The Pneumatic valves shall have the following features to cater to fulfil the above functional requirements: Housing shall be ball shaped for the ideal flow characteristics to ensure 100% clean ability by CIP. Housing closed by cover plates should not create a sump or dead corners. Housing interconnections shall be welded. Valve should be Spillage proof during on off operations. Valve should be considered up to max 8 bar line pressure.

The seals such as housing seals, stem seals and disc seals shall be flush mounted. Control unit shall be suitable for ASI connectivity.

Valves shall have low/very low susceptibility for the pressure surge. The valve shall have the short leakage outlet to recognize the leakage immediately

Valve shall have open lantern installed between the actuator and the product area of the valve to assure that leakages occurring at the stem seal shall be immediately visible and also shall act as a protection against over heating of the actuator.

Mix proof valves shall be used wherever the CIP and the process liquids are intercrossing in the piping system. The CIP of the isolation area is possible and also the leakage shall be easily identified.

All pneumatic connections from the header up to individual valves shall be of SS-304 through suitable SS-304 distribution headers connected with FRL units/moisture separator etc.

500 mm pneumatic flexible PU tubing to be considered at control unit side for all valves. The valves should also be configurable from the HMI/operator console.



SS Pipes, Valves (Mix Proof) & Fittings

Pipes:

Type: TIG welded, annealed and de-scaled tubes shall be manufactured as per the standard ASTM-A270. Outer surface of the tubes should be with dairy finish and inner surface should be pickled as per dairy standard. Fix type clamp with two side nut bolt shall required.

Material of construction and thickness:

All the pipes unless otherwise stated shall confirms to AISI 304. The average wall thickness of tubes should be 1.6 mm up to 76 mm OD and 2.0 mm for diameters above 76 mm OD. The wall thickness at any point shall not vary more than 12.5% over and under from the average wall thickness specified. The ovality on the open ends shall be within the permissible limit specified in the ASTM A270. Support pipes shall have wall thickness of 2.0 mm up to 40 mm dia pipe and 2.5 mm for higher size pipes up to 63 mm dia

SS Manual Valves & Fittings, Manual butter fly Valve:

The butter fly valve shall be of sanitary design and all liquid contacting parts shall confirm to AISI 316. The valve sealing gasket shall be EPDM / Nitrile rubber material suitable for hot water sterilization temperature of 100 Deg. Celsius and hot acid and lye solution of 2% concentration at 85 Deg. Celsius. The valve shall be provided with SS handle. The valve shall be with plain ends shall be suitable for direct welding on the pipes.

Non Return Valve:

The non return valve shall be of sanitary design and all liquid contacting parts shall confirm to AISI 304. The valve sealing gasket shall be EPDM / Nitrile rubber material suitable for hot water sterilization temperature of 100 Deg. Celsius and hot acid and lye solution of 2% concentration at 85 Deg. Celsius. The non return valve shall be with plain ends shall be suitable for direct welding on the pipes.

Unions:

All the parts unless otherwise specified shall be made out of investment casting using AISI 304 material. The union shall be complete with liner, male part, nut and sealing ring (neoprene food grade rubber gasket). The liner and male parts should be suitable for expansion joints. All the inside as well as outside surface of the union shall be with dairy finish.



Ghee Boiler

Capacity : 4 ton

MOC: SS316/SS304

Type: Insulated, vertical tank with top open able cover, with corrugated jacket on shell and dimple jacket on bottom cone and top mounted sweeping type agitator and geared motor.

Construction: The inner shell, bottom cone and top cover shall be with 3 mm, 3 mm and 2 mm thick SS 316 sheet respectively. The jacket on shell and on bottom cone shall be fabricated from 2 mm thickness SS 304 sheet. The outer cladding for shell and bottom cone shall be fabricated from 2 mm thick SS 304 sheet.

Accessories: Inlet, outlet, breather, fittings for instruments

Finish: All inside surface of 2B finish and welding joiyts of 150 grit finish. Outer surface of 150 grit or mill finish, outer shell weld joiys will have a abnd polish or 120 grit finish. Top cone, bottom cone, legs and all weld joints have 120 grit finish.

Insulation: Insulation of thickness 100 mm with mineral wool of density 32 kg/cu m with aluminum foil on both side

Electrical:

Required power for machine/ equipment shall be made available by AFD at input of MCC panel only and distribution thereafter it to and fro of machines is in scope of bidders.

Bidders to consider laying, termination and distribution of power, earthling, control cables and profibus cable with conduit/ cable tray after their VFD/MCC panel .

Bidders to consider supply and installation of MCC/VFD panel

Power & Control Cables

All LT power cables shall be weatherproof, PVC sheathed, steel / GI armored, XLPE insulated PVC coated, Copper conductor cables. All control cables laid in cable trunks shall be PVC sheathed, steel armored, PVC coated copper conductor cables. Power and control cables shall be terminated with compression glands at either end. GI ar moured Copper conductor cable will be use upto 9.3 kw motor rating , 11 kw rating & above aluminum armoured cable will be use.

Minimum size of armoured copper cable shall be 1.5 sq.mm. Copper Control cable size will be 1.5 sq.mm.

Power and control earthling (Separate)

Two Separate earthing shall provide for power and instrument/PLC earthling.



GI Strip/ Copper wire shall be used for earthing conductor

MCC

- Bidder to consider MCC and VFD panel with suitable In comer .
- All copper power cable after MCC, copper control cable, instrument cable, cable trays shall provide. SS cable trays and conduit shall provide in production area
- All motors of Plant having IE3 Standard.
- Cable trays inside plant shall be of SS
- Supply & placement of rubber mats of proper size as per the State Electrical Inspectorate rules shall be provided.
- All power cables between feeders in MCC and drives shall be of copper only.
- All junction boxes, RIO panel, isolators should be of SS
- The MCC shall be suitable for indoor installation. The motor control centre shall be completely dust & vermin proof conforming to IP 54 standard. The bus bar rating of each MCC shall be capable of carrying 1.25 times of full load current of all the feeders of respective MCC considering future load of the plant as described in the design basis.
- The Incomer of MCC shall have 4 pole MCCB of suitable rating/ Type with built in solid state/ Microprocessor based protective device with all accessories. Also the Incomer shall have 3-phase 4-wire energy (with RS 485 Communication) meter with necessary indications, voltmeter, and ammeter with selector switches and CT's and phase Indication lamps. The necessary feeders complete with switchgears/VFD/Soft starters for future expansion shall be provided in the MCCs. 20% spare complete feeders with all switchgear shall be provided in each MCC. The incoming and outgoing cables from the MCCs in the electrical control room shall be laid in cable trays. Cable entry & exit for all the feeders of MCC shall be from the top. The cables going to plant equipment shall be laid in cable trays on pipe rack along with the wall and ceiling in the rest of the plant building. Welding point in each MCC shall require.
- Feeders with MCCB/ MPCB/ Contactors with all controls shall be provided with all protection. The bidder shall provide XLPE insulated armored power cables.
- All motor feeder shall have ON, OFF, TRIP indications.

Motor Isolators

These shall be in SS304, completely dust, vermin and weather proof (IP 55), suitable for 30/25 A, 415 volts, 50 Hz with rotary type switch complete with cable gland for incoming and outgoing cables. For dairy's process area SS-304 motor isolator shall be used. Final finish of housing to be buffer mirror for SS. Samples to be approved before supply.



Automation:

Automation Hardware/ Soft ware

Bidder has to consider Existing Automation system to upgrade Butter oil plant. As per requirement Bidder has to add required RIO panel and ASI panel in the existing Automation system. All new add on plant instruments shall be integrated with new RIO panel. Bidder shall connect new RIO panel, separator PLC, separator drive and ASI panel through existing profibus network. Bidder shall developed new SCADA screen as per requirement.

Before modification bidder has to deeply study the existing automation system and provide require license key for Existing ES and OS. Also understand existing program and sequence accordingly modify or add new sequence.

Bidder has to modify existing software and integrate new equipment and instrument in the system. Purchaser shall provide plan shutdown for integration.

Comprehensive self-diagnostic features shall be provided to facilitate easy fault location and detection of failure without individually checking each module. On-line testing facility of control system while the unit is in operation shall be provided with suitable indication for easy identification of faulty module.

Bidder shall consider redundant power supply for IM and field instruments.

Bidder has to integrate separator PLC to existing Automation system and provide all alarm and key parameters on SCADA. Bidder shall provide original software backup of separator control system to purchaser. Also provide one complete set of PLC and HMI with software backup to purchaser as a spare. Separator PLC software shall be compatible with TIA Portal V.15.

Bidder shall configure live plant status like total stop, plant running, recirculation, rec water etc.

Bidder shall consider 30% spare I/O for each RIO station.

Bidder shall handover plant standard operating procedure including standard process and cip Parameters.

Bidder has to consider close loop back pressure control system for all separators.

Bidder has to provide local CIP for hot surface with return conductivity and flow switch.

All original software licenses key, Master backup of all PLC/ES/OS/ OP/Drives programs shall be Provide to purchaser after successful system up gradation.

Accessories/Hardware for Automation

Bidder shall provide 32 channel DI/DO, 8 channel AI/AO with hot swapping.



Network Hardware

Bidder shall consider profibus protocol for plant network and Ethernet for system network. Bidder shall provide RS 485 repeater as per network requirement.

System software

Bidder shall use existing Engineering station for software development.

Remote I/O Panel

This shall be field mounted SS panels with filed bus as incomer and all the D/I, D/O & AI/AO shall be connected to it. Bidder shall consider suction and discharge fan for panel cooling. Bidder has to provide separate MCB to all DI/DO/AI/AO. Panel internal wiring with LAPP cable and connector shall be wago make. Panel make shall be RITTAL. Panel shall be dust proof. Bidder shall provide panel air condition system to VFD panel. ASI panel shall be SS304 .ASI controller shall be universal dual master slave. Bidder has to consider 40 slaves on each master.

UPS Supply

Bidder shall provide UPS distribution SS304 PANEL with required rating of MCB. Also laying Main supply cable from existing UPS. Bidder shall consider 30% spare MCB for future requirement. UPS cable supply laying and termination it is in bidder scope.

Instruments:

Field Instruments shall be suitable for area in which these are located. In general, field instruments shall be weatherproof, dust tight and corrosion resistant with Protection Class IP-65/68. All Instrument housing shall be SS304. Field instruments shall be suitably mounted, supported and terminated in local junction or RIO panel. Bidder shall provide latest series of Instrument along with NABAL approved Calibration certificates. Accuracy of the Instrument shall be class –A. Bidder shall consider instrument self-testing, diagnostic, for all instruments. All Instruments have proper approach for easy maintenance bidder has to provide ladder or platform accordingly. Supply of instruments, Installation, cable laying, termination, and commissioning it is in bidder scope. Bidder has to provide complete measurement of flow in each new separator/ clarifier input and output (light and heavy phase).

Process Transmitters

All the Process Transmitters will be based on 24 V DC or 4-20 mA signal connectivity. Transmitters shall be provided with Local Digital Indicator. Measuring ranges of transmitters shall be selected in such a way that the rated value of the measuring variables appears at approx. 50-70% of the span. The sensing elements and internal parts shall be constructed with AISI 316 . In case of stock and corrosive fluid application, diaphragm seal type transmitter with capillary is foreseen.

Transmitters shall generally be installed on Instrument Stands made of 2" SS pipes located at convenient points. All transmitters shall be sanitary hydrostatic type.



Process Gauges

Process gauges shall be provided for local indication on all utility lines.

Pressure gauge sensing element shall be Bourdon / Bellow / Diaphragm type in general depending upon the process condition. Direct reading Pressure / Differential Pressure gauges shall be used of SS 316 sensing element and AISI 304 movement material. All accessories, such as 2-valve manifold/Gauge cock etc. shall be provided with pressure gauges according to application. Where process temperature exceeds 70°C, siphon loops shall be utilized. Local temperature measurement shall be done bi-metal Temperature gauges. Temperature gauges may be direct mounted type (multiangle) or with SS capillary extension (at least 3 Mtrs) as per the application area. The sensing element / bulb / capillary etc. shall be of SS 316 for temperature gauges.

Temperature elements

All Temperature Sensors Elements shall be of Duplex type with SS 316 sheath and MgO filled. Depending on temperature ranges, Pt-100 Resistance Temperature Detector (RTD) or thermocouple shall be used Thermocouple / RTD with SS304 heads, Accuracy class A
RTD shall be of the waterproof type, with duplex terminal block. RTD shall have R to I Converter on head mounted. Bidder shall provide 2 point calibration certificate.

Process Switches

Level switch shall be capacitance type, PNP hard wire connect to RIO panel

Local switches for pressure, differential pressure, temperature, level etc. shall be hard wired type blind type and shall be connected to DCS automation system through local junction box. Set points shall be adjustable throughout the range. Switching differential shall be adjustable

Flow Elements

Measurement of flow for clean fluids and employing differential pressure principles, flow nozzles or concentric square edge orifice plates shall be provided. All flow element calculation, design and construction shall be based on BS / ASME standard. Beta ratios (d / D) for flow nozzles and orifices shall not be less than 0. and not more than 0.70. Flow nozzles and flow orifice plates shall be 316 stainless steel. Accuracy of the primary element shall be plus or minus 0.25% or better
Bidders to specify technical details

Magnetic Flow Transmitters

The flow tube material shall be of AISI 304 with PFA lining. The electrode material shall be either SS 316L or Hastelloy depending upon process condition. In general, SMS type process connection may be used for mag flow meters. Remote type FT shall provide.

Accuracy of magnetic flow meter shall be plus or minus 0.1% of flow rate or better.
Local digital flow rate as well as totalizer display shall be provided.

flow meters shall have hard wire connectivity. Remote type FT shall provide. Bidder shall submit calibration certificate to purchaser.



Bidders to specify technical details

Mass / density Flow meters

The Mass flow meter shall be used for various requirement as per P & ID finalized during detailed engineering. The Mass flow meter envisaged shall be Coriolis straight tube type. The electronics part shall be microprocessor based. The Mass flow meter shall be capable of measuring mass flow rate, density, temperature, volumetric flow rate and totalized flow. Remote type FT shall provide.

Mass flow meters shall have hard wire connectivity. The flow tube / wetted parts material shall be SS 316 / SS 316L or as per the requirement of process fluid. SMS type process connection may be used for mass flow meters.

Accuracy of Mass flow meter shall be plus or minus 0.1% of flow rate or better.

Digital display of mass flow rate, density, temperature, volume flow rate as well as totalized flow shall be provided. Bidder shall submit calibration certificate to purchaser.

Bidders to specify.

Level Instruments

Flange Mounted Diaphragm seal type transmitters shall be used for level measurement on tanks. The wetted parts shall be of SS 316 or suitable material to suit process fluids. The process connection with the tank/vessel shall be 3" flanged or suitable process connections.

For clean fluid, water, condensate service etc. (other than milk applications) normal differential pressure type level transmitters shall be used.

Level transmitter shall be Hydrostatic type, hard wired (4-20 mA, 24 V DC signal output) connected to DCS automation system through remote I/O Panel. Remote type LT shall provide.

Control Valves

Pneumatic control valves shall be complete with conventional electro-pneumatic positioner having 4-20 mA signals from DCS. The control valve sizing shall be done in such way that calculated noise level at worst operating condition shall not be more than 85 db at 1 meter distance. Valve trim material shall be harder than but compatible with the pipe in which it is installed; all control valves shall have sufficient overload range. At maximum operation, the control valve shall be at 75-80% open.

Valve bodies shall be no more than two (2) line sizes smaller than the pipe in which they are installed. All control valves (independent of their type) shall have a tight shutoff at least 110% of the maximum design pressure. The stroke/throughput characteristic shall, dependent on the purpose. The valve stems shall be well guided and the valves shall operate without excessive vibration and noise. The above shall achieve a stable fluid control over the entire flow range. Control valve design and location shall take into account flashing and cavitation conditions



In case of failure of electric or pneumatic supply or in case of failure of the controller output signal, the actuators shall remain locked in actual position or shall reach a safe position, depending on the particular case.

Conductivity Transmitter

It may be installed online and the necessary mounting of analyzer electronic unit shall be taken care suitably. The process connection shall be SMS DN50 type. The conductivity analyzer shall be microprocessor based, electrode and shell material shall be of SS 316. Application – Hygiene food, CIP, Phase separation. Housing – SS304, IP67. Sensor operating temperature shall be 110°C. Automatic temperature compensation shall be provided with the analyzer, the meter shall be hardwire type (4-20 mA, 24 V DC), connected to DCS automation through RI/O Panel.

Instrument signal Cable

Instrument cable shall be of multi-stranded annealed plain copper conductor, extruded PVC type A insulated. Overall screened with Al. Mylar tape. Extruded PVC ST1 inner sheath, steel braided. Extruded polyamide /PVC type ST1 outer sheathed instrument signal cables. Min. Size of the instrument cable shall be 0.75 sq.mm. All instrument cable shall be LAAP make.

Drive

Bidder shall consider automation latest series drive with graphical display and 3C3 PCB coating. Communication protocol shall be on hard wire. Drive shall operate with minimum 55°C ambient room temperature. Bidder shall consider IP66/NEMA4 enclosure, galvanic isolation, dc choke, AFF filter and drive efficiency 97%. Bidder shall provide air condition system to all drives. All drive shall be hard wire communication.

MIS PC

Processor shall be latest Intel xenon with 32 GB, (16GB X2) RAM & 28" color TFT screen. Work station grade PC & shall have DVD_RW drives with back-up data recording facility. The hard disc shall be 2 TB. PC shall have required communication port like LAN RJ45, HDMI, USB PS2 for mouse and keyboard, Wireless mouse and keyboard. The hard disc shall have data storage capacity of at least **360 days** data. Bidder shall consider 2 nos. clients PC and 1 no. server pc. Printing of reports would be possible from client and server PC.

MIS SERVER

Bidder shall consider 2 nos MIS server as redundancy. Processor shall be latest Intel xenon with 32 GB, (16GB X2) RAM & 28" color TFT screen, Windows Server 2012 R2 Standard Edition, 64 Bit. Work station grade PC & shall have DVD_RW drives with back-up data recording facility. The hard disc shall be 3 TB. PC shall have required communication port like LAN RJ45, HDMI, USB PS2 for mouse and keyboard, Wireless mouse and keyboard. The hard disc shall have data storage capacity of at least **360 days** data. Printing of reports would be possible from this PC.



MIS Software

Bidder shall provide MIS system for butter oil and existing process plant.

This shall be based on software of open architecture/protocol.

Necessary forms to be developed on the networked PC's

for entering the data for process Plant. All the reports shall be developed after the

discussion with the customer. However, various reports are to be considered for

development. Milk Tanker reception union data as well as AFD testing parameter shall be enter in

the MIS client PC .Online milk reception like qty. of milk received ,pending tanker, target of

reception etc. shall be continuous monitor in the MIS client. Bidder shall consider unlimited tag

licenses for MIS client and server. Bidder should consider FSSC 22000 4.1 compliance in MIS reports

generation.

Software validation:

Bidder shall consider complete software validation including functional design, hardware design,

Installation qualification, operational qualification, software FAT, and Process Validation and CCP

validation. Final updated process and CIP set points validation. Bidder should consider FSSC 22000

4.1 compliance. Bidder shall submit the validation report in soft as well as Hard copy to purchaser.

CABLE TRAY/CONDUIT:

- Separate cable tray required for all power cables
- Separate cable conduit is required for instrument profibus cables such a way that any communication cables never pass nearby power cables
- Separate cable tray required for all I/O cables
- Separate cable conduit required for all ASi cables
- All cable trays must be covered with SS sheet.
- All cable tray and conduit must be provided with junction and union connection at various places whenever required.
- All cable trays inside the plant shall be SS cage type.

Printer

LASERJET PRINTER HP FOR A3 size paper – 1 No.

Documentations

Bidder shall submit 3set of technical documents like instrument and equipment manual, electrical and control wiring drawing, P& ID, software validation, SOP, Technical specification of all plant equipment etc. Also submit same documents in softcopy to purchaser

**Major Equipment List**

Sr No.	Description/Area	Capacity	Qty	Unit
1	Ghee Clarifier (Self De sludge)	Suitable	1	no
2	Ghee Heating System	Suitable	1	no
3	Ghee Holding Tank (Boiler)	4 ton net	5	no
4	Regenerative Ghee heater and Cooler (Dual)	Suitable	1	no
5	Sludge recovery tank	2 kl	1	no
6	Product Recovery Tank	10 kl		
7	Serum cooking vessel (SSHE) and transfer system	1 ton	2	no
8	Local CIP system (Fully Automatic)	Suitable	1	set
9	Pneumatic Valves	Suitable	1	lot
10	SS pipes and Fittings and structure	Suitable	1	lot
11	MS pipes and structure	Suitable	1	lot
12	MCC/VFD Panel	Suitable	1	lot
13	Power and control cables	Suitable	1	lot
14	Cable trays and accessories	Suitable	1	lot
15	Instrumentation and Automation	Suitable	1	lot
16	MIS system			
17	Steam distribution with all accessories	Suitable	1	lot
18	Air distribution with all accessories	Suitable	1	lot
19	Water distribution with all accessories	Suitable	1	lot
20	Chilled/Tower water distribution	Suitable	1	lot

These are the major equipment. However Bidders can use their own technology and equipment to achieve desired output

**Recommended Make for Bought out Items**

Equipment	Make
Ghee Clarifier	GEA/ Tetrapak
Process pumps	Alfalaval/ APV
SS tubes, Pipes and fittings	Apex, Heavy metals/ Bhandari/equivalent
Pneumatics	Festo/SMC
Automation system	Siemens
VFD	Danfoss/ABB
Pressure Transmitter	EH
RTD	Redix/Pyro/Altop
Flow Switch	IFM/Honeywell
Level switch	EH/Emerson
Flow Transmitters	EH/Emerson
Pressure Gauge	Waree/WICA/GIC
Process/CIP Pneumatic Valve	GEA Tuchenhagen/Alfalaval/APV
Electricals	
Electric Motors	ABB/CG/Siemens
MCCB/MPCB/Relay	L&T/Siemens
Timer, Switch Fuse, MCB	L&T/Siemens
Push Button, LED	L&T/Siemens
Ammeter/ Volt meter	Meco/Rishabh
Digital energy Meter	L&T/Siemens
PVC conduit and accessories	Polycab/others
Power cable	Poly cab/KEI
Instrument/signal cable	Lapp
Plug and Socket	Legrand/ Hensell



BATTERY LIMITS

BATTERY LIMITS

Supplier will be responsible to undertake all the works involved in completing the project within the battery limits prescribed below

Power:

Required power shall be made available at MCC panel of machine and distribution thereafter to and fro machine shall be in scope of bidders.

Required complete feeders for operation of machine shall be in scope of Supplier

Utilities:

All utilities shall be available within the plant. Tapping from existing utility and distribution thereafter is in scope of Bidders.

Civil Work:

All type of civil work shall be in the scope of purchaser.



SECTION - V **SUB - SECTION - 2**

RESPONSIBILITIES

4.1 Responsibilities of Supplier

- a) Developing the process design, complete engineering design, manufacturing and/or supply of goods and service and ensuring best performance of individual equipment/systems/process plant as a whole. We will avail the assistance of reputed specialists in the respective field wherever required as well as past experiences gained during installation/ commissioning of projects.
- b) Development of automation services, software, interfaces etc for incorporation in the project as required & necessary for the project.
- c) Providing technical data, technical literature, production and service load calculations.
- d) Arranging for approvals from various statutory authorities on behalf of the Client. The statutory fees will be reimbursed by the client on production of receipt.
- e) First charge of oil / lubricants.
- f) Execution of project in accordance with prevailing Indian standards IER & IBR, wherever applicable & relevant to the project.
- g) Testing and commissioning of the system under scope as per agreed performance parameters, product quality, utility consumption and losses to atmosphere.
- h) Test equipment included in scope as laboratory equipment required for testing powder & milk quality & stack loss measuring etc.
- i) Provide necessary manpower during erection , testing & commissioning & as per the clauses of service cover & standby operation
- j) Testing , commissioning of the system under scope as per agreed performance parameters & utility consumption
- k) Training client's personnel as per the terms mentioned in clause of Training.
- l) Powder type fire extinguishers shall be provided at strategic points

4.3 Responsibilities of Client (AmulFed Dairy, Gandhinagar)

- a) Details of civil design, building layout and drainage and sewage disposal.
- b) Document on local site conditions related to climate, access and communications.



- c) Temporary water and power supply at one point within the powder plant premises during erection. Water supply & temporary power supplier shall pay 1% of the contract value (only erection value), if availed. Supplier shall have option of making arrangements for temporary power on it's own.
- d) Lighting and domestic wiring system including the switchboards for lighting and Internal telephone system. Engineering personnel for liaison with the supplier, project manager & the execution team.
- e) Permanent water and power supply at the time of pre-commissioning and commissioning of the plant.
- f) Adequate trained and qualified staff including operators, supervisors and engineers to carry out product trials, testing & commissioning under the supervision and guidance of supplier engineers.
- g) All civil works including buildings, roads, cable trench, underground condensate piping, & drainage, foundation of the equipment upto plinth level, flooring, masonry trenches, grouting of and minor civil works.
- h) Provision of & cost of services, raw products, packaging materials & chemicals for CIP system at the time of commissioning and product trials (free of charge).
- i) Timely provision of adequate and qualified personnel for training during erection, commissioning & trials.
- j) Provide power during erection.
- k) Provide open storage area, lockable store and office space during execution / erection & commissioning of project.
- l) Suitable site fabrication yard.
- m) External telephone & fax system on chargeable basis.
- n) Timely Payment as per agreed terms and conditions.
- o) Timely Approval of drawings within 10 days from date of submission and decision within a week on issues which will come up.
- p) Project Manager with team throughout the implementation .- nominated
- q) Lightening protection system & protection against rain.
- r) Timely supply of items not under scope.



- s) Readiness of Civil Building, clear civil fronts in all respects along with necessary utilities within agreed schedule to enable commencement of erection activities to meet overall completion schedule.
- t) Timely availability of required quantity of milk for the designed product to conduct the first run of product trials at the rated plant capacity.
- u) Timely availability of all consumables required for the trials/performance demonstration



SECTION - V **SUB - SECTION - 3**

PROJECT MANAGEMENT

1.0 TIME SCHEDULE

- 1.0.1 Supplier shall follow a task force concept for the integrated project execution staff pattern for the time bound completion of the project to the desired quality & as per contractual requirement. The task force leader should be the PROJECT MANAGER who co-ordinates for various activities for timely execution of the project.
- 1.0.2 As required in the tender, the expected project execution duration would be 12 months from signing of contract & receipt of advance payment to commencement of product trials & service load trials. The preliminary Bar chart for the project schedule attached herewith for reference. The project execution period will be governed by timely approval of drawings (Within 10 days of 1st submission) and availability of civil building, Clear civil front, necessary utilities within 4 months from date of PO to commence the erection activities to meet the requirements of execution period. Any interruptions in the erection activities due to civil work shall affect the execution period accordingly. The Project Manager shall submit to the Project Manager of AmulFed Dairy with monthly expediting and progress reports, which clearly indicate the actual vs., planned progress and the new likely completion dates of supply, erection, and commissioning and product trials.

1.1 MANAGEMENT TEAM

- 1.1.1 A Project Manager with adequate experience in projects of similar magnitude and type shall head a competent executive team. Reputed experts in various fields who shall be responsible for satisfactory execution of the project shall assist the Project Manager. He shall be responsible for overall implementation of the project, from commencement to final take over of the plant.
- 1.1.2 A Project Engineer shall be appointed for day to day operation and co-ordination, and to ensure successful and satisfactory design, procurement, manufacture, inspection, erection, testing and commissioning of all the equipment/facilities/systems within the time bound schedule.
- 1.1.3 The Project Manager and Project Engineer shall attend technical and review meeting between various parties involved in the project, and ensure implementation of all decision taken in the meetings.
- 1.1.4 The Project Manager shall also be responsible for detailed material accounting at site and management of project materials and equipment stored at site.
- 1.1.5 The AmulFed Dairy, Gandhinagar will nominate a Project Manger with whom the Project Manager of the supplier shall communicate/co-ordinate.
- 1.1.6 For smooth execution of the project, a team of Project Manager and Key Personnel shall remain consistent throughout the execution period.
- 1.1.7 The Project Manager shall be fully authorized to take on-spot decision with regards to :-
 - Modification in layout and execution programme to suit local condition.



- To purchase essential materials from local market to avoid delays.

1.2 APPROVAL

1.2.1 AmulFed Dairy, Gandhinagar shall give approval on technical documentation within 7 working days after submission. Amendments, which are not in the original scope of work or due to changes in concept, shall be taken up by the supplier Project manager as per mutually agreed rates of Landed Cost plus 15% Service Charges. The PO shall be amended by AmulFed Dairy, Gandhinagar accordingly.

1.2.2 Supplier's Project manager shall obtain approval for purchase of specific makes of equipment whose makes are not mentioned in PO. If two or more makes of equipment are mentioned in the form of alternatives in the approved list, the Supplier's Project manager shall select any one of the particular make from the approved list after mutual discussions with the Purchaser's Project Manager.

1.3 INSPECTION

1.3.1 For indigenous items, the supplier's Project managers shall invite AmulFed Dairy, Gandhinagar for inspection and preliminary testing. Inspection may be required at various stages of manufacture/assembly for some items. The AmulFed Dairy, Gandhinagar will arrange to complete such inspection as maybe necessary along with clearance within a reasonable time (7 days) from the date of intimation by the supplier's Project manager.

1.3.2 For imported items internal test report of OEM shall be submitted where ever possible and shall form the basis of despatch,

1.4 SITE WORK AND INSTALLATION

1.4.1 Protection of electronic equipment.

It is the responsibility of the bidder to ensure that all electronic equipment and control system shall be fully protected against hostile environment, humidity, heat and dust that will be encountered during storage and installation.

1.4.2 Temporary power supplies.

Power supply at AmulFed Dairy Gandhinagar is normally very stable, but the bidder is responsible to ensure that delicate electronic equipment used during construction, such as welding machine, testing devices etc. are protected against damage from mains supply. In the event of a major power failure in the system, it shall be the responsibility of the bidder to hire a diesel generator if this prove to be necessary.

1.5 COMMISSIONING

1.5.1 After satisfactory erection and testing, a competent team shall be deputed to commission the plant and to run product trials and to establish performance parameters.

1.6 PRODUCT TRIAL AND PERFORMANCE GUARANTEE

1.6.1 On completion of the Commissioning period, the plant will be operated by AmulFed Dairy under supplier's supervision at full capacity to the satisfaction of the Project Authority for a period of seven days on the designed product.



- 1.6.2 If shut down occurs due to External Force Majeure reasons after 16 hours of operation in any day, this shall be considered as a full day of testing. If at less than 16 hours of operation, the trials shall be continued for an additional full day. This shall be mutually agreed during product trials.
- 1.6.3 Performance Guarantee: Performance and services consumption guarantees, and the relevant penalties for not meeting the rated capacities and efficiencies are covered in the tender .

1.7 TRAINING

1.7.1 The objective of the training is to provide selected staff members of the dairy with necessary knowledge of dairy technology and maintenance to ensure a sound and suitable operations of the plant. Emphasis will be given on application as well as operation and not on basics.

- Dairy staff for:
 - Operation of process, services utilized and process technology
 - Operation of machinery and equipment
- Maintenance staff for:
 - On the job training for technical personnel
 - Maintenance of plant and equipment
- Instrumentation staff:
 - On job training covering calibration
 - On the job training for technical personnel regarding set points
 - Fault finding and maintenance
 - Automation staff :
 - Training of DCS on hardware & software.
 - Process logic
 - Fault finding and maintenance
 - Electrical staff
 - Training on Sub station, PCC and MCC
 - Training on control and power wiring diagram
 - Fault finding and maintenance
 - Supervisory staff and operating staff:
 - Control and automation schemes
 - MIS systems
 - Management staff:
 - MIS systems and overall operations of plant



1.7.2 All above training has been considered for 90 trainer's man-days as per tender. Time allocation for each of those can be finalized before testing of the plant.

1.7.3 Services will be provided by AmulFed Dairy, Gandhinagar :

- Classrooms with chairs and tables for theoretical training
- Persons selected for training will have a good basic technical education
- Continuity in training and their assistance during start up of the plant
- Teaching material and audio visual aids.
- Training at manufacturing work if any in India/ abroad will be provided, if required. Travel, boarding, lodging and incidental expenses will be extra to the purchasers' account.

1.8 STAND BY OPERATION OF THE PLANT

The bidder will offer "Stand-by" Personnel to assist the AmulFed Dairy, Gandhinagar during the first year of operation as mentioned below:

Senior members of each commissioning team will attend at site for two missions during the first year of operation. The first mission will commence immediately after product trial and second mission after 6 months of first mission. Each mission will be of one week duration.

The stand-by team will place particular emphasis on ensuring that correct operation procedures are followed by the plant operators and that running adjustment are made correctly to the plant items, controls and instruments. They shall also run organized training sessions to strengthen the weak areas of plant management, operation and maintenance.

1.9 SERVICE COVER

The representative of the supplier shall attend the project for two days each month through out two years following first product trials. These visits will cover meetings, training, equipment adjustment and servicing. These visits will not cover guarantee work, which will be undertaken separately.

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

1. To help improve operating and maintenance procedures.
2. To keep the plant adjusted for optimum energy efficiency, product quality and minimum product losses.
3. To arrange for service visits by specialists to inspect, service and carry out reports.

1.10 EXCESS MATERIAL AT SITE

Any excess or unused material at site sent by supplier shall be remaining property of supplier and can be taken back with authorization from the Project In-charge.



SECTION V-Sub section-IV

DEVIATION FROM TECHNICAL REQUIREMENT

6. DEVIATION FROM TECHNICAL REQUIREMENT

- 6.1 This tender document provides guidelines for the processes and equipment to be used in tender package and the "basis of design" and the "standards and specifications", define the qualitative parameters against which equipment will be required to perform.
- 6.2 It is incumbent on bidder to provide a fully detailed list of equipment and Services, which they intend to provide a fully execute the contract inline with the tender document.
- 6.3 At various points in the tender the purchaser has stated that alternative Processes or alternative equipment will be considered. The bidder as part of the bid document shall provide the fully detailed list of such alternatives, together with a consider rationale for employing such alternatives.
- 6.4 Items, which deviate from the tender proposal, shall be as per design Specification of the bidder and shall be treated as a deviation from the text of this tender document. Deviated item should fulfill the minimum performance parameters as specified in the tender.
- 6.5 This tender does not allow bidders to make exclusions from any part of tender packages for which they bid, and an incomplete list of equipment or an incomplete schedule of services to be provided would be considered as a non responsive bid.

Table 3
Technical Deviation Statement Form

Sr. No	Clause Reference	Deviation	Remarks (Justification)
1			
2			
3			
4			

Above are the particulars of deviations from the requirements of the tender specifications. The technical specifications furnished in the bidding document shall prevail over those of any other document forming a part of our bid, except only to the extent of deviations furnished in this statement.

Date

Signature of Authorised Signatory of Bidder/Supplier

NOTE: Where there is no deviation, the statement should be returned duly signed with an endorsement indicating "**No Deviations**".



SECTION-V

Sub Section-V

7. OPTIONAL ITEMS

- 7.1 All items mentioned in the tender packages or in the basis of design as optional items shall be quoted on the basis of equipment of the systems that are supplied "ready to pipe in ". The price for such items shall include supply, installation, commissioning and connections including all necessary piping, fitting, instrumentation, controls, utilities etc.
- 7.2 The entire system shall be designed with all provisions to include the optional items in such a way that no major changes would be required in the system. The provision shall be made in the system irrespective of whether these additional items are supplied or not. The specifications of optional items shall be the same as that of similar items mentioned in tender.
- 7.3 The cost of optional items shall not be included in the calculation of total bid price. In the event that the purchaser, for supply, selects optional items, the quoted price for the optional item shall include all incidental costs of installing that item as part of the contract.



Section V

Sub Section-VI

Drawings, Data & Documents



1. DRAWINGS ENCLOSED WITH THE TENDER

A set of architectural drawings are enclosed along with the tender document for bidder's reference.

Proposed Automation Architecture is also enclosed.

2. DOCUMENTS REQUIRED FROM THE BIDDER

The Bidder must enclose the following Drawings with the Offer:

- Site Layout showing proposed services/amenities.
- Proposed machinery layout for all the Sections of the Ice-cream processing section. Machinery layout should also indicate the area and height requirement of the building.
- Product flow diagram including production equipment, service and product piping, controls instruments, automation, etc.
- CIP equipment arrangement and flow diagram.
- Utilities flow diagram including utility equipment, interconnection piping, controls, instruments, automation etc.
- Single line diagram for electrical distribution system.
- Control room configuration and layout to suit the space shown in tender drawing.
- Ice-cream storage and movement arrangements, justifying storage space requirement.
- The bid shall include layout, schematic and hydraulic flow diagrams, and general arrangement drawings for the units and equipment.

The Bidder must enclose the following Charts with the Offer

- Load histograms for:
 - a) Steam
 - b) Electrical Power
 - c) Water (soft & raw)
 - d) Chilled water (with IBT loading)
 - e) Ammonia Lines

Each histogram is to be based on 24-hours basis and is to show clearly the hourly consumption, total daily consumption, peak load and average load.

- Hourly equipment wise Time Schedule based on 24-hour time scale.



- Bar chart for project execution including personnel training programme.

The Bidders must enclose the following information in their Offer :

- Category wise staff requirement for various productions and utility Section of the plant on shift and daily basis.
- Literature covering general and technical information for all equipment covered within the scope of the tender.
- Detailed calculations for selection of process and utility equipment based on utility consumption and process requirements.

3. PERFORMANCE TESTS

The bidder is required to detail the documentation proposed for performance tests of all major items of equipment and all major processes and services plant. This shall detail the guaranteed vs. actual throughput or output or performance (as relevant) and the tolerance of accuracy. Also the test methods proposed to demonstrate that these guarantees have been met.

4. FORMATS OF GUARANTEES:

- Guarantees for throughput of various sections of plant.
- Product quality.
- Weight and Measurement tolerance.
- Milk solid loss
- Service consumption.
- Formats for performance tests.
- Procedure for carrying out the tests.
- Method of measurement
- Test duration
- Evaluation methodology

5. UTILITIES CONSUMPTION

The following tables are to be completed by the bidder and returned with bidding documents. This is mandatory and failure to comply may make the bid deemed non-responsive.



Utilities Consumption Data		
Steam	Peak Load kg/hr Total Load kg/day Tolerance \pm %	
Power	Peak Load kW Total Load kWh/day Tolerance \pm %	
Fuel oil	Peak Load lt/hr Total Load lt/day Tolerance \pm %	
Water	Peak Load lt/hr Total Load lt/day Tolerance \pm %	
Air	Peak Load Nm ³ /hr Total Load Nm ³ /day Tolerance \pm %	
Chilled Water	Peak Load lt/hr Total Load lt/day Tolerance \pm %	
Ammonia	Peak Load Total Load Tolerance \pm %	

6. DETAILS OF CONSUMABLE MATERIALS

Bidder is to provide full details of all consumable materials and chemical used in the plant.

Details of Consumable Materials		
CIP chemical	Lye 100%	
	Acids 100%	



Section V

Sub Section-VII

Criteria for

Technical Evaluation of Bids



1. TECHNICAL EVALUATION OF BIDS

- 9.1 The purchaser will evaluate and compare the technical merits of the bids based on the information supplied by the bidders taking in to account the following factors:
- 9.2 Suitability of the process with regards to ultimate product quality conforming to the standards specified in the tender.
- 9.3 Specifications of individual equipment as well as the system as a whole for material of construction, throughput, operating parameters, level of automation etc.
- 9.4 Energy efficiency of individual equipment and system as a whole.
- 9.5 Determination of filling accuracy of the product packaging machines and product losses.
- 9.6 Product losses during processing and product manufacturing for individual equipment and ultimately in the effluent system.
- 9.7 Consumption of consumable materials.
- 9.8 Space requirement.
- 9.9 Cost of spare parts.



Section V

Sub Section-VIII

Process Performance and Consumption Guarantees



1. PROCESS PERFORMANCE & CONSUMPTION GUARANTEE

If the plant or any part thereof does not give the agreed process performance and consumption guarantees during the warranty period due to reasons attributable to the supplier, the supplier shall, subject to clause 2 and 3 below, the action shall be as detailed therein.

2. EQUIPMENT PERFORMANCE

- The satisfactory performance of the equipment/processing plant will be considered achieved if the plant operates rated capacity declared by supplier in the offer.
- If the performance is between 95-98% of the rated capacity, penalty will be calculated at 2% of the rupee value of the contract, per 1% of shortfall.
- If the performance is below 95%, the contractor will be required to upgrade the plant or replace the plant to comply with the above performance criteria. Otherwise the plant will be deemed unacceptable.

3. SERVICES REQUIREMENT

- If measured demand of services in the plant is less than 102% of the consumption declared by the contractor, the buyer will accept that the service requirements have been achieved.
 - If the requirement of any of the services in the plant is between 102% and 105% of the declared demand, penalty will be charged at 2% of every 1% rise in consumption for each of the services which falls in the category of excessive demand. For the purpose of this calculation, only the main services, steam, power and chilled water will be considered.
- i. If the measured demand for services and energy is above 105%, the contractor will be required to up-grade the plant or replace the plant to comply with the declared performance criteria. Otherwise the plant will be deemed unacceptable

4. MAXIMUM LIABILITY

The maximum liability of suppliers on all counts of penalties including above, Liquidated Damages clause and other liabilities of any kind shall not exceed 10% of Contract value.



Section V

Sub Section-IX

Bidders Meetings



BIDDERS MEETINGS

- Details of the proposed pre-bid meeting are contained in instruction to bidders section- II. This will be general meeting at which all purchasers of the tender document may attend.
- Bidders may also request technical discussions with the AMULFED DAIRY, GANDHINAGAR / clients project team before the tender closing date. Subjects for discussion at the technical meeting may include:
 1. Project management
 2. Technical clarifications
 3. Scope of supply
 4. Concept of the design
 5. Processes
 6. Equipment designs
 7. Equipment suppliers
 8. Automation
 9. Plant management
 10. Quality control
 11. Existing equipment to be utilized in the job
 12. Battery limits
 13. Acceptable alternatives
 14. Equipment suppliers
- This will be the only opportunity for bidders to discuss the project in detail with AmulFed Dairy before the commercial bid opening, and all technical matters should be resolved at meetings.



Section-VI

Bidding Terms Deviation Statement Form			
Sr. No	Clause Reference	Deviation	Remarks (Justification)

Date:

Signature of Authorized Signatory of Bidder/Supplier

NOTE:

- Above are the particulars of deviations from the requirements of the bidding conditions/terms taken by the Bidder/Supplier.
- Where there is no deviation, the statement should be returned duly signed with an endorsement indicating "No Deviations" above.



Section-VII

BID FORM & PRICE SCHEDULE (To be furnished in the letterhead of the company)

Date

To ,

Dear Sirs,

Sub:

Ref:

Having examined the Bidding Documents, including the Addendum _____we, the undersigned, offer to supply and / or supply and deliver Goods and Services including installation and commissioning as detailed in the price schedule, in conformity with the said Bidding Documents including the technical specifications and drawings (except to the extent of deviation statement furnished in our bid) and the Conditions of Contract as mentioned in or referred to therein for the sum of: or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this bid and the said conditions.

We accept all the conditions of the Bidding Document in this Bid Form and this acceptance shall prevail over any other conditions, if any, given in our Bid.

We undertake, if our bid is accepted, to commence and complete delivery of all the Goods and Services as specified in the Schedule of Requirements of the Bid Document, from the date of receipt of your Purchase Order/Notification of Award.

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

We agree to abide by this bid for the period of 180 days from the date fixed for bid opening and it shall remain binding upon us and may be accepted any time before the expiration of that period.

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

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

Dated this day of 2015.

Duly authorized to sign bid for and on
Behalf of

Name of witness:



Price Schedule Form		
Summary Sheet		
SN	Summary Heads	Amount
1	2	3
1	Total Ex-factory, Packed	
2	Total Excise Duty	
3	Total Sales Tax/ WCT	
4	Transportation	
5	Insurance	
6	Total Supply Price delivered at Site (1+2+3+4+5)	
7	Total Installation & Commissioning	
8	Total Bid Price (6+7)	

Note:

1	Bid must be submitted strictly as per this pro forma (items break-up sheet shall be submitted in hard copy in sealed envelope at office address mentioned in IFB with marking of "DO Not Open Before")
2	Amount against Sr. No 1 to 3 & 7 must be the total worked out in items break-up sheet
3	Please quote charges for transportation (Sr. no 4) and insurance (Sr. no 5) as a percent of exfactory, packed (Sr. No 1)
4	List of Spares with unit prices, valid for one year, must be submitted
5	All the bidders have to submit price considering EPCG as well as considering Full custom duty. In all the cases all the responsibility till commissioning of the plant will remain of Bidder/Supplier.

Signature of Authorized Signatory of Bidder/Supplier



SECTION VIII
QUALIFICATION APPLICATION



Qualification Application Form

You must submit this form (Table 2 and 3), duly filled in, along with the supporting as per following checklist given in Table 1:



Table 1 Checklist for Supportings	
Supportings Required	Please (√)
Latest Balance sheet filed with (Name of Authority) on (Date)	
Latest Profit & Loss Statement from (date) to (date) filed with (Name of Authority) on (date).	
Audited copies 2of annual accounts and P & L account of past 3 years	
Certificate of Financial Soundness from Bankers of Bidder/Suppliers	
Income Tax Clearance Certificate (Latest)	
Sales Tax Clearance Certificate (Latest)	
Details of Income Tax Registration	
Details of Sales Tax Registration	
Organization Chart	
Annual Report of last three years	

² Indigenous Bidder/Suppliers must attach copy of accounts audited under section **44 AB of Income Tax Act**. In case the accounts need not be audited, a Chartered Accountant or Manager of a Nationalized Bank should attest the information in this statement.



Table 2 Financial Soundness			
General Information			
Name			
Address			
Phones			
Mobile			
Fax			
E-mail			
Contact Personnel with designation			
Financial Information			
S N	Description	Value (Rs)	
1	Cash Balance	In Bank	
		In Hand	
		Total	
2	Fixed Assets	Gross	
		Net	
3	Current Assets	Inventories	
		Others	
		Total	
4	Current liabilities	Bank Cash Credit	
		Sundry creditors	
		Others	
		Provisions	



		Contingent Liabilities (including claims not acknowledged, please specify)	
		Total	
5	Capital	Share capital	
		Free reserves	
		Other reserves (please specify)	
6	Term loans from financial institutions and banks		
7	Working capital		
8	Net worth		
9	Debtors and advances considered good	More than 6 months	
		Less than 6 months	



Significant Financial Ratios			
SN	Ratio	Definition	Value
1	Current	Current Assets to Current Liabilities	
2	Acid Test	(Cash + temporary investment held in lieu of cash + current receivable) / current liabilities	
3	Solvency	Total Liability to Net Worth	
Net Profit before Tax			
SN	Period		Value
1	Current period		
2	During the last Financial Year		
3	During the year before last Financial Year		
Financial Arrangements			
SN	Resources		Amount
1	Own		
2	Bank Credits		
3	Others (Specify)		



Sales			
SN	Category of Customers	Value of orders to be executed/ anticipated Sales	
		Current	Next Financial Year
1	Government Department		
2	Commercial		
3	Others		
	Total		
Annual Turnover			
SN	Financial Year (Please begin with current year)		Turnover
1			
2			
3			
4			
5			
6			



Table 3 Technical Competency		
Classifications		
SN	Category	Please (√)
1	Manufacturer	
2	Clearing & Forwarding Agent	
3	Stockist	
4	Wholesale Dealer	
5	Authorized Reseller	
6	Authorized Service Agent	
7	Retailer	
8	Trader	
9	Others (please specify)	
Details on Plant		
SN	Plant	Details
1	Location	
2	Description	
3	Type	
4	Size of building	
5	Is property on lease or free hold?	
6	If on lease, indicate date of expiry of lease in each case.	
7	Others (please specify)	



Plant Facilities			
SN	Facilities	Ans	Remark
1	Space available for manufacturing (in m2)		
2	Space available for storage (in m2)		
3	Space available for inspection (in m2)		
4	Are buildings fire resistant? (Y/N)		
5	Are premises approved by Municipal fire Department? (Y/N)		
6	Are buildings under Municipal fire protection?		
7	Are power & fuel supply adequate to meet production requirements? (Y/N)		
8	Are adequate transportation facilities available? (Y/N)		
9	Are safety measures adequate for performance of proposed contract? (Y/N)		
10	Is adequate material handling equipment available? (Y/N)		
Testing Facilities			
SN	Facilities	Details	
1	List testing equipment available		
2	Give details of tests to be carried out on items offered.		
3	Details of the testing organizations available.		
Quality Control Organization			
SN	Quality Control Method	Response	
1	Are goods offered subject to Batch Test, Random Sampling or full 100% test for		
2	Are tests carried out by factory employees or by a separate testing agency?		
3	Are independent Quality Control Organization checks made and certificates		
Manufacturing Capacity			



SN	Description of Equipment	Capacity	Units Manufactured		
			Current year	Last Year	2nd last year
1					
2					
Personnel/ Organization					
SN	Personnel in	Numbers in levels			
		Managerial	Supervisory	Skilled Workmen	
1	Production				
2	Marketing				
3	Installation and commissioning				
4	Service				
5	Spare parts				
6	Administrative				
Service Center nearest to our site location					
Location					
Phone no					
SN	Information required on		Details		
1	Number of skilled employees				
2	Number of unskilled employees				
3	Number of engineering employees				
4	Number of administrative employees				
5	List of special repair/ workshop facility available				
6	The storage space available for spare parts (in m2)				
7	Value of minimum stock of spares available at all				



	the service centres in respective currency	
8	List of the models/ types of equipment serviced by the Centre in last 2 years	



References ³						
SN	Name of Organization	Address, Telephone, Fax, Contact Person				
1						
2						
List of components usually subcontracted						
1						
2						
Workload for the current and forth coming financial year on quarterly basis						
SN	Financial Year	Quarterly Workload as % of Total Capacity				
		I	II	III	IV	
1	Current Financial Year					
2	Next Financial Year					
List of major projects of similar size and nature previously executed						
S N	Name of the client	Project	Year of award	Year of completion	Capacity/ Products	Value (Curren cy)
1						
2						
3						
4						
Type of equipment manufactured and supplied (M & S) during last 2 years						
SN	Equipment	Capacity	Qty	Projects	On Hand Order Qty	
1						

³ Names of two buyers to whom similar equipment are supplied, installed and commissioned in the past and to whom reference may be made by the AmulFed Dairy, Gandhinagar regarding the Bidder/Supplier's technical and delivery ability:



2					
3					
4					
Type of equipment manufactured, supplied, installed and commissioned (MSIC)					
SN	Equipment	Capacity	Qty	Projects	On Hand Order Qty
1					
2					
3					
4					
Schedules for furnishing technical data and certified drawings after receipt of orders					
1					
2					
Number of weeks required for preparing a bid proposal					



Section IX

Collaborators' Authorisation Form



Collaborators' Authorisation Form

Reference

Dated

Project Manager

AmulFed Dairy, Gandhinagar

Plot No. 35, Near Indira Bridge

Ahmedabad - Gandhinagar Highway

Vill.: Bhat

Dist.: Gandhinagar - 382428

Dear Sir,

Bid Reference: AFD/EXP/PKS/GHEE/2017

We, (Name of the Collaborator), an established and reputable supplier of Technology and goods (Name of Technoly & Goods) do hereby authorize (Name and address of **Agents**) to bid, negotiate and conclude the contract with you against Bid Reference: MD/EXP/PKS/2015/2 for the above technology & goods supplied by us.

No company or firm or individual other than (Name of your sole agent/ distributor) are authorized to bid, negotiate and conclude the contract in regard to this business against this specific Bid. (Strike out this, if not applicable)

We hereby extend our full guarantee and, warranty for the technology and goods offered for supply against this invitation for bid by the above firm.

Yours faithfully,

(NAME)

For and on behalf of

(Name of Manufacturers)

Note:

This letter of authority should be on the Letterhead of the Collaborators' concern and should be signed by a person competent and having the power of attorney to bind the Supplier.



Section X
Formats



Appendices I

Contents

1. Form of BG for Performance Security
2. Form of BG Against Advance Payment
3. Contract Form
4. Pro forma of Completion Certificate
5. Form of BG for Bid Security (EMD)
6. List of acceptable Banks for Bank Guarantees Nationalized / Scheduled Banks



Form of BG for Performance Security
(On the Non-Judicial Stamp Paper of Rs. 160/- as per the Stamp Act of State Government)

Bank Guarantee Number _____

Date: _____

This deed of performance guarantee made this _____ day of 20--- (Two thousand __) by (Name and address of the Bank) (herein referred to as the Bank) which expression shall unless repugnant to the context and meaning thereof includes its legal representatives, successors and assignees and the Gujarat Co-Operative Milk Marketing Federation Ltd. (hereinafter referred to as the AMULFED DAIRY, GANDHINAGAR) which expression shall unless repugnant to the context and meaning thereof include its legal representative, successors and assignees.

Whereas, AMULFED DAIRY, GANDHINAGAR/its clients has awarded a Contract and Purchase Order bearing Number __ dated _____ on (Name and address of the party) (hereinafter referred to as the 'Bidder/Supplier') for the supply/ supply and erection and commissioning of __. And whereas, the Bidder/Supplier has agreed to submit a performance guarantee in the form of a Bank Guarantee to the AMULFED DAIRY, GANDHINAGAR in terms and conditions of the Bidding Document and the Contract which will be kept valid up to __ calendar months from the date of Bank Guarantee (the period should be till end of warranty period). And whereas, the Bank and its duly constituted agent and officer has already read and understood the contract made between the AMULFED DAIRY, GANDHINAGAR and the Bidder/Supplier.

In consideration of the AMULFED DAIRY, GANDHINAGAR having agreed to award the contract/purchase order on the Bidder/Supplier, we, (name of the Bank), do hereby guarantee, undertake, promise and agree to with the AMULFED DAIRY, GANDHINAGAR, its legal representatives, successors and assignees that the within named (name of the Bidder/Supplier) their legal representatives and assignees will faithfully perform and fulfill everything within the Bidding Document and the Contract/Purchase order on their part to be performed or fulfilled, at the time (time being the essence of the contract) and in the manner therein provided, do all obligations thereunder and we further undertake and guarantee to make payment to the AMULFED DAIRY, GANDHINAGAR of Rs _ (Rupees __ only) being the 10% of the contract value, without any demur in case the Bidder/Supplier, their legal representatives and assignees do not faithfully perform and fulfill everything within the Bidding Document and the Contract/Purchase order on their part to be performed or fulfilled, at the time and in the manner therein provided and do not wilfully and promptly do all obligations thereunder.

In case, the Bidder/Supplier fails to perform or fulfill the Contract/ Purchase Order as per the terms and conditions agreed upon, the AMULFED DAIRY, GANDHINAGAR is entitled to demand an amount equal to 10% of the Contract value from the Bidder/Supplier and the demand made by the AMULFED DAIRY, GANDHINAGAR by itself will be conclusive evidence and proof that the Bidder/Supplier has failed to perform or fulfill his obligations and neither the Bidder/Supplier nor the Bank will be entitled to raise any dispute regarding the reasons for the failure of performance or fulfilment, on any ground.



We, (name of the Bank), do hereby undertake to pay an amount equal to 10% of the order value, being the amount due and payable under this guarantee without any demur, merely on a demand from the AMULFED DAIRY, GANDHINAGAR which has to be served on us before the expiry date of Bank Guarantee i.e. --/--/-- stating that the amount claimed is due by way of non-performance of the contractual obligations as aforesaid by the Bidder/Supplier or by reason of the Bidder/Supplier's failure to perform the said contractual commitments/Purchase Order, any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs -- (Rupees _ only) being the amount equal to 10% of the total order value.

We, (name of the Bank), further, agree that the performance guarantee herein contained shall remain in full force and effect for a period of -- calendar months from the date of Bank guarantee (the period should be till end of warranty period) and till the AMULFED DAIRY, GANDHINAGAR certifies that the terms and conditions of the said contract/ purchase order have been fully and properly carried out by the said Bidder/Supplier and accordingly discharge the guarantee, unless a demand or claim under this guarantee is made on us in writing by the AMULFED DAIRY, GANDHINAGAR on or before _ , we shall be discharged from all liabilities under this performance guarantee thereafter.

We, (name of the Bank), further agree with the AMULFED DAIRY, GANDHINAGAR that the AMULFED DAIRY, GANDHINAGAR shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Bidding Document and the Contract/Purchase order or to extend the time of performance by the said Bidder/Supplier from time to time or postpone for any time or from time to time and any of the power exercisable by the AMULFED DAIRY, GANDHINAGAR against the Bidder/Supplier and to forebear or enforce any of the terms and conditions relating to the said Bidding Document and the Contract/Purchase Order and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Bidder/Supplier, or for any forbearance, act or omission on the part of the AMULFED DAIRY, GANDHINAGAR to the said Bidder/Supplier by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

This guarantee shall be in addition to and without prejudice to any other securities or remedies which the AMULFED DAIRY, GANDHINAGAR may have or hereafter possess in respect of the goods supplied or intended to be supplied and the AMULFED DAIRY, GANDHINAGAR shall be under no obligation to marshal in favour of the Bank any such securities or funds or asset that the AMULFED DAIRY, GANDHINAGAR may be entitled to receiving or have a claim upon and the AMULFED DAIRY, GANDHINAGAR at its absolute discretion may vary, exchange, renew, modify or refuse to complete to enforce or assign any security or instrument.

The Bank agrees that the amount hereby guaranteed shall be due and payable to the AMULFED DAIRY, GANDHINAGAR on serving us with a notice before expiry of bank guarantee, requiring the payment of the amount and such notice shall be deemed to have been served on the Bank either by actual delivery thereof to the Bank or by dispatch thereof to the Bank by Registered Post at the address of the Bank.



In order to give full effect to the provisions of this guarantee the Bank hereby waives all rights inconsistent with the above provisions and which the Bank might otherwise as a guarantor be entitled to claim and enforce.

We, __, undertake to renew the Bank Guarantee provided the request for the Bidder/Supplier before the expiry of Bank Guarantee makes renewal.

We, __, (Name of the bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the AMULFED DAIRY, GANDHINAGAR in writing and the guarantee shall be a continuous and irrevocable guarantee up to a sum of Rs __ (Rupees __ only).

Notwithstanding anything stated herein before: (i) our liability under this guarantee is restricted to Rs __ (Rupees _ only) (ii) The Bank Guarantee shall remain in force till __/__/20__ and (iii) The Bank is liable to pay the guarantee amount or any part thereof under this Bank Guarantee only if the AMULFED DAIRY, GANDHINAGAR serves upon the bank a written claim or demand on or before __.

Signature

Seal
Code Number

Place:

Date:

Notes:

Bidder/Suppliers should ensure that the bankers, before submission of the bank guarantees, put seal and code number of the signatory.

Stamp paper is not required in case of foreign Bidder/Suppliers.

The value of stamp duty should be as per latest stamp act of local state government where the bank guarantee issued.



Form of BG Against Advance Payment
(On the Non-Judicial Stamp Paper of Rs. 160/- as per the Stamp Act of State Government)

Bank Guarantee Number _____

Date: _____

In consideration of the AMULFED DAIRY, GANDHINAGAR having agreed to grant an advance of Rs _ Rupees only) to M/s ___ (hereinafter called the said Bidder/Supplier) under the terms and conditions of an contract/purchase order Number ___ dated _ made between the AMULFED DAIRY, GANDHINAGAR and M/s _ for the supply/ supply, erection and commissioning (hereinafter called the `said contract/purchase order') on production of a Bank Guarantee for Rs _ (Rupees _ only). We ___ (hereinafter called `the Bank') do hereby undertake to pay the AMULFED DAIRY, GANDHINAGAR an amount not exceeding Rs _ (Rupees ___ only) against any loss/ damage caused to or suffered would be caused or suffered by the AMULFED DAIRY, GANDHINAGAR by reason of any breach by the said Bidder/Supplier(s) of any of the terms and conditions contained in the said contract/ purchase order.

We, ___, do hereby undertake to pay the amounts due and payable under this guarantee without any demur merely on a demand from the AMULFED DAIRY, GANDHINAGAR which has to be served on us before the expiry date of Bank Guarantee i.e. ___ stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the AMULFED DAIRY, GANDHINAGAR by reasons of any breach by the said Bidder/Supplier(s) of any of the terms and conditions contained in the contract/purchase order or by reasons of the Bidder/Supplier(s) failure to perform the said contract/purchase order, any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee shall be restricted to an amount not exceeding Rs _ (Rupees ___ only).

We, ___, further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said contract/ purchase order and that it shall continue to be enforceable till all the dues of the AMULFED DAIRY, GANDHINAGAR, under, or by virtue of the said contract/purchase order have been fully paid and it's claims satisfied or discharged or till the AMULFED DAIRY, GANDHINAGAR certifies that the terms and conditions of the said contract/Purchase Order have been fully and properly carried out by the said Bidder/Supplier(s) and accordingly discharge the guarantee unless a demand or claim under this guarantee made on us in writing on or before _ , we shall be discharged from all liability under this guarantee thereafter.

We, ___, further agree with the AMULFED DAIRY, GANDHINAGAR that the AMULFED DAIRY, GANDHINAGAR shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said contract/Purchase Order to extend time of performance by the said Bidder/Supplier from time to time or to postpone for any time or from time to time any of the power exercisable by the AMULFED DAIRY, GANDHINAGAR against the said Bidder/Supplier and to forbear or enforce any of the terms and conditions relating to the said contract/Purchase Order and we shall not be relieved from our liability by reason of any such variation, or extension or for any forbearance, act of omission on the part of the AMULFED DAIRY, GANDHINAGAR or any



indulgence by the AMULFED DAIRY, GANDHINAGAR to the said Bidder/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank agrees that the amount hereby guaranteed shall be due and payable to the AMULFED DAIRY, GANDHINAGAR on serving us with a notice before expiry of Bank Guarantee requiring the payment of the amount and such notice shall be deemed to have been served on the Bank either by actual delivery thereof to the Bank or by dispatch thereof to the Bank by registered post at the address of the Bank.

We, ___, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the AMULFED DAIRY, GANDHINAGAR in writing.

We, ___, undertake to renew the Bank Guarantee provided the request for the said Bidder/Supplier before the expiry of Bank Guarantee makes renewal.

Notwithstanding anything stated herein before: (i) our liability under this Bank guarantee is restricted to Rs. __ (Rupees __ only) (ii) The Bank Guarantee shall remain in force till ____20____ and (iii) The Bank is liable to pay the guarantee amount or any part thereof under this Bank Guarantee only if the AMULFED DAIRY, GANDHINAGAR serves upon the bank a written claim or demand on or before _____.

Signature

Seal
Code Number

Place:

Date:

Notes:

Bidder/Suppliers should ensure that the bankers, before submission of the bank guarantees, put seal and code number of the signatory.

Stamp paper is not required in case of foreign Bidder/Suppliers.

The value of stamp duty should be as per latest stamp act of local state government where the bank guarantee is issued.



Contract Form
(On the Non-Judicial Stamp Paper of Rs. 160/- as per the Stamp Act of State Government)

THIS AGREEMENT made the ___ day of ___ 2001 between AmulFed Dairy, Gandhinagar, through its (hereinafter "the purchaser") of the one part and ___ (hereinafter "the Bidder/Supplier") of the other part.

WHEREAS the Purchaser is desirous that certain goods and ancillary services should be provided by the Bidder/Supplier, viz (brief description of goods and services) and has accepted a bid submitted by the Bidder/Supplier in response to the Purchaser's Bidding Document Reference WR: PUR: LCB 02/2001 for the supply of those goods and services in the sum of Rs _ (Rupees ___) (hereinafter "the contract price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

In this agreement words and expressions shall have the same meaning as in the Terms and Conditions mentioned in Section III and Section IV and in other sections in the above-referred Bidding Document. The following documents shall be deemed to form, read and construe as part of this agreement:

- The offer and the price schedule submitted by the Bidder/Supplier and as accepted by the purchaser;
- The schedule of requirement/ list of items and the technical specifications in the above referred Bidding Document;
- The terms and conditions in the above-referred Bidding Document;
- The Purchaser's purchase order Number WR: PUR: ___ dated

In consideration of the payments to be made by the Purchaser to the Bidder/Supplier as hereinafter mentioned, the Bidder/Supplier hereby covenants with the Purchase to provide the goods and services and to remedy defects therein in conformity in all respects with the provisions of the Purchaser's purchase Order and Bidding Document.

The Purchaser hereby covenants to pay the Bidder/Supplier in consideration of the provision of the goods and services and the remedying of defects therein, the contract price or such other sum as may become payable under the provisions of the purchase order at the times and in the manner prescribed in the Purchase order and bidding document.

IN WITNESS whereof the parties hereto have caused this agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed and delivered by the authorized signatory for the Purchaser)



In the presence of:

- 1.
- 2.

Signed, sealed and delivered by the authorized signatory for the Bidder/Supplier)

In the presence of:

- 1.
- 2.



Pro forma of Completion Certificate
(To be issued by the purchaser after successful commissioning of the supplied goods)

Reference:

Date

Subject: Certificate of commissioning of supplied goods/ PLANT

This is to certify that the plant section as detailed below has been received in good condition along with all the standard and special accessories (subject to short supply mentioned) in accordance with the Contract/ Specifications. The same has been installed and commissioned. The Performance Test has been done to our entire satisfaction and operators have been trained to operate the plant. The Bidder/Supplier has fulfilled his contractual obligations satisfactorily (subject to unfulfilled obligations mentioned)

Completion Certificate		
S N	Item	Description
1	Contract Number & Dated	
2	Description of the plant	
3	Quantity	
4	Bill of Lading/ AWB (for Import Contract)/ LR/ RR & Dated	
5	Name of the vessel/ transporters	
6	Consignment Note Number & Dated	
7	Name of the consignee	
8	Date of Commissioning & Performance Test	



Details of short supply and recoveries to be made		
SN	Description	Amount to be recovered
1		
2		
Details of unfulfilled contractual obligations		
SN	Description	Amount to be recovered
1		
2		

Signature

Name, Designation & Stamp

Explanatory Notes for filling up the certificates on contractual obligations of the Bidder/Supplier

- Bidder/Supplier has adhered to the time schedule specified in the contract in dispatching the documents/ drawings pursuant to technical specifications.
- Bidder/Supplier has installed and commissioned the plant in time (within the period specified in the contract) from the date of the intimation by the Purchaser in respect of the installation and commissioning of the units.
- Training of personnel as per contractual obligation by the Bidder/Supplier has been done.
- In the event of documents having not been supplied or installation and commissioning of the plant have been delayed on account of the Bidder/Supplier, the extent of delay should always be mentioned.



Form of Bank Guarantee for Bid Security
(On Non-Judicial Stamp Paper of Rs. 160/- as per the Stamp Act of Local State Government)

Bank Guarantee Number:

Date:

This Deed of Guarantee made this ____ day of 20 ____ (two thousand and ---) by (Name and the address of the bank), hereinafter referred to as the Bank, which shall unless repugnant to the context and the meaning thereof include its legal representatives, successors and assignees and **the AMULFED DAIRY, GANDHINAGAR** which expression shall unless repugnant to the context and meaning thereof include its legal representatives, successors and assignees.

Whereas the AMULFED DAIRY, GANDHINAGAR has invited Bids for the supply/ supply & installation of _ by the Invitation to bid number MD/EXP/PKS/2015/1.

AND WHEREAS (Name and Address of the Bidder/Supplier) who having submitted their bids (hereinafter referred to as the Bidder/Supplier) and have agreed to deposit to the AMULFED DAIRY, GANDHINAGAR an amount indicated in the Invitation to bid as per the terms and conditions of the Bidding Documents. AND WHEREAS the AMULFED DAIRY, GANDHINAGAR is also willing to accept a Bank guarantee in lieu of payment by demand draft of an amount equivalent to the amount of Bid security required to be deposited by the Bidder/Supplier to the AMULFED DAIRY, GANDHINAGAR and the guarantee shall be kept **valid for 120 days** after the day of the opening of the bids.

In consideration of the AMULFED DAIRY, GANDHINAGAR having agreed to consider the Bid proposals having submitted by the Bidder/Supplier without depositing the amount of Bid security and against this Bank guarantee, we (name and address of the Bank) hereby undertake and guarantee to make payment to the AMULFED DAIRY, GANDHINAGAR the amount of Bid security or any part thereof not deposited by the Bidder/Supplier to the AMULFED DAIRY, GANDHINAGAR at any time (time being the essence of the Contract) when the AMULFED DAIRY, GANDHINAGAR asks for the same as per the terms and the conditions of the Bidding Document within 120 days from the date of opening of bids.

The Bank further undertakes not to revoke this guarantee during its currency except with the previous consent of the AMULFED DAIRY, GANDHINAGAR in writing and the guarantee shall be continuous and irrevocable guarantee up to a sum of Rs _ (Rupees _ only) provided always that any indulgence or forbearance on the part of the AMULFED DAIRY, GANDHINAGAR to the said Bidder/Supplier, with or without the consent of the Bank shall not prejudice or restrict remedies against the bank nor shall the same in any event be a ground of defence by the Bank against the AMULFED DAIRY, GANDHINAGAR.

In case the AMULFED DAIRY, GANDHINAGAR puts forth a demand in writing on the Bank for the payment of amount full or in part against this bank guarantee, the Bank will consider without demur that such demand by itself is a conclusive evidence and proof that the Bidder/Supplier has failed in complying with the terms and conditions stipulated by the AMULFED DAIRY, GANDHINAGAR in its Bidding Document and payment will be made to the AMULFED DAIRY, GANDHINAGAR without raising any disputes regarding the reasons for such failure on the part of the Bidder/Supplier.



The Bank shall not be discharged or released from this guarantee by any arrangement between the Bidder/Supplier and the AMULFED DAIRY, GANDHINAGAR with or without the consent of the bank or any alterations in the obligations of the parties or by an indulgence, forbearance shown by the AMULFED DAIRY, GANDHINAGAR to the Bidder/Supplier.

This guarantee shall be in addition to and without prejudice to any other securities or remedies which the AMULFED DAIRY, GANDHINAGAR may have or hereafter possess against the Bidder/Supplier and the AMULFED DAIRY, GANDHINAGAR shall be under no obligations to marshal in favour of the Bank any such securities or fund or asset that the AMULFED DAIRY, GANDHINAGAR at its absolute discretion may vary, exchange, renew, modify or refuse to complete or enforce or assign any security or instrument.

The Bank agrees that the amount hereby guaranteed shall be due and payable to the AMULFED DAIRY, GANDHINAGAR on serving us with a notice before expiry of Bank Guarantee requiring the payment of the amount and such notice shall be deemed to have been served on the Bank either by actual delivery thereof to the Bank or by dispatch thereof to the Bank by Registered Post at the address of the Bank.

In order to give full effect to the provisions of this guarantee the Bank thereby waives all rights inconsistent with the above provisions and which the Bank might otherwise as a guarantor be entitled to claim and enforce.

The guarantee shall remain in force until _ and the bank undertakes to renew the Bank Guarantee provided the Bidder/Supplier before the expiry of Bank Guarantee makes the request.

Notwithstanding anything stated herein before: (i) our liability under this guarantee is restricted to Rs _ (Rupees _ only) (ii) The Bank Guarantee shall remain in force till _ 20 _ and (iii) The Bank is liable to pay the guarantee amount or any part thereof under this Bank Guarantee only if the AMULFED DAIRY, GANDHINAGAR serves upon the bank a written claim or demand on or before _.

Place: SIGNATURE

Seal Code Number.

Note:

Bidder/Suppliers should ensure that the banker before submission of the bank guarantees puts the seal and code number of signatory.

Stamp paper is not required in case of foreign Bidder/Suppliers.

The value of stamp duty should be as per latest stamp act local state government from where the bank guarantee issued.



Bank Guarantees from Scheduled Banks

Bank Guarantee from all nationalized banks is acceptable. Other than the Nationalized Banks, BGs from the following banks shall also be acceptable:

1. Scheduled Banks:

- IDBI Bank
- ICICI Bank
- Axis Bank
- HDFC Bank
- Kotak Mahindra bank
- Yes Bank