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1. Request for Bids

1.1. Introduction

Jabalpur Sahakari Dugdh Sangh Maryadit (JSDSM) is intent to set-up an automated – State of the art Paneer Manufacturing Plant of 10 tpd capacity at Jabalpur (MP).

This is planned to increase product manufacturing capacity and improve product quality. Some of the existing equipment's shall also be moved in new building; bidder shall be responsible for design, supply, installation and commissioning of these equipment's also.

1.2. Qualification Criteria

Bidder / Supplier shall be preferred have requisite experience of installing fully Automatic Paneer manufacturing Plant

1.3. Submission of Bid

The bidder who obtain/download e-tender, are eligible for submission of bids in their name only. However, they have to deposit the cost of tender document i.e. Rs.1,000/- (Rupees one thousand only) online while downloading the tender document at <https://mptenders.gov.in>

1.4. Bid Security/ EMD

Each bid must be accompanied by bid security (Earnest Money Deposit – EMD as mentioned in clause no.2.9). The bids which are not accompanied with EMD shall be rejected. The bid security shall be paid on line at <https://mptenders.gov.in> while uploading bid document.

1.5. Bid Opening

This is 02 bid system composed of technical bid and commercial bid. The technical bids will be opened initially for evaluation as per tender specifications and other requirement as per assessment criteria.

The commercial bid of only that bidder/supplier whose technical offers are receptive shall be accepted and shall be invited to attend the tender opening.

1.6. Bid Validity

Bid shall be valid for a period of 90 days from the date of tender opening.

2. Instruction to Bidder / Supplier

2.1. Cost of Bidding

The supplier shall incur all costs associated with the preparation and submission of its bid, and JSDSM in no case shall be responsible for any cost incurred by supplier / bidder.

Tenderers are advised to visit JSDSM, Dairy Plant to study the New building layout to analyze all requirements before submitting the tender.

2.2. Pre bid meeting

The bidder or his authorized representative is advised to be present at a pre-bid meeting which will take place at the office of JSDSM, Jabalpur on dated 05/04/2019.

2.3. Documents composing the Bid

2.4. Technical Bid:

- ✓ Documentary proof to qualify the eligibility criteria
- ✓ Bid Security (Earnest Money Deposit)
- ✓ Technical Data related to the system offered
- ✓ All technical data, drawing and details required as per tender document
- ✓ Tender document each page sealed and signed as token of acceptance to each and every terms and conditions.

2.5. Commercial Bid:

- ✓ Bid form filled

2.6. Bid price

Price indicated on the price schedule shall be inclusive of all taxes and other expenses like

- GST
- Packing and forwarding
- Freight
- Insurance
- Loading and unloading

2.7. Bid Currency

All prices shall be quoted in Indian rupees ONLY

2.8. Documents for Bidder / Suppliers qualifications

- ✓ All documents (Work order copy, completion certificates) related to the previous executed projects for Automated Paneer Plant
- ✓ All documents pertaining to the experience similar work execution in last 3-5 years
- ✓ Copies of original documents defining registration, Type of firm (firm / partnership etc.), legal status, location of registration etc.
- ✓ Reports on financial position of bidder / supplier such as profit and loss statements, balance sheets, and auditor's report of last 3 years, banker's official document certifying bidder.
- ✓ Information concerning any present litigation in which bidder / supplier is involved.

2.9. Earnest Money Deposit (EMD)

- ✓ The bid security of Rs.15,00,000/- (Rupees Fifteen lakhs only in INR) shall be paid on line at <https://mptenders.gov.in> while uploading bid document.
- ✓
 - **Unsuccessful bidders shall be returned their EMD at earliest**
 - **EMD may be forfeited**
- ✓ If successful Bidder / Supplier fails/denies to perform work
- ✓ If any bidder / supplier withdraws its bid during the bid validity period

2.10. Submission of Bid

The bidder / supplier shall submit bid in 02 separate part:

Part-I - duly marked as "TECHNICAL BID" –all the bid document to be uploaded related to Technical bid along with signed and stamped tender document as token of acceptance of all the tender terms and conditions.

AND

Part-II "COMMERCIAL BID" as per bid format

3. Special Conditions of Contract

3.1. INTENT OF SPECIFICATION

The solution specified herein is intended for Design, Installation, commissioning and trial run of 'New Automated Paneer Manufacturing Plant' on turn-key basis.

3.2. GENERAL INFORMATION

Any material or accessories which may not have been specifically mentioned but which is necessary for usual, satisfactory and trouble-free operation for Automated Paneer Manufacturing Plant, shall be furnished by the supplier without any extra charge to JSDSM.

3.3. SCOPE OF WORK

Include design, supply, installation, commissioning, user training and trial run of Automated Product Dairy at JSDSM, Dairy Plant premises on turn-key basis.

3.4. SCOPE OF SUPPLY

Following main component shall be supplied:

3.4.1. Shall be as per Bill of Material (BOM) in the tender document

3.4.2. Drawing & Documents including input drawing and loading data.

3.4.3. Software solution (SCADA, MES and MIS) with graphical representation of all processing patterns along with the standard and other features required by the dairy and engineering department.

3.4.4. Software solution (SCADA, MES and MIS) should have the network, reporting, Production Planning, Production execution and Production analysis capability for real-time operation.

3.4.5. Deputation of engineering team for checking the correctness of Engineering work pertaining to the existing (already constructed) building.

3.4.6 Any other items required for installation and commissioning of entire system

3.4.7 Instruction manual of the entire system.

3.5. SCOPE OF SERVICES

- 3.5.1. Furnishing of all labour, skilled and unskilled, supervisory and administrative personnel, erection tools and tackles, testing equipment, supplies, consumables etc. and hardware for timely and efficient execution of the erection work.
- 3.5.2. Complete assembly, erection, connections, testing and commissioning, putting into successful and satisfactory commercial operations of all above equipment's.
- 3.5.3. The items of work to be performed on all equipment and materials shall include but not limited to the following:
- Receiving, unloading and transport at site. (To Dairy stores and from there up to actual place of erection).
 - Opening, inspecting and reporting all damages and short supply items.
 - Arrange to repair and / or re-order all damages and short supply items.
 - Storing at site with suitable all-weather protection (place for storage shall be provided by JSDSM).
 - Assemblies, erection and complete installation.
 - Final check-up, testing and commissioning in presence of JSDSM's representative.
 - Trial run for THIRTY (30) days, rectification of defects, if any and adjustment as necessary.
 - Obtaining JSDSM's written acceptance of satisfactory performance.

3.6. COMPLETENESS

- 3.6.1. It is not the intent to specify completely herein all details of the work. Nevertheless, work shall be complete and operative in all aspects.
- 3.6.2. Any material or accessories which may not have been specifically mentioned but which is necessary for usual, satisfactory and trouble free operation of the system, shall be furnished by the supplier without extra charge to JSDSM.

3.7. INFORMATION REQUIRED FROM BIDDER / SUPPLIER

3.7.1. Along with the Offer

- 1) Experience related to the similar work performed for the dairy industry and capability demonstration before the technical committee.
- 2) Typical drawing of all equipment, piping and instrumentation to be supplied and disposition of various fittings and loadings.
- 3) Proposed P&I drawing for process section including all details for
 - Milk receiving Section
 - Pre-Processing Section
 - Automated Coagulation section
 - Paneer Mould conveying system
 - Raw Milk, Milk Process Valve Clusters modules

- CIP system Drawing along with miscellaneous destinations like -
 - Tank CIP, CIP of all pipe lines including Milk receiving and Return Milk lines
- 4) I/O Details of DDC panel and I/O distribution details across the process section.
 - 5) All annexure of this specification duly filled in and signed by the supplier.
 - 6) Catalogue of all equipment and components explaining construction features
 - 7) Software (SCADA), MES (Manufacturing Execution System) and MIS (Management Information System):
 - Software architectural, information flow drawing and sufficient details.
 - Higher level and lower level design of software which includes from modular level layout i.e. soft and hard copy of all the proposed screens of software for approval. And database schema design with each table's description.
 - Detailed document for specifying the functional aspects of software in reference to the routine plant activities. And network compliance features.
 - Details related to the complex features like Milk standardization calculation, Kg. Fat / SNF cross audit, HACCP compliant Reports, Pre-Heater control in abnormal situations, CIP Recipe configurations etc.
 - 8) Transportation / shipping dimensions and weights, space required for handling parts for maintenance.
 - 9) Detailed documents related to Effectiveness, accuracy and Benefits provided by the whole system.
 - 10) Type test certificates for all equipment on similar type of equipment.
 - 11) Demonstration capability details.

3.7.2. **After award of offer**

- 1) Dimensional general arrangement (GA) drawing of all equipment to be supplied showing disposition of associated fittings & accessories and cable entry, space requirement etc.
- 2) Bill of materials, control schematic, line diagram for Electrical and PLC/DCS panel, terminal connection, wiring diagram with physical location of components for all equipment.
- 3) Project execution schedule as per details mentioned under Project Management head
- 4) Cable and power layout drawing.
- 5) Fitting arrangements, plant and loading details.
- 6) Test certificates of main equipment's.
- 7) Any other relevant data or drawings.
- 8) Test report of all tests carried out at site.

3.8. PROJECT COMPLETION SCHEDULE

Time of Completion: 6-8 (Max) Months

3.9. OTHERS

Submission of Drawing and Software details for approval: Along with the tender Tender Offer to be submitted to: CEO JABALPUR SAHAKARI DUGDH SANGH MARYADIT, Jabalpur

Pre-bid date 05/04/2019 at 1.00 pm

Last date of purchase of tender 09/04/2019 up to 5.00 pm

Last date of acceptance of tender: 10/04/2019 up to 2.30 pm

Date of Opening of tender:
(For Technical Bid) 10/04/2019 at 3.30 pm

(For Financial bid) Shall be notified

Prices: Shall be FIRM and shall include: Basic Price, Packing and Forwarding, Excise Duty, Sales Tax, Freight up to site, Insurance, Octroi and Other duties.

3.10 PENALTY ON LATE COMPLETION

The time period to complete the work should be strictly adhered. In case they are not followed or in case of delay in execution or non-execution of the order, the JSDSM reserves the right either to cancel the order and make alternative arrangement from other sources at the risk and cost and expenses of the Tenderer. In case the Tenderer delay in completion of the work as per schedules, the liquidated damages will be charged as under:

S.No.	Duration of delay	Liquidated damages
1.	Upto 15 days	1%
2.	Between 16 to 30 days	2%
3.	Beyond 30 days	5%

3.11 VARIATION IN QUANTITY

The JSDSM management shall have right to delete or increase/decrease quantity specified in this specification.

3.12 CO-ORDINATION

3.12.1 The supplier shall co-ordinate with JSDSM Project team at site for execution of his part of work.

3.12.2 The Supplier shall at all times work in close co-ordination with the JSDSM supervising personnel and afford them every facility to become familiar with erection, maintenance and working of the equipment.

3.13 AS BUILT' DRAWINGS

The supplier shall mark in red on one (1) set of drawing all deviations / alterations, not shown on drawings but carried out at field. After completion of work the supplier shall furnish four (04) sets of print and one copy of reproducible soft copy of 'As Built' drawings of Piping & Instrumentation Drawing, Equipment and Instrumentation disposition layout, control schemes, software (HMI / PLC) etc. including drawings of equipment supplied under this specification incorporating all changes carried out at site.

3.14 PROTECTION TO WORK

The supplier shall effectively protect at his own expense, such work, equipment or material as may be liable to damage, theft or tampering during erection. Insurance charges etc. for the above shall be borne by the supplier till handing over of complete installation to the JSDSM as per terms and conditions of contract.

3.15 GUARANTEE

At the close of the work and before issue of final certificate of virtual completion by JSDSM, the supplier shall furnish a written guarantee indemnifying the JSDSM against defective materials and workmanship for a period of **18 months** after completion. The supplier shall hold himself fully responsible for re-installation or replacement free of cost to JSDSM.

NOTE: Warranty on Valve Actuator - All Sanitary pneumatic valves shall support minimum 5 years warranty on actuator.

3.16 FORCE MAJEURE

The terms and conditions mutually agreed upon shall be subject to the purchaser shall be considered in default in performance of its obligations here under, if such performance is prevented or delayed because of war, hostilities, revolution, civil commotion, strike, epidemic, accident, fire, wind, flood, earthquake or because of any law, order proclamation, regulation or ordinance of any government or any nature, beyond the reasonable control of the party affected. Should one or both of the parties be prevented from fulfilling his/their contractual obligations by state of force majeure lasting continuously for a period of six months, the two parties should consult with each other regarding the future implementation of the contract of the purchase order.

3.17 ARBITRATION

In the event of any dispute in the interpretation of the terms of the agreement/purchase order or difference of opinion between the parties or any point in the purchase order arising out of, or in connection with the agreement/ accepted purchase order or, with regard to performance of any obligation here under by either party, the parties hereto shall use their best efforts to settle such disputes or difference of opinion amicably by mutual negotiations.

In case, no agreement is reached, a notice in writing of the existence of such question, dispute, or difference of opinion and the same shall be referred to the Arbitrator i.e. **Chairman**, Jabalpur Sahakari Dugdh Sangh Maryadit, Jabalpur and his decision will be final and binding on the parties as per the provisions of the Indian Arbitration Act, 1940, and the rules there under or any statutory modifications thereof for the time being in force. In this agreement/purchase order, venue of all such arbitrations shall be JABALPUR.

3.18 TERMS OF PAYMENT

- a) 30% Advance against Bank Guarantee
- b) 50% payment after receiving of material at site
- c) 10% payment shall be made after satisfactory installation & commissioning

- d) 10% payment shall be made after 3 months of use and after submission of performance security in the form of BG (as per the format attached)/DD/banker's cheque.

Income Tax at source will be deducted wherever applicable as provision of I.T. Act 1961 as amended from time to time.

3.19 PERFORMANCE SECURITY DEPOSIT

Performance Security deposit @ 10% shall be kept towards security deposit and this amount will be refunded after completion of guarantee period of 12 months (twelve months) from the date of completion of successful production trial to the satisfaction of CEO, JDS.

- 3.20** Due weightage shall be given to the past experience, effectiveness, efficiency of the system with benefits and advantages etc.
- 3.21** The supplier shall arrange for insurance etc. of his people employed for erection and installation work as per ESIC act workman compensation and any other provision to meet statutory requirement of various labor Act / Rules. In case of accident to any of the workers during the period of installation, JSDSM shall not bear any liability whatsoever the entire responsibility primary and final in this respect will be that of supplier.
- 3.22** Supplier shall be responsible for following all kinds of safety rules and regulations during installation and commissioning work. Like wearing safety belts, helmets, gloves etc.
- 3.23** Technical committee of JSDSM may visit project already implemented by vendor; and may ask end customer's view about implementation and overall effectiveness of complete system
- 3.24** JSDSM management reserves the right to accept or reject any / or all the tenders without assigning any reason thereof.
- 3.25** For any technical clarification / interpretation decision of CEO,(JSDSM) shall be final.
- 3.26** Lowest price shall be considered on totality basis. Break-up price shall be for indication purpose but it is mandatory to be filled.
- 3.27** For Disputes if any decision of JSDSM management shall be final.

DESIGN CRITERIA

1. INTRODUCTION

In general plant is designed considering the following:

S.NO.	PARTICULAR	DATA
1.	Milk In take – Type	Raw / Pasteurized
2.	Milk Fat Content	3 – 6.5%
3.	Milk Solids not fat content	7.5 – 9.0%
4.	Plate count less than	5 million/ml
5.	Temperature	8-10 Degree C
6.	PH	6.65 – 6.75

The Raw/Processed Milk shall be used for manufacturing of Paneer. Milk shall be taken into receiving Tanks (Qty – 02 Nos., Capacity – 15 KL)

Milk from receiving tanks can be directly sent to Pre-Processing g operation and later shall go to automatic coagulation.

All Milk, CIP and water flushing movement shall be part of full-scale automation system.

A Single circuit fully automatic CIP system is envisaged to cater the need of CIP related operations of entire processing routes.

All the plant operations including CIP operation shall be controlled by suitable DCS/PLC back bone centralized automation system. The automation system shall comprise of hardware's like UPS, Heavy duty Workstations, PLC CPU, digital & analog I/O systems, software, MIS system etc.

2. DESIGN BASIS

In general, the plant is designed considering the following:

- ✓ State of art Process Technology comparable with the best in the industry
- ✓ Advanced and sophisticated Instrumentation & Control
- ✓ Distributed Control system-based Automation along with the real time process optimization
- ✓ Minimum Energy consumption & Product losses.
- ✓ The Plant shall be capable of producing 10,000 Kgs of Paneer in maximum 20 Hours for 12/10/5 kg block.(Dimension to be given by bidder for size of mould as per design of paneer press).

MECHANICAL WORKS

1. Scope

General installation i.e. positioning and installing all the production and miscellaneous equipment's as per approved layout and as per the contract.

2. General Installation

2.1. Positioning of Equipment

2.1.1. 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. VENDOR/CONTRACTOR shall provide all required foundation engineering drawings to make civil foundations. No equipment shall be permanently bolted down to foundations or structure. VENDOR/CONTRACTOR shall provide all necessary foundation / anchor bolts and bedplates if required without extra cost if anything specific is not provided with standard equipment.

2.1.2. VENDOR/CONTRACTOR 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 to the work but also for the protection of surrounding plant and equipment. VENDOR/CONTRACTOR shall take out and remove any or all such centering, scaffolding, staging planking etc.

2.1.3. 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 considerations.

3. Service Piping Installation

3.1. General Guidelines

All piping's shall comply with latest editions of the following regulation.

- All applicable Indian standards.
- All applicable State government / central government laws / acts.

3.2. Scope of Supply

VENDOR/CONTRACTOR shall supply all piping materials like pipes, fittings, flanges, measuring instruments and all other items as per P&I diagram. All the pipes & fittings and insulation material etc. shall be of class A and make specified in offer.

3.3. Scope of Piping erection

- The scope of erection for piping, includes all system covered in the flow diagrams and specifications. VENDOR/CONTRACTOR's work commences / terminates at the pipe connections with valves or flanges as specified in flow diagram.
- VENDOR/CONTRACTOR 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.
- VENDOR/CONTRACTOR shall perform necessary internal matching of pipes for installing orifices, flow nozzles, control valves etc.

3.4. Testing of Piping

- VENDOR/CONTRACTOR shall test all piping systems including valves and specialties and instruments as per procedure
- All piping shall be internally cleaned and flushed by VENDOR/CONTRACTOR after erection in a manner suited to the service.
- For hydrostatic testing and water flushing, VENDOR/CONTRACTOR shall furnish necessary pumps, equipment, instrument and piping etc.

3.5. Other Guidelines

- 3.5.1. Color code shall be used to identify pipe material. VENDOR/CONTRACTOR shall be able to identify on request all random piping prior to field fabrication.
- 3.5.2. VENDOR/CONTRACTOR shall be responsible for the quality of welding done by them and shall conduct tests to determine the suitability of the welding procedure by us.
- 3.5.3. All piping supports, guides, anchors, hangers, rollers with structural framework shall be supplied and erected by VENDOR/CONTRACTOR.
- 3.5.4. 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 building structural limitations.
- 3.5.5. Anchors and /or guides for pipelines or for other purposes shall be furnished, when specified, for holding the pipelines 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.
- 3.5.6. 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 outer surface, which will affect serviceability of pipes.
- 3.5.7. 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.

4. Cleaning chemicals and Lubricants

- 4.1. The necessary quantities of cleaning chemicals, lubricants etc., required for the installation, commissioning, testing and start-up of all the supplied equipment's till handing over shall be supplied by VENDOR/CONTRACTOR at NO EXTRA cost.

5. Testing, Commissioning and Start-up

- 5.1. VENDOR/CONTRACTOR shall operate, maintain and give satisfactory trial run of the plant for the design product satisfactorily for a minimum period of one week or as mutually agreed by JSDSM of the plant at the rated output. VENDOR/CONTRACTOR shall carry out all rectification of defects (if any in equipments supplied by VENDOR/CONTRACTOR) and routine trouble shooting during commissioning.
- 5.2. During this period, VENDOR/CONTRACTOR shall incorporate / execute necessary minor modifications during the trial period for maximizing operational efficiency. VENDOR/CONTRACTOR shall also execute minor modifications as may be suggested by JSDSM.

6. The Commissioning shall include

- 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 all service lines.

- ☑ 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.

7. Trouble shooting during the trial period

- ➔ VENDOR/CONTRACTOR shall demonstrate proper working of all mechanical, electrical, automation and software related systems.
- ➔ After satisfactory commissioning and start-up VENDOR/CONTRACTOR shall keep representative under whose supervision Staff of JSDSM shall be operating and maintaining the plant and equipment's for a minimum period of one month. VENDOR/CONTRACTOR representative shall be present at all times during the running and operation of plant and equipment's and attend any works required to be done and shall also take complete responsibility for proper operation and maintenance of complete plant and equipment.

8. Training of Personnel

- ✓ VENDOR/CONTRACTOR shall be providing beforehand training to the staff deputed by JSDSM before actually starting the commissioning activities.
- ✓ Training activities shall continue during the installation, testing, commissioning and start-up period and training tenure shall be extended for a minimum period of one month from date of commissioning and Start-up.

Mechanical Works - Table – C

TESTING PRESSURES FOR VARIOUS PIPELINES					
S.NO.	NAME	TEST PRESSURE KG/CM2	TEST MEDIUM	DURATION OF TEST (HOUR)	ALLOWABLE PRESSURE DROP (KG/CM2)
1.	SS Pipes for dairy	6	Water	½	0
2.	Air (Inside Process Section)	12	Air	8	0.1

JSDSM shall provide water at available supply point from which VENDOR/CONTRACTOR shall connect temporary piping for testing water.

ELECTRICAL WORKS

1. Scope

- 1.1. The intent of this specification is to define the installation, testing and commissioning of electrical systems like Electrical Panels, Power and Control cables, remote push button stations, motors, earthing network etc.

2. Standards

- 2.1. The work shall be carried out in the best workmanship in conformity with these specifications, the relevant specification / codes of practice of the Bureau of Indian Standards, approved drawings and the instructions issued by the engineer in-charge or authorized representative of JSDSM. Some of the relevant Bureau of Indian Standards is listed in Table-1
- 2.2. In addition to these standards, all work shall also confirm to the requirements of the following
 - 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
 - Installation and operating manuals of original manufacturer of equipment

3. Equipment and accessories specifications

- 3.1. This defined specifications and requirements mainly for the equipment and accessories which are going to be supplied by TENDERER
- 3.2. All materials, fittings and appliances to be supplied by TENDERER shall be of best quality and shall conform to the specification given in this proposal.
- 3.3. All similar materials and removable parts shall be uniform and interchangeable with one another

4. Constructional features

- 4.1 Metal enclosed unit shall comprise of rigid welded structural frame enclosed by 14/16 gauge thick cold rolled metal sheets, structural frame work with foundation/fixing bolts etc shall be provided at the bottom to mount panel directly on concrete/steel channel base. Panel body shall be of 14 swg doors 16 swg.
- 4.2 Switch gear shall be fully compartmentalized, separate segregated compartment of metal partitions shall be provided for breakers., DOL, Star Delta starter, VFD, switch fuse unit, protections relays indication instrument and cable boxes.
- 4.3 Switch gear plate should be provided with removable cable gland plates of 16 swg sheet cable entry shall be bottom rear side unless otherwise specified.
- 4.4 The gland plate should have punched holes suitable for cable glands as per cable schedule given by switch gear construction and components shall be such purchases that to make further extensions readily possible on either side.
- 4.5 Separate cables shall be provided for switchgears cubicles, relays instruments, switches etc. and one danger board in the front and back shall also be provided
- 4.6 Panel switch gear shall be dust, moisture and vermin proof. All doors removable covers shall be gasket all round with neoprene gaskets and all louvers shall have screens and fibres.
- 4.7 All knobs should be Quarters Tern Type, side covers sided type and compartment and back covers should be open able – hinged type

- 4.8 Painting shall include insulation cleaning, picking with dilute acid, washing and running by water, phosphate and over drying. One coat of zinc chromate primer and 2 coats of synthetic enamel power coating.
- 4.9 All equipments in front of panel shall be flush type, cut outs, if any provided for mounting further equipments, the same shall be properly blanked off

5. Cable Glands

These shall be provided at both ends of armored / unarmored electrical cables. Cable glands shall be manufactured as per performance requirements of BS 6121 amended as on date, with BRASS material accurately machined and nickel finish. Double compression cable glands complete with check nut, gland body, 3 nose metal washers and outer seal rubber ring and compression nut. Double compression glands complete with checkout, gland body, neoprene, outer ring, armor clamping nut, neoprene outer ring, skid washer & outer seal nut. For instruments MOC of cable glands shall be polyamide.

6. Cable Connectors

Cable connectors, lugs/sockets, shall be copper / aluminum alloy, suitably tinned, solder 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.)

7. Cable Route Makers

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.

8. Cable, Wire Indicators

Individual symbols / numbers on yellow strips of glossy PVC should be used for each cable / Wire indicator

9. Pipes for Cables

- 4.1 For laying cables under floor, GI class 'A' pipes shall be used. For laying cable in air where cable trays are not being used SS 304 pipe (1.6 mm thick) shall be used (This shall be limited to Milk Processing Hall or any other area related to Milk Processing activities). In area (other than Milk processing) MS 'B' Class pipe shall be used. Size of pipe shall depend upon the overall outer diameter of cable to be drawn through pipe. 40% area of pipe shall be free after drawing of cable.

10. Motor Isolators

- 4.1 These shall be in aluminum cast / polymer based 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 SS-304 motor isolators shall be used and shall have enclosure weather protection at IP-65 level. Final finish of SS 304 shall be Matt (150 grit) and for aluminum housing shall be powder coated gray.

11. Control Junction Box

- 4.1 These shall be SS – 304 . Completely dust, vermin and weather proof (IP 65 weather protection).

12. Remote Push Button Stations

- 4.1 These shall be used for remote OFF for motors, away from MCC. These shall be

suitable for surface / structure mounting in cast SS - 304 based housing having IP-55 class of weather protection. For Dairy's process area SS-304 based push button shall be used.

- 4.2 Riveted type bi-color Aluminium name plate shall be provided for each feeder.
- 4.3 For outdoor installation suitable canopy shall be provided.

13. Erection of Equipment

- 4.1 The cases containing equipment shall be handed over to JSDSM. TENDERER shall be making their own arrangements for safe transportation of all the items to 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 engineer in-charge (from JSDSM side). These empty packing cases shall be returned to the space identified by engineer in-charge and any document (if found) with the equipment shall be handed over. Any damage or shortage noticed shall be reported to engineer in-charge in writing immediately after opening of packaging cases.

14. Power control Centers, distribution Board, control Panels and Bus ducts

- 4.1 Erection: TENDERER shall deliver electrical panels and bus ducts in convenient shipping section. TENDERER shall be responsible for final assembly and inter-connection of bus bars/wiring. TENDERER shall grout foundation channel in the flooring.
- 4.2 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 and shall be supplied by TENDERER. TENDERER shall not charge anything extra for supply and labor for such replacements.
- 4.3 Testing: Before electrical panel is energized, the insulation resistance of each bus shall be measured from phase to ground. The insulation of all DC control circuits shall be measured from line to ground. Tests shall be performed on all circuits
- 4.4 TENDERER shall 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 closing circuit, wherever provided by simulating conditions that would cause 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.
- 4.5 All electrical equipment alarms shall be tested for proper operation by causing alarm to sound under simulated abnormal conditions.

15. PANEL WIRING

- 15.1 Panel shall be supplied completely wired internally to equipment and terminal blocks and ready for purchases external cable connection at the terminal blocks when panels are to be mounted adjacent to each other all inter panel wiring and connection between panels shall be furnished by vendor.
- 15.2 All wiring shall be carried out with 650 V grade, single core stranded copper wires PVC insulated. The minimum size for all control circuit should be 1.5mm² copper and for CT circuit 2.5 Sq.mm copper.

- 15.3 Wire termination shall be made with crimping type of tinned copper lugs which firmly grip the conductor and insulation. Insulated sleeves shall be provided at the wire termination. All wire should have marking by ferrules at both side of each wire.
- 15.4 All the wire directly connected to the trip circuit of breaker/or any trip device shall be distinguished by the addition of a red coloured unlettered ferrules
- 15.5 Terminal blocks shall be 650V grades, 10 amps complete with insulated barriers, marking on the terminal strips shall correspond to wire number on the wiring diagram.
- 15.6 Terminal blocks for CT & Voltage shall be provided with test links and isolating facilities. The CT secondary leads shall be provided with short circuiting and earthing facilities
- 15.7 All least 15% spare terminals shall be provided on each terminal block.
- 15.8 All spare contacts and terminals of the panel mounted equipments and devices shall be wired to terminal block.
- 15.9 All starters contact wires of over load relay push button, power contactors and timers brought on connector strip and looping of contacts to be carried out on connector strip.

16. Erection and Testing of Motors

- 4.1 Erection and coupling of motors with machine 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 motor will be measured and recorded by TENDERER. The direction of the rotation of motor shall also be checked before the driven equipment is finally coupled. Motor bearing shall be checked and rectified including supply and changing of grease if required.
- 4.2 Before connecting power cables to motors the insulation resistance of all motors windings shall be measured. Measurement shall be repeated after power cable terminations are completed and before first charging.
- 4.3 Motor shall be operationally tested together with starting gear and auxiliary apparatus such as push button stations, the contactor, level and pressure controls, signals and alarm apparatus, power and control circuit etc.
- 4.4 TENDERER shall run all motors uncoupled for a maximum period of 4 hours before the driven equipment is placed in regular service.
- 4.5 All outdoor installed motors shall be shrouded with cover made of 14 gauge GI sheet with lifting hook.

17. Installation of Cable Network

- 4.1 Cable network shall include power, control cables which shall be laid in underground trenches, Hume pipes, open trenches, cable trays, GI pipes or on building structure surfaces. Supply installation of cable trays, GI pipes/conduits, cable gland sockets at both ends, isolators, junction boxes, remote push button stations etc. shall be under the scope of TENDERER.

18. Handling of cables

- 4.1 Before laying cables, TENDERER shall test each cable 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 meter.
- 4.2 The cable shall be supplied at site, wound on wooden drum as far as possible. For smaller length and sizes, cables in properly coiled form are supplied. The cables shall lie by mounting the drum on drum carriage. Where 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.

- 4.3 Sharp bending and kinking of cable shall be avoided.
- 4.4 While drawing cables through GI pipes, conduits, RCC pipe, ensures 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.
- 4.5 A/C cable (230 V and above) and other control cables shall be separated from each other by adequate spacing or running through independent pipes/trays.
- 4.6 Armored cables shall never be concealed in walls / floors/ roads without GI pipe conduit pipes.
- 4.7 Joints in the cable throughout its length shall be avoided as far as possible and if unavoidable, proper straight through epoxy resin type joint shall be made.
- 4.8 A minimum loop of 3 meters shall be provided on both ends of the cable, or after every 50 meters 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.
- 4.9 Cable shall be neatly arranged in the trenches/trays in such a manner so that crossings are avoided and final take off to motor/switchgear is provided. Arrangement of cables within the trenches / trays shall be responsibility of TENDERER.
- 4.10 Whenever cable rises from underground / concrete trenches to motor / switchgear/push buttons, these shall be taken in GI/MS pipes of suitable size. In dairy case of Milk processing area it shall be SS 304 pipe.

19. Laying of cables (underground system)

- 4.1 Cables shall be so laid in ground that these will not interfere with other underground structure. All water pipes, sewage lines, which become exposed by excavation.
- 4.2 Cables shall be laid at minimum depth of 750 mm in case of LT. The width of trench shall be sufficient for laying of required number of cables.
- 4.3 Cable markers shall be installed at an interval not exceeding 50 meters along the straight routes of cable at a distance of 0.15 meter away from center of cable with the arrow marked on the cable markers plate indicating the location of cable. Cable markers shall also be used to identify change in direction of cable route and for location of every joint in underground cable.

20. Laying of cables under Floors

- 4.1 GI Class 'A' Pipe shall be used for laying of outgoing cables under floors from distribution boards to motors, isolators / junction boxes, starter of motors and push button station. 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 meters then free area shall be increased to 50%
- 4.2 Ends of pipe shall be sealed temporarily while laying with cotton/jute/rubber stopper etc. to avoid entry of building material.

EQUIPMENT'S SPECIFICATIONS DETAILED

1. CIP RETURN PUMP FOR RECEIVING TANKS	
Capacity	20 KLPH
Type	Self-priming, Centrifugal
Duty	To return CIP station from Milk Silos
MOC	Contact parts in SS 316.
Head	25 MWC

2. MILK RECEIVING TANK		
Capacity	15 KL	
Type	Suitable for Outdoor installation.	
Nos.	01	
Material	The inner shell, conical lop and flat bottom should be fabricated from AISI 304	
Thickness	Inner Shell & Canonical Top	3 mm. thick
	Outer Shell & Canonical Top	2 mm. thick
	Flat Bottom	4 mm.
	Stiffeners between inner and outer shell and supporting structure for bottom of mild steel shall be provided.	
Finish	150 grit.	
Agitation	Single side mounted mechanical agitator to ensure uniform fat distribution without any adverse effect on the contents. Provision for air agitation.	
Ports / fittings	Inlet/Outlet, outlet ss 304 two way butterfly valve, breather, CIP spray High pressure turbine (360 Degree Movement), Level Monitoring, High and Low level sensors, temperature sensors, Man way, , Alcove and other standard accessories like light glass, site glass.	
Insulation	PUF Insulation of suitable thickness to ensure temp. Rise does not exceed 1 Deg C in 24 hours' time in all seasons; Minimum insulation thickness 100 mm (in multiple layers). There shall be 0.5 mm thick metal coated polyester film vapor barrier between 2 nd and third layer.	
Outer finish	Outer sheet finish 2 B and all joints and Dish in 150 grid finish.	
	Outer sheet finish No 4 and all joints and dish are sand blasted.	
Level sensors	There shall be 2 Nos. of level switches for High and Low level indication. One differential pressure transmission type Level transmitter having referential accuracy of 0.075% and sanitary design with LCD type local display shall be mounted. Accurate level of Milk shall be transmitted to centralized control room in each mille seconds.	
Other	The outer shell shall be provided with minimum two drain holes. Any aperture in the shell shall be designed to prevent ingress of moisture.	
	4 nos. of SS 304 lifting lugs shall be provided on the top for smooth handling during transit and installation.	
Tests	Dye penetration test for all welding joints.	
	Water fill-up test for inner vessel before insulation.	

3. SS PIPES

Sizes	All new piping's for milk,cip and air has to be done in AISI304 with all required supporting structure.
Type	TIG welded, annealed and de-scaled pipe manufactured as per standard ASTM-A 270
Material	AISI 304
Finish	Bright polished outside, pickled inside as per dairy standard
Thickness	1.6 mm up to 51 mm diameter 2.0 mm for 63.5 mm and 76 mm diameter
Unions	Will be complete with liner, male nut and gasket. Liner made of male parts will be suitable for expansion joints
Pipe Clamps	Will be quick opening type

4. PIPE SUPPORTS

Sizes	Square Sections as required (Mostly 40 x 40 mm / 40 x 60 mm / 40 x 80 mm)
Type	Supported from walls, ceilings and floors
Material	AISI 304

5. PNEUMATIC SEAT VALVES

Type	Two Way / Three Way pneumatically operated safety break valve, On-OFF valves, Mix proof valves, flow diversion valves etc.
Material	AISI 316
Sealing	Positive
Controls	Electrically or electronically operated integrated solenoid valve and valve position feedback with digital communication with Centralized Control system

6. OTHER PNEUMATIC VALVES

Type	Ball Butter Fly valves
Material	AISI 316
Controls	Electrically or electronically operated integrated solenoid valve and valve position feedback with digital communication with Centralized Control system

AUTOMATION & INSTRUMENTATION

AUTOMATION & INSTRUMENTATION

1) PLC system for plant operation including Suitable Panel

Microprocessor based PLC/ Hybrid PLC System shall be used for centralized operation of the new plant. Generally but not limited to, following operations are controlled from Automation system;

- 1.1 Milk Receiving and Storage
- 1.2 Pre-Heating Operations
- 1.3 Milk Coagulation
- 1.4 Paneer Mould conveying system
- 1.5 Paneer Dip Chilling Pasteurizer
- 1.6 Centralized CIP Kitchen.

- The PLC system shall have open architecture and shall use common engineering tool for operator station, automation system, communication system, engineering system and distributed i/o's; sub systems are integrated together with standard & proven networks with fully optimized & standard open protocols.
- All the components use single RDBMS database server
- Scalability: the offered system shall be suitable for future expansion of phase
- 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.
- The processor / final control element interface section of PLC shall comprise of various signal interface cards suitable for digital communication with distributed I/O stations, local control panel, actuator/sensor, frequency drives and motor control system.
- All the original software licenses, back up of all PLC programs shall be supplied with the system.
- The system shall control all the processing as well as CIP operations from receiving, processing, storage and dispatch to packing machines
- Integration of packing machines shall be done to generate centralized MIS reports.

2) MIS Server

Server will store all the relevant information from the PLC and all networked computers connected and will generate the MIS reports. Necessary RDBMS software SQL server and User-friendly front end with meta data search engine is for all MIS reports generation.

MIS report required shall be finalized during detailed engineering.

3) MMI Operating Station PCs

Quantity : 02 nos.

Each monitoring / control terminal will be fully capable of addressing any plant data thus, will function as a single window for operation and monitoring. Each terminal will be independent with its support hardware including adequate local memory for resident database to reduce data traffic through the highways. The resident data will be continuously updated at all terminals.

24" touch screen Ultra Sharp monitors shall be connected to EACH MMI PC. The MMI software shall support multi-screen Technology and PC's shall consist of key board, mouse, graphic and report printer and necessary hardware & software.

4) UPS system for PLC & instruments with 30 min Battery Backup

5) 24 V DC power supply shall be used wherever applicable for Control System and will be derived from UPS, Any other voltage level required for the system shall be the responsibility of the bidder along with all required hardware. Control & Instrument (C & I) equipment furniture shall incorporate necessary techniques for protection against electrostatic discharge and radio frequency interface, as per international codes and standards.

6) Safety earthing and C&I System earthing shall be separate. Safety earth bus shall be connected to main plant earth pit. Separate earth pit/s shall be providing for system earth bus (electronic earth). Electronic earth shall be cabled directly to the corresponding earth bar.

7) All instrument shall have clear access for maintenance, removal, lay- down, calibration etc. access platforms shall have clear access for maintenance, removal, lay-down, calibration etc.

8) Access platforms shall be provided for easy access of instruments, valves and actuators.

9) Network Hardware

- UTP / STP Cables – 1 Lot
- Switches – As required

10) System Software

The system software will preferably be on open architecture and shall support 64 bit processing platform. For networking High Speed Gigabit Ethernet TCP/IP model will be in use. It shall be latest object oriented software, which result in fully scalable system. Original license version of the latest release of software shall be used.

11) MIS software

This shall be tailor made package based on RDBMS software. Following minimum reports are envisaged from the system. System shall have open protocol are to be consider for development.

11. Technical Specifications

a. GENERAL INFORMATION

1 This specification shall be read and constructed in conjunction with the drawings and annexure.

1.1 For design purpose, the following site conditions shall be taken into account:

- | | | |
|------------------------|---|--------|
| a) Ambient Temperature | : | 50 ° C |
| b) Relative Humidity | : | 90% |

1.2 All equipments shall be capable of continuous operation satisfactorily under the following conditions.

1.3

- | | | |
|------------------------|---|-------|
| a) Voltage variation | : | ± 10% |
| b) Frequency variation | : | ± 5% |

c) Combined voltage & Frequency	:	± 10%
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Variation

b. DESIGN CRITERIA

General terms & conditions for tender to supply & fulfil following–

1. The equipment shall be installed in a hot, humid and tropical atmosphere. However, PLC panel shall be located indoor room with suitable capacity split air conditioner.
2. All equipment, accessories and wiring shall have tropical protection, involving special treatment of metal and insulation against fungus, insects and corrosion.
3. All equipment / parts & components of identical type / size shall be physically interchangeable.

c. SPECIFIC REQUIREMENT**d. SOFTWARE (SCADA)**

As software is the major component in this project. It should strictly follow below mentioned requirement

- 1) Application shall be designed in latest version of Microsoft .Net Framework 4.5 or above; and shall use WPF (Windows Presentation Foundation) for presentation, WCF (Windows communication foundation) for communication.
- 2) Software should follow CSLA (Component Scalable Logical Architecture) and n-tier architecture.
- 3) Software should support Cross Tab, aggregates along with drill down reports. Reporting should facilitate following –
- 4) It should support Charts following chart type for data representation
 - 1) Bar
 - 2) Stacked Bar
 - 3) Line
 - 4) Area
 - 5) Stacked Area
 - 6) Pie
 - 7) Gantt
 - 8) Bezier Line
 - 9) Spline line
 - 10) Bubble
 - 11) Point
- 5) Data support – It should have data support for SQL Server, MySQL, Oracle, OLEDB, Business Objects, XML, Web services and flat file for generation of Reports.
- 6) Report Viewer – It should have windows and web report viewer
- 7) Software shall provide the facility for printing reports and exporting data to PDF, Word file, excel file, TIFF, JPG, GIF, PNG, BMP and webpage.
- 8) **Software User Interface –**
User interface shall be developed with all usability scenario considerations.
It shall have controls to support asynchronous communication (for data update without actually refreshing / post back)

Software shall be based on event driven programming model composed of custom events and delegates.

9) **Reception of Milk** – Milk reception from Main Dairy to receiving Tanks

Step: 1 – Start Flush

Step: 2 – Receiving

Step: 3 – End Flush

10) **Operation of Chilled water Pasteurizers (For Paneer Dip-Chilling)** – Operation of 01 Nos. of Chilled water Pasteurizer. It shall enable pasteurizers to work under miscellaneous sequence –

Step: 1 – Water

Step: 2 – Heating

Step: 3 – Sterilization

Step: 4 – Stabilization

Step: 5 – Filling / Start Flush

Step: 6 – Production

Step: 7 – End Flush

All valve, pumps etc. shall have option for forcing and masking through computer display.

11) **All CIP line adjustments** – Like setting-up of CIP lines for Tanks, Pasteurizers, milk pipe lines etc. shall be done from computer

12) Operation of all tank Agitators –
This shall support three modes of operation like a) automatic b) manual c) interval based

13) Graphical user interface based: Display the level and temperature of tank along with the type of milk.

14) Shall capable to process complex business logic with accuracy and consistent performance.

15) Shall support all configurations of interlocks, feedback timers, motor pump delays, process recipes, force option for all digital inputs and digital outputs, automation to manual switching etc.

16) Shall facilitate the complex calculation for standardization of Milk (Pearson's Square) for batch preparation.

17) **Production Planning** – Software should provide Manufacturing execution system for effective production planning.

18) **Production analysis** – Software should provide all types of analytical data along with graphical representation to analyze specific production data.

19) All screens should be designed for minimum resolution of 1920x1080

20) Error and warning messages should be located appropriately and in a common place to draw user's attention.

21) Consistency: all data formats should be consistent across the entire application.

22) All valve, pumps etc. shall have option for forcing and masking through computer display.

- 23) All CIP line adjustments – Like setting-up and configuration of CIP recipes, configuration of valves, pumps, pasteurizer settings etc. shall be done from computer
- 24) All Pumps shall be controlled through VFD based on required Flow Rate setting done by operation based on selected destination to be cleaned
- 25) Report viewer shall support drag and drop for sorting or segregation.
- 26) **Pipe Line Animations:** SCADA system shall display all processes through animations in pasteurizer, pipelines etc. i.e. each and every pipeline movement of liquids Milk, water, Lye, Acid, Hot Water and soft water shall be displayed in different colours with animated views. And these animations should give complete plant status on multiple displays in user friendly animation enabled view.

FIELD INSTRUMENTS

Field instruments

- ❖ Field instruments shall be suitable for area in which these are located. In general, field instruments shall be weather proof, dust tight and corrosion resistant with protection class IP-65. Field instruments shall be suitable mounted, support and terminated in local junction boxes.
- ❖ Die cast aluminum or stainless steel casing shall be used as case material in general.
- ❖ Dial size for all pressure and temperature gauges shall be 150 mm and any lower size selection specific to the application.
- ❖ In general the minimum accuracy of the instruments shall be as below

Electronic transmitters	+ 0.25 % of FSD
Pressure & temperature gauge	+ 1.0 % of FSD
Conductivity analyzer	+ 0.5% of FSD
Level gauges	+ 5. Mm of the reading
The repeatability of pressure, temperature, level and flow switches shall be	+ 2.0% of FSD

- Temperature stub to be welded on process pipe / vessel and shall match with thermo well process connection and size. Thermo well shall be drilled out of bar stock and the length & construction shall comply with process requirement / relevant standards. Material of construction of thermo well is SS 316.
- The cable inlet at the instruments mounted on the plant will have a female threaded connection for protection pipe with nominal diameter ½' NPTF.
- The instruments pneumatic connection will be ¼'NPT female.
- All field instruments / equipment's shall be description. The tag plate shall be secured to the instruments / equipment with SS chain.

1) Pressure Transmitter

Quantity : 01 Lot

Pressure 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 etc. shall be provided with pressure gauges according to application. Where process temperature exceeds 70 C, siphon loops shall be utilized.

The pressure transmitter shall be give 4-20 mA output to be transmitters to central control room through AI/AO panel mounted in field.

2) Temperature Transmitter

Quantity : 1 Lot

All Temperature sensors Elements shall be of duplex type with SS 316 sheath and mgO filled. Depending on temperature shall be used.

Thermocouple / RTD heads, with chain holder, shall be the waterproof type, with duplex terminal block, gasket cover and stainless steel chain. Screwed covers shall be used.

The Temp transmitter shall be give 4-20 mA output to be transmitted to central control room through room AI/AO panel mounted in field.

3) Magnetic/Turbine flow meters

Quantity : 1 Lot

- ❖ Magnetic flow meters shall be true smart type with analog output. The flow tube material shall be of AISI 304 with PTFE lining. The electrode material shall be either SS 316L or depending upon process condition. In general, SMS type process connection may be used for magnetic flow meters.
- ❖ Accuracy of magnetic/Turbine flow meter shall be plus or minus 0.5% of flow rate or better.
- ❖ Digital flow rate as well as totalizer display shall be provided. 4-20 mA signals shall be used for DCS connectivity.
- ❖ Earth ring of SS 316 shall provide for proper grounding of magnetic flow meters.

4) Level Transmitter

Quantity : 1 Lot

- Flange mounted diaphragm seal type level transmitters shall be used for level measurement on tanks. The wetted part shall be SS 316 or suitable material to suit process fluid. The process connection with tank / vessel shall be 1-3" flanged.
- For clean liquid, water, condensate service etc. (other than milk application) normal differential pressure type transmitter diff. pressure type to be used.
- Level gauges shall be of the reflex / transparent / tubular type as per the application area and made of stainless steel and fitted with toughened borosilicate glass each gauge shall be fitted with top and bottom isolating valves with full bore drain valve at the bottom and plugged vent at the top. Flanged connection, rated same as the vessel, shall be used. Gauges shall be arranged so that the visible length is in excess of the maximum operating range.
- Displacement / flat type instruments and switches shall be mounted in external cages with flanged connection, rating same as the vessel. This type of instrument shall not be used for application, involving viscous, corrosive or flashing liquids. The cage material shall be carbon steel in accordance with vessel material and the float shall be of 316 SS. Drain and vent shall be provided on the cage.
- The level transmitter shall be give 4-20 mA output to be transmitted to central control room through AI/AO panel mounted in field.

5) Conductivity analyzer / transmitter

Quantity : 1 Lot.

- ➔ The conductivity analyzer may be installed on-line or at a distance connected by sampling Line. The necessary mounting of analyzer electronic unit shall be taken care suitably. The Process connection shall be SMS type.
- ➔ The conductivity analyzer shall be microprocessor based. The electrode and cell material shall Be of Non Contacting type (Toroidal) and Material of construction shall be Teflon / Peek.
- ➔ Automatic temperature compensation shall be provided with the Analyzer.
- ➔ The Conductivity transmitter shall be give 4-20 MA output to be transmitted to central Control Room through AI/AO panel mounted in field.

6) Control Valves

Quantity : 1 Lot

- Pneumatic control valves complete with suitable analog type Positioner.
- The control valve sizing shall be done in such a way that the calculated noise level at worst Operating condition shall not be more than 85 dBA at 1 m 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 Leakage class ANSI IV.
- All control valves (independent of their type) shall have a tight shutoff against at least 110% of maximum design pressure. The strike/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 capitation 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.
- Analog valve positioners shall be suitable for 4-20 mA output signal to central control room with Analog I/O panel mounted in the field.

7) Pneumatic Actuated Valves

Quantity : 1 Lot

Type	Two ways / three ways pneumatically operated ON-OFF valves, flow Diversion valves, mix proof valves etc.
Material	AISI 316
Sealing	Positive.
Controls	Electrically or electronically operated integral solenoid valves and valve Position feedback (opens & closes both).
Size	As per P&I and Detailed Engineering.

Technical Specification of Chilled Water (Generation) Pasteurizer:

Type	: Plate Heat Exchanger
Capacity	: 5000 LPH
Quantity	: 1 No.
MOC of plates	: SS 316 (0.6 mm thickness)
Product	: Milk/lassi/ butter milk
Composition	: 35 % TS
Regeneration Efficiency	: 93 % (on whole milk as well as skim milk)
Gasket Material	: NBR
Gasket Type	: Clip-On
Note – Refer temperature profile mentioned below	

3.10. Utilities:

Steam at 3.5 bar Pressure

Chilled Water @ 2 deg. C: Flow Rate 10,000 LPH

3.11. Basis of operation: Multi-Functional Pasteurizer along with filtration system

- a) Milk-processing line of 5,000 LPH capacity, Temperature profile (12-80-2), Holding time 20 Seconds.

Pasteurizer must be operated on single command through PLC (Centralized Plant wide Automation System) and all the sequences shall be in auto mode. Pasteurizer should have automatic flow and temperature control with automatic level control of balance tank. Arrangement to attach separator and homogenizer is to be facilitated.

Pasteurizer should generate alarm observing delta T of hot water section. Flow diversion valves for heating as well as chilling to be considered. Pasteurizer must be design to run for continuous 8 hours operation without CIP.

3.12. Other Requirements

3.12.1. Flow Diversion –

In case of flow diversion due to inadequate heating temperature. Upstream Water shall go to balance Tank for re-heating at the same time downstream Water shall stay in re-circulation through booster Pump to ensure No staling of Water during elongated diversion due to other reasons. Supplier shall supply adequate valves to support two channel operations in case of diversion.

NOTE – This shall be double channel pasteurizer. For reference to specific double channel specification. Tenderer can refer to PMO ordinance of USA.

- 3.12.2. Hot water generation from steam shall be done by tubular heat exchanger (Welded without any rubber gaskets)

3.13. Technical Details

3.13.1. Plate Heat Exchanger – Water Pasteurizer with Plates.

3.13.1.1. Plates:

The plates shall be made from stainless steel (SS 316, Thickness – 0.6 mm) in sanitary design. All the product contact and exterior surfaces shall be easily accessible or readily removable for cleaning and inspection.

3.13.1.2. Gaskets:

The sealing gaskets must ensure complete sealing and pre-vent any cross - leakage between product and service liquids. Gaskets shall be of sanitary type and shall continuously bonded to the heat transfer surface. The gasket material shall be food grade, non-toxic, and fat resistant, non-absorbent and shall have smooth surface. The material shall withstand a water sterilization temp. Of 100 Deg. C. and 2% caustic / nitric acid solution at 80 Degree Centigrade. Gasket shall be Clip-on type (NBR).

3.13.1.3. Supporting Frame:

The supporting frame for the plate pack shall be of a self-supporting design made of stainless steel (AISI 304) clad mild steel with a manually operated stainless steel (AISI 304) tightening device. The tightening device shall be able to exert uniform pressure on all the parts of heat transfer plates to prevent any leakages from Pasteurizer. The frame and tightening device shall prevent the plates from deflecting under pressure differential of minimum 4 kg/sq.cm.

Heating Section PHE shall be placed as an independent Plate Pack.

3.13.2. Accessories

3.13.2.1. Inlets/Outlet: The inlets and outlets of the heat exchanger for products as well as services shall be provided with complete stainless steel (AISI 304) unions.

3.13.2.2. Thermo-wells: SS (AISI 304) pockets for thermometer on required ports for Product and service inlet and outlet connections.

3.13.2.3. Ball Feet: The frame shall be provided with adjustable SS ball feet with provision for height adjustment of 50 mm.

3.13.2.4. Balance Tank:

The balance tank of appropriate capacity shall be fabricated from 2 mm thick SS sheet conforming to AISI 304. The tank shall be provided with cover, Product inlet, cup type outlet, return Product inlet, inlet for water, over flow and adjustable SS ball feet, level switches and level transmitter. The balance tank shall be provided with Pneumatic Seat Valve with Top Head unit / Think Top and control valve at the product inlet interlinked with High Level & Low Level Probes for control and to maintain the level of balance tank of level of liquid in balance tank. The Feed Pump shall also be interlocked with high level & Low Level Probes to avoid the dry running of pumps. The balance tank shall also be provided with manual butterfly valve at the inlet & outlet.

3.13.2.5. Raw water feed pump to balance tank: Quantity – 01 Nos.

The Pasteurizer stainless steel raw Water feed pump with speed control shall be of sanitary steel shroud with louvers for air-cooling and suitable design as per dairy standard. Its capacity shall be adequate to facilitate efficient CIP. The TEFC drive motor shall be fitted with stainless arrangement for cable connection.

3.13.2.6. Feed Pump: Quantity – 01 Nos.

The Pasteurizer stainless steel feed pump shall be of sanitary steel shroud with louvers for air-cooling and suitable design as per dairy standard. Its capacity shall be adequate to facilitate efficient CIP. The TEFC drive motor shall be fitted with stainless arrangement for cable connection. It should be equipped with frequency drive to control the flow.

3.13.2.7. Booster Pump: Quantity – 01 Nos.

The Pasteurizer stainless steel booster pump shall be of sanitary steel shroud with louvers for air-cooling and suitable design as per dairy standard. The TEFC drive motor shall be efficiency 1 type fitted with stainless arrangement for cable connection. It should be equipped with VFD for operation.

3.13.2.8. Hot water Pump: Quantity – 01 Nos.

Hot water pump will be supplied which will be used for hot water circulation for heating of Water up to desired temperature. It shall be of SS-316, Centrifugal type.

3.13.2.9. Pneumatic Valves: Quantity – 01 Lot

Sanitary Remote-Control valves (Seat Type) at different locations shall be complete with Top Head unit (for control and Feedback Signals)

STANDARD EHEDG APPROVAL FOR VALVES (MANDATORY)

EHEDG – EUROPEAN HYGIENIC ENGINEERING AND DESIGN GROUP

3.13.2.10. Pipes and Fittings (SS 304)

- All inter connecting pipes with necessary fittings for product as well as service shall be supplied within the specified battery limits and exclusions. All fittings will be confirming AISI 304.
- The supply shall include all the necessary SS 304 pipes and fittings from balance tank to the finished pasteurized product outlet as required inter-connecting the above equipment.
- Shall be designed & conceived to acquire minimum floor area and mounted on SS SKID. The Module shall be SKID mounted PHE.

3.13.3. Other Components

3.13.3.1. Raw Milk Transfer Pump to Pasteurizer: Quantity-01 Nos.

Capacity – 5 KLPH
Make – APV / Alfa Laval

3.13.3.2. Steam Trap: Quantity-01 Nos.

Make – Spirax

3.13.3.3. Cables: Quantity-01 lot

Electrical cables – PolyCab / Finolex
Control cables – Polycab

3.13.3.4. Balance Tank: Quantity-01 Nos.

Capacity – 100 Litres
Material of Construction – SS 304
Float Type – Mechanical

3.13.3.5. Steam control Valve (2 Way): Quantity-01 Nos.

Size – 2”
Make – Samson / Forbes Marshall

3.13.3.6. Filters: 01 SET (01 Micron)

3.13.3.7. Tube – In – Tube Heat Exchanger for Hot Water generation through Steam:

Tubes Material of Construction – SS 316
Tubes Type – Seamless

NOTE:

All Pumps and motors shall be having VFD connectivity. All VFD shall be mounted in VFD panel with suitable weather protection and panel air ventilation. All VFD panel shall have relay modules for ON / OFF of Pumps and motors.

SCOPE DETAILS - BILL OF MATERIAL

(For 10tpd automated paneer plant)

FULLY AUTOMATED PANEER PLANT				
S.NO.	ITEM DESCRIPTION	CAP	QY	UOM
1.00	MILK RECEIVING STORAGE SECTION			
1.01	Milk Storage Tank (VMST) with Level, Temp sensors and Transmitters Note: Agitator VFD Driven	10,000	2	Nos.
1.02	Milk Transfer Pump from VMST to PHE (VFD Driven) Make: Alfa Laval / SPX	Suitable	1	Nos.
1.03	CIP Return Pump (VFD Driven) Make: Alfa Laval / SPX	Suitable	1	Nos.
1.05	PLC Remote I/O Panel (Enclosure: SS-304, IP-67)	Std.	1	Nos.
1.06	Automation Valve Cluster to support Fully Automatic operation of Milk Storage Section. Automated Valve Cluster to support Storage Tanks Cap-10 KL 1. Storage Tanks - 02 Nos. 2. Milk Filling lines: 01 Nos. 3. Milk Dispatch lines: 01 No. 4. CIP Isolation header: 01 No. SANITARY REMOTE-CONTROLLED VALVES Type: TT / LL / Butter Fly etc. Gasket: EPDM MOC of Contact: SS 316, Size: 51 mm Type: All valves with Intelligent Control Top Head Unit Note: Mix-Proof Valves at Junctions Make: SPX / GEA	Suitable	1	Nos.
1.07	Sanitary Remote-Control Valve to be installed in field 1) Tank outlet 2) Water Flushing 3) CIP Supply etc. MOC of Contact: SS 316, Size: 51 mm Type: All valves with Intelligent Control Top Head Unit Make: SPX / GEA Note: Complete section of Milk Storage should work in Full Automation	Suitable	1	Lot
2.00	PANEER MILK HEATER (SKID MOUNTED PANEER MILK HEATER INCLUDES)			
2.01	Milk Balance Tank, Cap - 100 Litres compatible with Level switch mounting	Suitable	1	Nos.
2.02	Milk Inline filter (Pipe in Pipe), Size - 70 micron	Suitable	1	Nos.
2.03	Milk Pump, Cap - 3,000 LPH, Make - Alfa Laval / SPX, (VFD Driven)	Suitable	1	Nos.
2.04	Multi Section (03 Section) PHE Function - Stage-1: Heating from 4 Degree C to ambient Temperature by cooling Tower Water Stage-2: Heating to 90 Degree C by Hot Water and Holding for 10 Minutes Stage-3: Cooling to 77-78 Degree C Note: All Temperature profiles shall be settable through SCADA Make: Kelvion / Alfa Laval	3000 LPH	1	Nos.
2.05	Holding Tube (MOC - SS 304, Size: 76 mm)	10 min	1	Nos.
2.06	Flow Diversion Valve, (With Control Top) Make: SPX / GEA	Suitable	1	Nos.
2.07	Hot water PID Control Valve, Make: Forbes Marshall / Samson	Suitable	1	Nos.
2.08	Well Water PID Control Valve, Make: Forbes Marshall / Samson	Suitable	2	Nos.
2.09	Pneumatically actuated Butterfly Valve for Milk Inlet (with Control Top) Make: SPX / GEA	Suitable	1	Nos.

2.10	Pneumatically actuated Butterfly Valve for Water Inlet - balance tank (with Control Top) Make: SPX / GEA	Suitable	1	Nos.
2.11	Pneumatically actuated Butterfly Valve for CIP inlet (with control Top) Make: GEA / Alfa Laval	Suitable	1	Nos.
2.12	Instruments Includes:			
2.13	a) Level Switches for balance tank, Make: Anderson Negle/Baumer	Std.	2	Nos.
2.14	b) Flow Transmitter for Milk, Make: Emerson / Yokogawa	38 mm	1	Nos.
2.15	c) Temp. Transmitter	Suitable	8	No.
2.17	All interconnecting pipelines and fittings on skid	Suitable	1	Lot
2.18	SS Skid for the above	Suitable	1	Lot
2.19	Pneumatic Pipes and Fittings for Skid	Suitable	1	Lot
2.20	SS Cabling and Cable Trays on skid	Suitable	1	Lot
2.21	RIO Panel (SS 304, IP-67) PLC Make: Allen Bradley / ABB It should communicate with central PLC and SCADA system	Suitable	1	Nos.
2.22	Processed Milk Buffer Tank, Capacity - 1 KL Type - Insulated, MOC - SS 304 (Inner and Outer), Agitator with VFD	1000 Litrs	1	Nos.
2.23	Pneumatically actuated Valve for Water Make-up water Tank (Inlet and Outlet) Make: ASCO - Emerson / Burkert Type: Angle Valve	Suitable	2	Nos.
2.24	Hot water Re-circulation Pump for Heating Module (Pre-Heater) Type: Multi-stage Pump (VFD Driven) Make: Grundfos / Equivalent	Suitable	1	Nos.
3.00	COAGULATION SECTION			
3.01	Fully Automatic Paneer Coagulation Machine - 1) Automatic pH Controlled coagulation 2) Precise movement 3) Fully PLC and SCADA controlled 4) Automatic De-Vat operation	300-400 KG/Hr	1	Nos.
3.02	Operator Platform with SS Chequered Plate	Suitable	1	Nos.
3.03	Citric Acid Tank (Triple Walled Jacketed and Insulated- with Jacket Heating control valve)	300 Litres	1	Nos.
3.04	Inline filter (Pipe in Pipe)	Suitable	1	Nos.
3.05	Whey Transfer Pump, make: Alfa Laval / SPX (VFD Driven)	5000 LPH	1	Nos.
3.06	Acid Dosing Pump, Metering Type	Suitable	1	Nos.
3.07	Flow Transmitter for Milk and Acid, Make- E+H / Yokogawa	Suitable	2	Nos.
3.08	Sanitary Remote-Control Valve (Butter-fly) with C-Top Unit for a) Milk and Acid Inlet to coagulation	Suitable	2	Nos.
3.09	Sanitary Remote-control Valves (Butter Fly / L Type) with C-Top Unit a) CIP Return Valve before coagulation tank for Re-circulation CIP of Pre-Heater - 01 Nos. 2) CIP Stop Valve to enable Re-circulation CIP of Pre-Heater - 01 Nos. 3) CIP Supply Valve for Coagulation Tank CIP - 01 Nos. 4) RO water Inlet for Acid Tank 5) Milk Filling Line Check Valve - 01 Nos. Make: SPX / GEA	Suitable	5	Nos.
3.10	Sanitary Remote-control Valves (FDV / LL Type) with C-Top Unit Location: Milk Filling line to coagulation Vat Drain or CIP Return Make: SPX / GEA	Suitable	1	Nos.
3.11	SS Control Panel (Enclosure IP-67): For Citric Acid Tanks integrated PLC based RIO	Suitable	1	Nos.
4.00	PANEER PRESS AREA, CONVEYING AND MOULD CLEANING AREA			

4.01	Paneer Moulds (Micro-perforated) Size: 285 x 400 mm x 220 mm (Height) Material: HD Polyethylene (Food Grade) Stiffener: SS 304	12-13 KG	60	Nos.
4.02	Paneer Press (Progressive Pressing) Variable - Stage wise pressing shall be configurable through SCADA based on type of paneer	5 HEAD	2	Nos.
4.03	Fully Automatic Paneer Mould Cleaning Machine (PLC and HMI based) Capacity - 15-20 Moulds per Hour Type - Rapid Cleaning - Ultrasonic It shall support complete automatic wash along with Pre-Rinse, Deep Wash, Post Rinse along with complete conveying system	15-20 Moulds per Hour	1	Nos.
4.04	Mould Lid Opening Machine	Suitable	1	Nos.
4.05	De-Moulding Machine	Suitable	1	Nos.
4.06	Automatic Modular Conveyor system (along with whey trough) for Complete Mould Handling Right from Loading, Pressing, Cleaning etc. (complete with all instrumentation, VFD's etc. to support fully automatic operation through centralised Control system) 1. Mould loading 2. Loaded mould transfer to Pressing Machine 3. Automatic insertion into Pressing Machine 4. Automatic exit after Pressing 5. Transfer to De-Moulding 6. Empty Mould Transfer to Cleaning	Suitable as per Civil Layout	1	Set
5.00	PANEER DIP CHILLING AREA			
5.01	Chilled Water Tank -Insulated (Paneer Dip Chilling / soaking tank) to keep paneer Blocks	3000 Litres	1	Nos.
5.02	Pasteurizer for Chilled water (It shall be designed as per Milk Standards) Type: Fully Automated Capacity - 5 KLPH Regeneration Efficiency - Not less than 90% Sections: 04 section Pressure Drop - Not more than 1 bar (Including all sections Product side) Note: Shall be fully automatic along with all instrumentation and accessories like balance Tank, Feed pump, Plate Pack, Flow Transmitter, Balance Tank Level switches, Holding tube (20 sec holding), Automatic Flow Diversion valve, Automatic Re-circulation valve, Automatic controlled steam hot water control valve (PID based), automatic Chilled water valve (On/OFF) etc.	5000 LPH	1	Nos.
5.03	Chilled water Re-circulation Pump, Make - Alfa Laval / SPX	5000 LPH	1	Nos.
5.04	Paneer Trolley for sterilizer	Suitable	2	Nos.
5.05	Paneer Mincer (to Crush Paneer)	100 KG/Hr	1	Nos.
5.06	SS Remote Control Panel for Chilled Water Pasteurizer and dip chilling	Suitable	1	Nos.
5.07	Paneer Tray for Dip Chilling	Suitable	100	Nos.
6.00	PANEER CUTTING AND PACKING			
6.01	Paneer Block Cutting Machine: For Cutting 10 KG Block into 200 gm / 400 gm / 500 gm PLC and HMI based Fully Automatic	Suitable	1	Nos.
6.02	Weigh Scale Make: Matler Toledo/Prompt	5 KG	1	Nos.
6.03	Vacuum Packaging Machine 2 chamber	Suitable	1	Nos.
6.04	SS Packing tables	Suitable	1	Nos.
7.00	STERILISATION SECTION			

7.01	SS Sterilizer for Paneer (Hot Water Spray Type) a) With Sliding Doors Pneumatically Operated With SS Trays, Trollies, and Carriage b) With all Controlled Valves for Hot Water, Air etc c) All Instruments Like TT, PT and Flow meters d) SCADA Controlled	300 KGS	1	Nos.
7.00	ALL PIPING AND FITTINGS			
7.01	SS Piping and Fittings with Supports (for the hall)	Suitable	1	Lot
7.02	All GI/MS Pipe and Fittings (Well water, Hot Water, Chilled Water, RO water-SS Pipes and Air Lines Note: Utility lines shall come from respective sections to Paneer Plant	Suitable	1	lot
7.03	Insulation of Chilled Water, hot water Lines	Suitable	1	lot
8.00	ELECTRICAL SECTION			
8.01	MCC & VFD Panel	Suitable	1	Set
8.01	Cables , Cable Trays and Earthing's	Suitable	1	Lot
9.00	CENTRALIZED AUTOMATION SYSTEM			
9.01	Centralized Control Panel PLC: ABB / Allen Bradley	Suitable	1	Nos.
9.02	SCADA License with MES and MIS	Suitable	2	Nos.
9.03	Workstation for SCADA	Suitable	2	Nos.
10.00	AUTOMATIC CIP SYSTEM (SINGLE CIRCUIT)			
10.01	LYE AND ACID TANK MATERIAL OF CONSTRUCTION (INNER SHELL): SS 316 (Acid Tank) and (Lye Tank) SS 304 MATERIAL OF CONSTRUCTION (OUTER SHELL): SS 304 CAPACITY: 5,000 LITRES		2	Nos.
10.02	HOT WATER TANK MATERIAL OF CONSTRUCTION (INNER SHELL): SS 304 MATERIAL OF CONSTRUCTION (OUTER SHELL): SS 304		1	Nos.
10.03	RECUPERATION / SANITIZER TANK - UNINSULATED MATERIAL OF CONSTRUCTION: SS 304L CAPACITY: 5,000 LITRES		1	Nos.
10.04	SHELL AND TUBE (TUNE IN TUBE) HEAT EXCHANGER – WITH ALL INLET & OUTLET POCKETS FOR THEMOWELL /SENSERS. CAPACITY – 20,000 LPH HEATING MEDIUM – Steam TUBES: AISI 316 CONSTRUCTION		1	Nos.
10.05	STEAM CONTROL VALVE WITH ELECTRO-PNEUMATIC POSITIONER AND MANUAL HANDLE MAKE – SAMSON / FORBES MARSHALL / EQUI.		1	Nos.
10.06	INLINE FILTER COMPLETE WITH ACCESSORIES Capacity – 25 KLPH MATERIAL OF CONSTRUCTION: SS-304 WITH SANITARY FINISH		1	Nos.
10.07	CIP SUPPLY PUMP (MONOBLOCK TYPE) CAPACITY – 25,000 LPH HEAD - 40 MWC MAKE – APV/ ALFA LAVAL		2	Nos.
10.08	PNEUMATIC VALVES (SINGLE SEAT / BUTTER FLY) WITH TOP HEAD UNIT FOR CIP SYSTEM SIZE – 51 MM TYPE – L/ T/ TL TYPE MAKE – APV / ALFA LAVAL / GEA		1	Nos.

10.09	PNEUMATIC CONTROLLED MAKE-UP WATER VALVES FOR LYE AND RECUPERATION TANKS Size – 1.5 inch MAKE - DANFOSS / ASCO / GEA		4	Nos.
10.1	SS 304 SKID BASED STRUCTURE ENTIRE STRUCTURE OF CIP UNIT SHALL BE ON SKID BASED MODEL. EXCLUSION CAN BE ONLY LEGS OF CIP TANKS REST COMPLETE STRUCTURE SHALL BE BASED ON SKID MADE BY SQUARE SS-304 PIPES.		1	Nos.
10.11	SS PIPES, BENDS, CLAMPS, SS SUPPORT PIPES ETC: COMPLETE WITH ALL ACCESSORIES TO MAKE THE SYSTEM COMPLETE		1	Nos.
10.12	PNEUMATIC PIPING (TUBING) COMPLETE WITH ALL ACCESSORIES MAKE (PU TUBES & ACCESSORIES) – FESTO / LEGRIS / SMC		1	Nos.
10.13	FR (FILTRATION – REGULATION) UNITS SIZE – 1/2” MAKE: FESTO / LEGRIS		1	Nos.
10.14	COMMUNICATION CABLE WITH REQUIRED CONVERTERS		1	Nos.
10.15	SS OPERATOR PLATFORM COMPLETE WITH LADDER, GRILL, CATWALK AND ACCESSORIES Chakker Plate – SS 304		1	Nos.
10.21	TEMPERATURE SENSOR WITH HIGH MANUFACTURING CLASS (SANITARY TYPE WITH WATER RESISTANT ENCLOSURE) ACCURACY – CLASS ‘A’ MATERIAL OF CONSTRUCTION – SS 316 NOTE – CIP SUPPLY AND RETURN LINES QTY:07 Nos.		1	Nos.
10.22	TRANSDUCER / SIGNAL CONDITIONERS TYPE – ISOLATED PROCESSOR – UDIAN AI ASIC CHIP FIELD CONFIGURATION – REMOTE PROGRAMMABLE THROUGH E8 REMOTE DISPLAY MOUNTING – PANEL MOUNTED NOTE – CIP SUPPLY AND RETURN LINES QTY: To accommodate 05 Nos. temperature sensors		1	Nos.
10.23	CONDUCTIVITY SENSOR (TOROIDAL TYPE) + TRANSMITTER (COMPLETE WITH ADAPTOR FOR FLOW THROUGH & IMMERSION MOUNTING) SENSOR: TOROIDAL TYPE (NON-CONTACTING) SENSOR MATERIAL - TEFLON MAKE: ROSEMOUNT / ANDERSON / GLI (USA)		2	Nos.
10.24	LEVEL TRANSMITTER –0.075% OF SPAN ACCURACY AND 100:1 RANGE ABILITY; SUPPLY COMPLETE WITH ALL MOUNTING AND ACCESSORIES. (IT WILL BE COMPATIBLE WITH CIP TANKS DIAMETER, HEIGHT AND DIMENSIONS FOR ACCURATE LEVEL MEASUREMENT) DIAPHRAM – SS 316		4	Nos.
10.25	ALL CABLES - ELECTRICAL POWER & CONTROL AND INSTRUMENTATION CABLES TO COMPLETE THE JOB • CABLE TRAYS – PERFORATED TYPE (GI – GALVANISED AND POWDER COATED). ALONG WITH C-TYPE CLAMPS AND COVER PLATES • CABLE LAYING (IN ENCLOSURE) FOR CARRYING THE SIGNALS FROM EACH SIGNAL POINTS TO PLC PANELS & COMPUTER. • CABLE TAGS AND MARKERS ARE PROVIDED AT EACH CABLE END. • ALL POWER CABLES ARE COPPER AND ARMORED. MAKE: FINOLEX, POLYCAB ALL SIGNAL/CONTROL CABLES ARE SHIELDED / BRAIDED		1	Lot

10.26	ALL NECESSARY ACCESSORIES LIKE JUNCTION BOXES, ADAPTORS, GLANDING, LUGS ETC. FOR MOUNTING ALL THE MENTIONED FIELD DEVICES TO MAKE THE SYSTEM COMPLETE		1	Nos.
10.27	MAGNETIC FLOW METER TYPE – SANITARY MAX CAPACITY – 20 KLPH MAKE: ROSEMOUNT / YOKOGAWA NOTE – It shall be installed at CIP Supply line		1	Nos.
10.28	WORKSTATION PROCESSOR along with SCADA License – Processer I5 (2.93 GHz, 1066 MHz FSB, 3 MB Cache) HDD-250GB) WITH 24” LCD / TFT Ultra Sharp MONITOR MAKE: DELL / LENOVO MONITOR MAKE: DELL / LENOVO TYPE – Ultra Sharp MONITOR [ALONG WITH WINDOWS 7 LICENSE – 64 BIT]		1	Nos.
10.29	CIP RETURN PUMPS TYPE – SELF PRIMING Make – APV / Alfa Laval		2	Nos.
11.00	OTHER UTILITY LINES			
11.01	Material for Cooling Tower line (Includes GI Pipes, bends, MS Supports, other accessories to make the job complete)	Suitable	1	Lot
11.00	WHEY STORAGE AREA			
11.01	Whey balance tank with strainer	80 Lts	1	Nos.
11.02	Inline filter (Pipe in Pipe)	Suitable	1	Nos.
11.03	Whey Transfer Pump, make: Alfa Laval / SPX (VFD Driven)	5000 LPH	1	Nos.
11.04	Whey Chiller Make: Kelvion / Alfa Laval Temp. 78-25-4 Deg C	2000 LPH	1	Nos.
11.05	CIP Return Pump Make: Alfa Laval / SPX	20,000 LPH	1	Nos.
11.06	Whey Storage Tank	10,000 Lts	1	Nos.
11.07	Automation Valves to support Fully Automatic operation of Whey Storage Tanks. Automated Valve Cluster to support Whey Storage Tanks Cap-10 KL 1. Whey Storage Tanks - 01 Nos. 2. Milk Filling lines: 01 Nos. 3. Milk Dispatch lines: 01 No. SANITARY REMOTE-CONTROLLED VALVES Type: TT / LL / L / Butter Fly etc. Gasket: EPDM MOC of Contact: SS 316 (With Intelligent Control Top Head Unit)	Suitable	1	Nos.
11.08	Sanitary Remote-Control Valve to be installed in field (For Whey Storage Tanks) 1) Tank outlet 2) Water Flushing 3) CIP Supply etc.	Suitable	1	Lot
11.09	SS -304 RIO Panel (Enclosure IP-65) for Whey Section	Suitable	1	Nos.
11.10	Blast and Cold room Blast Room Size - 3000 x 3200 x3000 (H) mm Cold Room Size - 300 x 3200 x 3000 (H) mm Product - Paneer Product Inlet Temp - 35-40 C Product Out from Blast Room Temp - 3-4 C Pull down time - 7 Hr Product Out from Cold Room - 1 C	Mentioned	1	Set

DEVIATION SHEET

DEVIATION FROM TECHNICAL REQUISITE

1. This tender document provides recommendations for the processes and equipment's to be used in tender package and "basis of design" and "standards & specifications". These all define the qualitative limitations.
2. It is compulsory on bidder to provide complete details of equipment and services. Which supplier is propose to provide
3. Items, which deviate from the tender proposal, shall be as per design specification of supplier and shall be treated as deviation from the text of this tender document.

DEVIATION STATEMENT FORM		
S.NO.	DEVIATION	REMARKS

LIST OF MAKES OF MAJOR EQUIPMENT/BOUGHT OUT ITEMS

DESCRIPTION	MAKES
MILK & CREAM RECEPTION, PROCESSING	
SS Milk & CIP Supply & Hot water Pump	FRISTAM /SPX / ALFA LAVAL / GEA
PHE Type Milk Chiller / Pasteurizer	KELVION / TETRA PAK / SPX
PHE Type Cream Chiller /Pasteurizer	KELVION / TETRA PAK / SPX
PHE Type Water & CIP Solution Heater	KELVION / TETRA PAK / SPX
SS CIP Return Pump (self- priming)	FRISTAM / SPX / ALFA LAVAL / GEA
Online Inkjet Printer	DOMINO / VIDEOJET / IMAGE/Equilant
Crate Washer	SHREE VISWAKARMA/ SWASTIK / DAIRY-ENTERPRISES / SS ENGINEERS
Online TTO Printer for FFS machine	DOMINO / VIDEOJET / MARKEM
Online Metal Detector	METLER TOLEDO / DAS ELECTRONICS /BIZZERBA
Tri-blender	FRISTAM / TETRA PAK /SPX
EPS / PUF Insulation Materials	LLOYDS / BEARDSSELL / FRICK
PUF Panels for Cold Rooms	LLOYDS / BEARDSSELL / FRICK / RINAC /JINDAL MECTEC / SINTEX/ICEMAKE
Saddles for Cold Insulation	SUPERTHERM (LLOYD) / BEARDSSELL
Resin bonded mineral wool mat	LLOYD / UP TWIGA / ROCKWOOL
Resin bonded mineral wool pipe section (un laminated & laminated with	UP TWIGA
SS Vertical Water / Chilled /Hot Water Pumps	KIRLOSKER/GRUNDFOS / MATHER & PLATT/ WILO/ CRI / KSB
Milk Silo Agitator (Side Mounted)	STELZER / ALFA LAVAL / PRG
Vacuum Packing Machine	INDOVAC/MULTIVAC/Equilant
PANEER VAT AND COAGULATION SYSTEM	TECHNOLAT/TETRAPAK/DONIDO/GEA/Equivalent
PANEER CUTTING MACHINE	FILLPACK/EQUIVALANT-INDEGENOUS

INSTRUMENTATION, CONTROLS & AUTOMATION

VFD	SIEMENS/ ALLEN BRADLEY/ DANFOSS/ ABB/ SCHNEIDER
Level Transmitter & indicator	P&E/E&H / EMERSON
Temperature / Pressure Transmitter	RADIX/E&H / EMERSON / ANDERSON NEGELE / IFM
Conductivity & Ph Transmitter	E&H / EMERSON / ANDERSON NEGELE
RTD	E&H / EMERSON / ANDERSON NEGELE / IFM/ RADIX / GIC / ALTOP
PID Controller	SAMSON / AVCON / DEMBLA / FORBES MARSHALL / YOKOGAVA
Flow Switch	E&H / IFB, Gmbh / IFM / ANDERSON NEGELE
Proximity switch	SICK / P&F / IFM
Level Switch (float type & vibrating fork type)	E&H / EMERSON / ANDERSON NEGELE / IFM/ BAUMER
Vortex / Magnetic Flow meter	E&H / EMERSON
Mass Flow meter	E&H / EMERSON
Air Flow Meter	E&H/ ANDERSON-NEGELE
Control Valve	DEMBLA / DANFOSS / SAMSON / MARSHALL-ARCA
Pressure switch / temp switch	DANFOSS / ALCO / HANSEN / PARKER / E&H/EMERSON / ANDERSON NEGELE / IMF /INDFOSS / PYROTECH / SWITZER / RADIX / DAG-PROCESS/ TRAFAG
Pressure & Temperature Gauge	FIEBIG / H GURU / WAAREE / WIKA / PRICOL
Dual type Pressure / temp gauges	FIEBIG / H GURU / WAAREE / WIKA / GIC /PRICOL / ALTOP
Temperature digital indicator / controller	E&H / EMERSON / ANDERSON NEGELE / IFM/RADIX / WIKA
Load Manager / Power / Energy Monitor	ROCKWELL (ALLEN BRADLEY) / SIEMENS / ABB / L&T / SCNEIDER
PC (Personal Computer)	HEWLETT-PACKARD / DELL / LENOVO
Network Switch	CISCO /SIEMENS
DCS / PLC System	SIEMENS / ALLEN BRADLEY
Automation System	SIEMENS / ALLEN BRADLEY / ABB

ELECTRICALS	
MCCB	SIEMENS / BSHAMINI / JULEE / ABB / ABB / SCHNEIDER / SOMERGRAND / DUMPTON GREAVES / KIRLOSKAR
MPCB	L&T / SIEMENS / SCHNEIDER / ABB
Air Circuit Breaker	L&T / SIEMENS / SCHNEIDER / ABB
MCCB	L&T / SIEMENS / ABB / SCHNEIDER /
MPCB	L&T / SIEMENS / SCHNEIDER / ABB
Contactors	L&T / SIEMENS / SCHNEIDER / ABB
Starter Overload Relays	L&T / SIEMENS / SCHNEIDER / ABB
Intelligent Motor Protection Relays	L&T / SIEMENS / ALLEN BRADLEY / ABB /
Timers Electronic	L&T / SIEMENS / SCHNEIDER / ABB
Switch Fuse Units	L&T / SIEMENS / SCHNEIDER / ABB
MCBs	LEGRAND / SCHNEIDER / SIEMENS / HAGER
Push Buttons	SIEMENS / L&T / SCHNEIDER / ABB / GE /
Indicating Lamps (LED)	L&T / SIEMENS / SCHNEIDER / ABB / BINAY / TEKNIC
Digital Ammeter & Voltmeter	SIEMENS / L&T / SCHNEIDER / RISHABH
Analog Ammeter & Voltmeter	RISHABH / IMP / MECO / AE
Digital Energy Meter	SIEMENS / L&T / SCHNEIDER / HPL SOCOMEC
PVC Conduit & accessories	PRECISION / CLIPSAL / POLYCAB / P - PLAST
Digital Power Factor Meter	SIEMENS / L&T / SCHNEIDER / RISHABH /
Programmable Protection Relay	MINILEC / L&T
Resin cast / Polycarbonate	KAPPA / BHARTI / L&T / NEWTEK / PRECISE /
LT armoured Power Cables (aluminium &	KEC (RPG) / FINOLEX / RR KABEL /
LT armoured Copper Control Cables	KEC (RPG) / FINOLEX / RR KABEL /
LT steel braided copper power & control	LAPP KABEL / SBEE / RR KABEL
Signal & Instrument cable	LAPP KABEL / FINOLEX / POLYCAB / RR
Power Capacitors	EPCOS / SCHNEIDER / NEPTUNE DUCATI /
APFC Relay	BELUKE / EPCOS / L&T / SIEMENS
Harmonics Filter	APCOS / SCHNEIDER / ASIAN / L&T / DB
Cable Tray	INDIANA / MEK / PILCO / ELCON / METALICA
Isolating Switches	SIEMENS / L&T / SCHNEIDER / ABB
HRC fuses	L&T / SIEMENS / EE / GE POWER / C&S
Plug & Socket	LEGRAND / CLIPSAL / BCH
IP 65 Boxes for motor isolator/junction box	HENSEL / RITTAL / R STAHL
Terminal Blocks	WAGO / LAPP INDIA / CONNECT WELL /
Rotary Selector Switch	L&T / SIEMENS / SALZER / KAYCEE
Cable Glands	LAPP KABEL / DOWELS / COMET / BRACKO
Cable Lugs	LAPP KABEL / DOWELS / COMET
Mechanical Interlock	L&T / SCHNEIDER / ABB
Electronic Soft Starter	DANFOSS / ALLEN BRADLEY / SIEMENS /
Servo Voltage Stabilizer	SUVIK / APLAB / NEEL / CRYCARD
UPS	EMERSON / HI-REL / DB ELECTRONICS /
SMF Battery	AMCO / EXIDE / AMARA RAJA / AMCO
WATER & STEAM VALVES & PIPES (MS & GI)	
Water Valves (Butterfly / Ball)	L&T (AUDCO) / GEMU / INTERVALVE /
Water Valves (Diaphragm)	SAUNDERS / BDK / GEMU

Non-return Valve for water	L&T (AUDCO) / INTERVALVE / LEADER /
Water Foot Valve	KIRLOSKAR / GG / LEADER
GI Pipes for water	TATA / JINDAL / MST / ZENITH / KALYANI
MS Pipes for air, steam, condensate	TATA / JINDAL / MST / ZENITH / KALYANI
NRV for Air / Oil Line	INTERVALVE / L&T (AUDCO) / LEADER /
Solenoid Valve for water lines	DANFOSS / AVCON / BURKERT
Water Flow Meter (analogue)	DASHMESH / ANAND ASAHI / KENT
HP / LP Steam / condensate Globe Valves	L&T / SPIRAX / FORBES MARSHALL /
HP / LP Steam Valves Piston type	FORBES MARSHALL / SPIRAX /
Automatic Pumping Pump	FORBES MARSHALL / ARMSTRONG, USA/
Steam relief valve, traps & strainers	FORBES MARSHALL / ARMSTRONG, USA/
Steam Pressure Reducing Valve	FORBES MARSHALL/ ARMSTRONG, USA/
Steam Pressure Reducing Station	FORBES MARSHALL/ ARMSTRONG, USA/
Steam operated pumping trap	FORBES MARSHALL / ARMSTRONG, USA/
SS PIPES & VALVES	
SS Pipes	RATNAMANI / BHANDARI FOILS & TUBES/
Single Seat SS Pneumatic Valves	SPX / GEA TUCHENHAGEN / ALFA LAVAL
Mix Proof SS Pneumatic Valves	SPX / GEA TUCHENHAGEN / ALFA LAVAL
Pneumatic SS Butterfly / Ball type valves	SPX / GEA TUCHENHAGEN / ALFA LAVAL
SS Manual Valves & Fittings	IDMC / ALFA LAVAL / GEA/EQUIVALENT
Flush type Light & Sight Glass for Tanks &	ALFA LAVAL / GEA / TETRA PAK / SPX /

BATTERY LIMITS		
ITEM	PURCHASER'S SCOPE	SUPPLIER'S SCOPE INCLUDES
CIVIL WORK	Civil building & necessary foundations for equipment based on the details provided by the equipment supplier.	Supply of necessary foundation bolts along with the template, sub base, motor slide rails and all other associated erection materials.
MILK	Standardized Milk at inlet of milk storage tank.	The scope of work includes all transfers, processing, intermediate storage, etc for milk & all products envisaged in this tender/ functional requirements.
PASTEURIZED CHILLED WATER	Nil	As per scope
CIP KITCHEN	Nil	As per scope
WATER LINES	Water line header in process hall	Tapping from header to consumption points
COMPRESSED AIR LINES	Compressed air header in existing process hall	Compressed air distribution up to all the utility points of the process plants, packing, under the scope of this tender.
CHILLED WATER LINES	Chilled water supply-return header in existing process hall	Chilled water distribution up to all the utility points of the process plants, packing, under the scope of this tender.
STEAM & CONDENSATE	LP steam in the boiler house	Steam distribution from steam header to all the utility points in scope of this tender excluding PRS as per process requirement. the Boiler house.
POWER	Outgoing feeders in PCC at substation.	Power cable from the feeders of the PCC (including end termination) to new MCCs and distribution of power and controls up to all the consumption points in the scope of this tender. All necessary earthing as per requirement are also included in the scope of this tender.
STRUCTURAL / PIPE	RCC pedestals	Outdoor structural pipe bridges/ supports

BRIDGE/ SUPPORTS & PLATFORMS	(around 300 mm above GL) for road cross over bridges & other pipe supports. construction& Cable trenches with nosing angles.	in GI construction for water (raw/soft), steam & power cables. All pipe line supports for milk/product lines/cable trays inside the plant/ tanker bay shall be constructed from SS-304 box sections. Misc. structure (SS-304) including pipe cross over, shall be supplied & installed.
AUTOMATION	Nil	Entire plant automation for the new equipment with Necessary hardware/software/driver for communication within automation system. Automation for paneer plant is under scope of supply. However bidder should consider automation as per mentioned in the tender.

TECHNICAL EVALUATION OF BIDS

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:

Suitability of the process with regards to ultimate product quality conforming to the standards specified in the tender. Specifications of individual equipment as well as the system as a whole for material of construction, throughput, operating parameters, level of automation etc.

Energy efficiency of individual equipment and system as a whole.

Determination of filling accuracy of the product packaging machines and product losses.

Product losses during processing and product manufacturing for individual equipment and ultimately in the effluent system.

Consumption of consumable materials.

Space requirement.

Cost of spare parts.

Preference shall be given on better and advance technology.

Utility and raw material consumptions provided by the bidder

Process Performance and Consumption Guarantees

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 following:

EQUIPMENT PERFORMANCE

The satisfactory performance of the equipment/processing plant will be considered achieved if the plant operates above 98% of the rated capacity declared by supplier in the offer.

SERVICES REQUIREMENT

If measure demand of services in the plant is less than 102% of the consumption declared by the contractor, the buyer will accept that the service requirement guarantee has been achieved.

If the measured demand for services and energy is above 102 %, the contractor will be required to upgrade the plant or replace the plant to comply with the declared performance criteria. Otherwise the plant will be deemed un- acceptable.

11.1 DOCUMENTS REQUIRED FROM THE BIDDER

The Bidder must enclose the following Drawings with the Offer:

- Layout for Paneer plant building (provided by purchaser) with Incorporation of proposed equipment/ services/amenities.
- GA drawings tanks in soft as well as hard copy.
- Proposed machinery layout for Paneer plant which is relevant.
Machinery layout should also indicate the area and height requirement.
- P & ID for all processes, 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.
- The bid shall include layout, schematic and hydraulic flow diagrams, and general arrangement drawings for the units and equipment.
- The bidder should follow the guideline for preparation of drawing as described in general. Any deviation in thickness of material of construction and general arrangement will be specifically mentioned in the drawing as remark.
- Automation Layout

The Bidder must enclose the following Charts/details with the Offer Load histograms/peak and average load for:

Steam

Electrical Power

Water (RO & raw)

Chilled water

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

11.2 PERFORMANCE TESTS

11.2.1 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.

Hourly equipment wise Process Time Schedule (PTS) based on 24-hour time scale.

Bar chart for project execution including personnel training program.

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.

FORMATS OF GUARANTEES:

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

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 Average Load Kg/Hr Total Load kg/day Tolerance \pm %	
Power	Peak Load kW Total Load kWh/day Tolerance \pm %	
Solid Fuel	Peak Load Kg/hr Average Load Kg/Hr Total Load Kg/day Tolerance \pm %	
RO Water & Raw Water (Separately)	Peak Load lt/hr Average Load Lt/Hr Total Load lt/day Tolerance \pm %	
Air	Peak Load Nm ³ /hr Average Load: Nm ³ /Hr Total Load Nm ³ /day Tolerance \pm %	

Chilled Water	Peak Load TR/hr Average Load TR/Hr Total Load TR/day Peak Chilled Water flow Lit / Hr Tolerance \pm %	
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11.5 PRODUCT RECOVERY DATA (wherever applicable)

Product loss assuming rated capacity operations follows

Milk Loss	Filling Losses	
	Losses to ETP	

11.6 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%	

**FORMS FOR ORGANISATION DETAILS, AGREEMENT, PERFORMANCE
GAURANTEES AND FOR BG AGAINST ADVANCE**

PERTICULARS OF UNIT/ORGANISATION

I/We hereby furnish following particulars about our unit :

1. Name of the Unit :

2. Address of the Unit :

3. Name & Address of the :

Directors/Partners :

4. Name with Designation of other persons.....

authorized to sign the documents on behalf:.....

of the Unit if anyway :

5. Telephone /Fax No. Office..... Factory.....

6. Telegraphic Address Office..... Factory

.....

7. Particulars of the Registration certificate issued by the Directorate of Industries

..... Registration No. & Date..... 8. GST No. & Date

..... State..... ST No. & Date..... 9. GST and income tax

Assessment /Clearance has been made for the year last two years..... (Enclose

Return/Assessment/Clearance certificate) 10. Whether the unit or its sister concern unit or any unit of their

proprietorship, if any, has been Blacklisted/Debarred or Penalized by any central or state

Govt./Organization at any Time..... YES..... NO.....

If "YES", when and Why? Give Reasons in Detail :

11. Manufacturing Facility :

12. Specification of the Plant :

:

(Please fill the Technical specifications in

13. Customers on current list : (separate sheet may be attached)

:

14. If you Propose to Diversify to Technological advancement if so, What is the expected time

.....

15. Name & address of service canters/engineers

16. No. of EQUIPMENTs supplied to coop. milk unions in last 5 years (separate sheet may be attached)

.....

17. Annual turnover of the firm from EQUIPMENT segment (attach proof)

.....

18. Whether the EQUIPMENTs are being manufactured in India

.....

19. EMD details : DD No.Date : Amount Rs

Name of bank.....

I/We undertake that the information furnished in this tender document is correct to the best of my/our Knowledge and belief .

Date : Place :

Signature of authorized Signatory of the Unit

(with seal)

CONTRACT AGREEMENT FORM

(On a Non-Judicial Stamp Paper of Rs.500.00)

THIS AGREEMENT is made at Jabalpur on the _____ day of _____ 20

between Chief Executive Officer, Jabalpur Sahakari Dugdha Sangh Maryadit, Jabalpur, MP, India (hereinafter called "JDS") of the one part and _____ (hereinafter called "the Contractor") of the other part.

WHEREAS JDS has appointed Supplier/Contractor to get work done under the contract of the bid which has been submitted by Supplier/Contractor and who has accepted a bid in response to the JDS' Bidding Document Reference _____ with regards to undertaking of

the _____ Mechanical _____ &

Electrical work, for a sum of Rs. _____

(here in after called "the Contract Price").

NOW THIS AGREEMENT WITNESSTH AS FOLLOWS:

In this agreement words and expressions shall have the same meaning as in the Terms and Conditions and in respective Sections in the above referred Bidding Document.

1. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz

a. the offer and price schedule submitted by the Contractor:

b. the scope of work/supply of items and the technical specifications in respective section of the above referred Bidding Document:

c. The General terms and conditions, special conditions of erection and commissioning in respective Sections in the above referred Bidding Document:

d. The JDS Work Order No. _____ dated _____ (File ref. :)

2. In consideration of the payments to be made by the JDS to the Contractor, the Contractor hereby covenants with the JDS to undertake the **Design, Supply, installation, commissioning, training and successful trial run of new Paneer plant of 10 Tons per day capacity at Jabalpur Sah. Dugdha Sangh** and to remedy defects therein in conformity in all respects with the provisions of the Work Order given by the Consultant and Bidding Document.

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

Signed, Sealed and Delivered by the said the said

Authorized Signatory

Authorized Signatory

Chief Executive Officer, Jabalpur

Contractor

Sahakari Dugdha Sangh Maryadit, Jabalpur, MP, India

In the presence of:

In the presence of: Witness
Witness

1) Signature

1) Signature

Name

Name

Address

Address

2) Signature

2) Signature

Name

Name

Address

Address

(Form of Bank Guarantee for Performance Security)

(On the Non-judicial Stamp paper as per the Stamp Act of Local State Govt.)

Bank Guarantee No.....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 _

Chief Executive Officer, Jabalpur Sahakari Dugdha Sangh Maryadit, Jabalpur,MP, India (hereinafter referred to as "JDS") which expression shall unless repugnant to the context and meaning thereof include its legal representative, successors and assignees.

Whereas, JDS has awarded a Contract and Purchase order bearing No._____ dated____on

M/s._____ (Name and address of the party) (hereinafter referred to as the 'Supplier') for the **Design, Supply, installation, commissioning, training and successful trial run of new Paneer plant of 10 Tons per day capacity at Jabalpur Sah. Dugdha Sangh** And whereas, the Supplier has agreed to submit a performance guarantee in the form of a Bank guarantee to the JDS as per terms and conditions of the Bidding Documents 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).

In consideration to the above where in JDS has awarded _____ the contract/purchase order to the Supplier, we _____ (name of the Bank), do hereby guarantee, undertake, promise and agree to with the Service Recipient, its legal representatives, successors and assignees that the within

named _____ (name of the 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 JDS of

Rs. _____ (Rupees _____)

only) being the 10% of the contract value, without any demur in case the 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 willfully and

promptly do all obligations thereunder.

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

We, _____ (name of the Bank), do hereby undertake to pay an amount equal to Rs. _____ being the 10% of the order value, being the amount due and payable under this guarantee without any demur, merely on a demand from the JDS 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 Supplier or by reason of the 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 Service Recipient certifies that the terms and conditions of the said contract/ purchase order have been fully and properly carried out by the said Supplier and accordingly discharge the guarantee, unless a demand or claim under this guarantee is made on us in writing by the JDS on or before _____, we shall be discharged from all liabilities under this performance guarantee thereafter.

We, _____ (name of the Bank), further agree with the JDS that the JDS shall have the fullest liberty without our consent and without affecting in any manner our obligations here under 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 Supplier from time to time or postpone for any time or from time to time and any of the power exercisable by the JDS against the 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 Supplier, or for any forbearance, act or omission on the part of the JDS to the said 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 JDS may have or hereafter possess in respect of the goods supplied/executed or intended to be supplied/executed and the JDS shall be under no obligation to marshal in favour of the Bank any such securities or funds or asset that the JDS may be entitled to receive or have a claim upon and the JDS 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 JDS 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 despatch 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, _____ (the name of Bank), undertake to renew the Bank Guarantee provided the request for renewal is made by the supplier before the expiry of Bank Guarantee.

We, _____ (the name of Bank), lastly undertake not to revoke this guarantee during its currency except with the previous consent of the JDS in writing and the guarantee shall be a continuous and irrevocable guarantee up to a sum of Rs. _____ (Rupees _____ only).

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

(SIGNATURE)

Place: SEAL

Date:

NOTE:

CODE NO

- 1 THE SUPPLIER SHOULD ENSURE THAT SEAL AND CODE NO. OF THE SIGNATORY IS PUT BY THE BANKERS, BEFORE SUBMISSION OF THE BANK GUARANTEES.
- 2 STAMP PAPER IS NOT REQUIRED IN CASE OF FOREIGN SUPPLIERS.
- 3 THE VALUE OF STAMP DUTY SHOULD BE AS PER THE LATEST STAMP ACT OF LOCAL STATE GOVERNMENT FROM WHERE THE BANK GUARANTEE ISS

FORM OF BANK GAURANTEE AGAINST ADVANCE

(On the Non-judicial Stamp paper as per the Stamp Act of Local State Govt.)

Bank Guarantee No. _____

Date: _____

1. In consideration of Chief Executive Officer, Jabalpur Sahakari Dugdha Sangh Maryadit, Jabalpur, MP, India (hereinafter called 'JDS') having agreed to grant an advance of Rs. _____ (Rupees _____ only) to M/s. _____ (hereinafter called the said supplier) under the terms and conditions of an contract/purchase order No. _____ dated _____ made by JDS to M/s. _____ for the Design, Supply, installation, commissioning, training and successful trial run of new Paneer plant of 10 Tons per day capacity at Jabalpur Sah. Dugdha Sangh (hereinafter called the 'said contract/purchase order') on production of a Ban Guaranteefor Rs. _____ (Rup _____) only. We

_____ (here in after called 'the Bank') do hereby undertake to pay the JDS an amount not exceeding Rs. _____ (Rupees _____ only) against any loss/damage caused to or suffered would be caused or suffered by the JDS by reason of any breach by the said supplier(s) of any of the terms and conditions contained in the said contract/ purchase order.

2. We, _____ (the name of Bank) , do hereby undertake to pay the amounts due and payable under this guarantee without any demur merely on a demand from the JDS 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 our would be caused to or suffered by the JDS by reasons of any breach by the said supplier(s) of any of the terms and conditions contained in the contract/purchase order or by reasons of the 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.

3. We, _____ (the name of Bank), 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 JDS, under, or by virtue of the said contract / purchase order have been fully paid and it's claims satisfied or discharged or till Service Recipient certifies that the terms and conditions of the said contract/Purchase Order have been fully and properly carried out by the said 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.

4. We, _____ (the name of Bank), further agree with the JDS that the Service Recipient 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 Supplier from time to time or to postpone for any time or from time to time any of the power exercisable by the JDS against the said 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 JDS or any indulgence by the JDS to the said 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.

5 The Bank agrees that the amount hereby guaranteed shall be due and payable to the

JDS 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 despatch thereof to the Bank by registered post at the address of the Bank.

6. We, _____ (the name of Bank), lastly undertake not to revoke this guarantee during its currency except with the previous consent of the JDS in writing.

7. We, _____ (the name of Bank), undertake to renew the Bank Guarantee provided the request for renewal is made by the said supplier before the expiry of Bank Guarantee.

8. Notwithstanding anything stated hereinbefore (i) our liability under this Bank Guarantee

is restricted to Rs. _____ (Rupees _____ only) (ii) The guarantee shall remain in force till the _____ 20____ and (iii) The Bank is liable to pay the guarantee amount or any part thereof under this bank guarantee _____ only if the JDS serves upon the Bank a written claim or demand on or before _____.

Place :

Date :

(SIGNATURE)

SEAL

CODE NO.

NOTES:

1. SUPPLIERS SHOULD ENSURE THAT SEAL AND CODE NO. OF THE SIGNATORY IS PUT BY THE BANKERS, BEFORE SUBMISSION OF THE BANK GUARANTEES.
2. STAMP PAPER IS NOT REQUIRED IN CASE OF FOREIGN SUPPLIERS.
3. THE VALUE OF THE STAMP DUTY SHOULD BE AS PER LATEST STAMP ACT OF LOCAL STATE GOVERNMENT FROM WHERE THE BANK GUARANTEE ISSUED.

DRAWING

(CIVIL BUILDING LAYOUT AND INDICATIVE EQUIPMENT LAY OUR ARE ATTACHED)