

Tender Notice

Tender offers are invited for design, supply, installation, hooking up with present system, commissioning, user training and trial run of all equipments and centralized automation system at our Shirol Dairy on turnkey basis. Details of our requirements, scope of contract, details of equipment and Terms and Conditions of this Tender are available on our website <www.gokulmilk.coop> . Earnest Money Deposit for this Tender is Rs.7,00,000/- (Rs. Seven lacs only). Tender offer is to be submitted on or before **15:00 hrs. of 05/11/2025**. Right to accept or reject any or all Tenders without assigning any reason is reserved.

Managing Director
Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.,
B-1, M.I.D.C., Gokul Shirgaon
Tal. Karveer, Dist. Kolhapur - 416234

KOLHAPUR ZILLA SAHAKARI DUDH UTPADAK SANGH LTD., KOLHAPUR

TERMS - CONDITIONS

1. The bidder should design, supply, install, hooking up with present system, commissioning, user training and trial run of all equipments and centralized automation system at our Satellite Dairy, Udgaon, Shirol on turn key basis.
2. Bidder's annual financial Turnover in the same name and style during each of the last three financial years should not be less than Rs. Fifteen crores.
3. The job should be treated as 'TURN KEY' excluding civil work. Details as regards requirements, scope of contract, details of equipment / material are given herewith.
4. The Bidder should submit their Tender in a prescribed format & visit the installation site to take information at his own cost.
5. Technical offer and commercial offer should be sent in a separate envelope duly marked as COMMERCIAL OFFER and TECHNICAL OFFER respectively. Sealed envelopes of Commercial offer & Technical offers to be put in a Common sealed cover duly marked as '**TENDER FOR CENTRALIZED AUTOMATION SYSTEM AT SATELLITE DAIRY UDGAON, SHIROL**'
6. Bid must be accompanied by Earnest Money Deposit of Rs. **7,00,000/-** (Rs. Seven lac only) in the form of RTGS / Demand Draft drawn in favour of Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. payable at Kolhapur. Scanned copy of Demand Draft/RTGS toward EMD is to be attached with the Technical offer & original D.D. in sealed cover duly marked as DD towards Tender for Dairy Automation. D.D. should reach our office, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., B-1, M.I.D.C., Gokul Shirgaon, Tal. Karveer, Dist. Kolhapur 416 234 on or before **15:00 hrs. Of 05/11/2025**. Tender without EMD will not be considered. Earnest Money Deposit of unsuccessful Tenderer will be returned within two months.

RTGS Details

Name of Project Authority	Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., Kolhapur
Address of Project Authority	B-1, MIDC, Gokul Shirgaon, Tal Karvir, Dist. Kolhapur, State Maharashtra Pin Code 416 234
Name of Bank	Bank of Maharashtra
Bank A/c No.	60182028384
IFSC Code	MAHB0001575
Branch Name & Address	B-1, MIDC, Gokul Shirgaon, Tal Karvir, Dist. Kolhapur, State Maharashtra Pin Code 416 234

7. No escalation in the price will be given once the order is finalised.
8. Successful bidder will have to keep 3% interest free security deposit of the basic order value with us. Security deposit will be released after completion of successful and satisfactory trials. Successful bidders EMD will be transferred to security deposit. The bidder will have to deposit differential amount of security deposit.
9. Payment Terms:
 1. 30% Advance against Bank Guarantee of nationalize bank valid for six months after acceptance of purchase order. ABG will be released after receipt of all material as per the P.O. at site.
 2. 40% payment after receiving and approval of material at site in good condition.
 3. 20% payment shall be made after satisfactory installation & commissioning
 4. 10% payment will be released after successful and satisfactory trial runs of 2

months against performance Bank Guarantee of 10% amount of order value valid for a period of one year from the date of satisfactory trials.

5. Income Tax at source will be deducted whatever applicable as provision of I.T. Act 1961 as amended from time to time
10. a. Entire work of design, supply, installation, hooking up with present system, commissioning, user training and trial run of all equipments and centralized automation system of equipment is to be completed within 8 months from order acceptance and 2 months trial runs from successful commissioning.

b. If anything missing to mention in the tender & it is requirement of project for satisfactory running of the system then bidder should consider provide it without any extra cost.
11. Tender is to be submitted on or before **15:00 hrs. of 05/11/2025**.
12. We reserve right to accept or rejects any bid, postpone bidding process and reject all bids at any time prior to award of contract.
13. All the Tender documents should be sealed & signed as acceptance of Tenderer.
14. For bactofuge & homogenizer, to hang the chain pully block arrangement should be done by bidder. Required capacity chain pully blocks for bactofuge & homogenizer are in bidder's scope.
15. The bidder has to submit the following documents
 1. Valid Work contract tax registration
 2. Valid GST registration certificate.
 3. Proof regarding payment of E.M.D.
 4. Experience Certificate amounting minimum of Rs 10 crores (single order) issued by competent authority of similar nature for executed supply cum erection work in any Govt./Semi Govt./ Private Organization during last three years.
 5. Site visit report. **Site visit /Pre bid meeting** is mandatory which will be held on **27/10/2025 at 11.00 am on Satellite dairy, Udgaon Shirol Dist. Kolhapur**.
 6. Bidder should have complete at least 3 works of such type in last 5 year & valid documents of satisfactory work completion report should be attached.
16. The right to ignore any tender which fails to comply with the above instructions is reserved with the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.. Outstation tenderers should send EMD D.D. by Registered post. No cognizance will be taken for the postal delays, if any.
17. The bidder or his authorized representative may be present at the time of opening the tender.
18. The tender offers shall remain valid for a period of 90 days from the date of opening the tender.
19. The Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., reserves the right to accept or reject any or all the tenders without assigning any reason thereof.
 - a) The price quoted for the items should be F.O.R. at Satellite Dairy, Udgaon, Shirol, Kolhapur unit inclusive of all charges for packing, forwarding, transportation, shifting, loading, unloading, transit insurance, insurance till commissioning, assembling, erection, installation, commissioning, trial run, training etc. complete on TURN KEY BASIS. No price escalation will be allowed.
 - b) Warranty – One year comprehensive after successful commissioning.

c) If the bidder is not OEM then, he should submit the commitment letter of OEM on OEM's letter head regarding assurance of warranty period of equipments & after sales service & spares backup to Gokul as & when required.

20. The offer should be inclusive of all the taxes, duties, levies as applicable.
21. The bidder will have to pay Security Deposit as indicated in the Tender Form, within 15 days from the receipt of purchase order for satisfactory completion of the supply/work within the specified period. This amount may be used for adjusting the penalty (if any), recovery of cost damages etc. besides any other amount to recover damages/extra cost resulting from failure/ irregularity of the contractor, as the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., may deem fit. In this regard, the decision of the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., will be final. Exemption from the payment of Security Deposit will not be granted.
22. The bidder should furnish necessary details about Income tax clearance (for the last three years), along with details of turnover, number of machines sold during last five years. The bidder should furnish client's report regarding satisfactory performance of the machines. The bidder should also furnish necessary details about infrastructure facilities, Quality Control facilities, number of persons employed, etc.
23. Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. reserves the right to reject the item either in full or in part, if at the time of delivery, the items supplied do not confirm to the quality and technical specification as stipulated in the tender.
24. The conditional, incomplete, defective or ambiguous tenders, as decided by the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., shall be rejected.
25. Bidder should also visit Gokul Dairy & have discussions for clarifications if any. Bidder should visit the site & inspect the space availability in the Dairy for suitability of accommodation of material.
26. Bidder should have a vast experience in manufacturing, installation and repair of the above job & documents/certificates for experience should be submitted along with the tender.

The bidder should offer the inspection of the material prior to dispatch at no extra cost to the Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.. The entire supply should also be further offered for the inspection at site. If the material fails to conform the technical specifications, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. may reject the same and the bidder shall either replace or make alterations necessary to meet the requirements, free of cost.
27. If the bidder fails to complete the supply/complete the work within the period prescribed, the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., shall be entitled, at his option, to recover from the bidder, as penalty a sum equivalent to half percent of the total cost for delay of each week or part thereof during which supply/installation is delayed, subject to the maximum of 5 % of the tendered cost of the contract.
28. REJECTION OF DEFECTIVE MATERIAL: The supply of material, as well as their installation and commissioning shall have to be carried out by the bidder to the entire satisfaction of Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.. If the plant, machinery and equipment is found to be defective or found to have failed to fulfill the requirements of the contract or develop defects after commissioning within a period of 12 months from the date of satisfactory trials, the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., shall be entitled to give a notice to the bidder indicating details of such defects or failure and the bidder shall forthwith make the defective plant good or alter the same to make it comply with the requirements of the contract at his own cost. Further, if in the opinion of the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., the defects of such nature, cannot be made good or repaired without impairing the efficiency of workability of the plant, the bidder shall replace the same with

the plant, machinery and equipment- conforming to the stipulated specifications in all respects at the cost and risk of the contractor. Should the contractor fail to do so, within a reasonable time, the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., may reject and replace it at the cost and risk of the bidder.

29. FINAL TEST AND TRIAL RUN: Each machine/equipment shall first be tried out and satisfactorily commissioned by the bidder. After satisfactory commissioning, a joint trial shall be conducted by the bidder and the representative of Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., for a period of 15 days.
30. During the erection, commissioning and trial runs, the tenderer shall train the staff of the Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., for operation and maintenance of the machinery and equipment.
31. The tenderer shall supply:-
 1. Two sets of service and maintenance manual for each machine / equipments
 2. Two sets of operating instructions for each machine/equipment.
 3. Any other technical literature/drawing required by Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd..
 4. All the program backups of SCADA, PLC and VFD's & all passwords.
32. Tenderer should submit the working drawing & layout to Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. before executing the work..
33. The tenderer shall arrange for insurance etc. of his people employed for erection and installation work as per ESIS ACT, WORKMEN COMPENSATION ACT, and any other provision to meet statutory requirements of various Labour Acts/Rules. In case of accident to any of his person in his employment or agents during the period of installation, the office of the Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. shall not bear any liability whatsoever. The entire responsibility primary and final in this respect will be that of tenderer.
34. Necessary safety guards etc. for the operation of machinery and equipment required under the Factories Act shall be provided by the tenderer and included in the offer.
35. The minor modifications in layout to suit the site requirements / conditions shall be undertaken by the party within the cost of the tender.
36. RESPONSIBILITY FOR COMPLETING THE CONTRACT:

The responsibility for completing the contract and commissioning the plant, machinery and equipment rests with the tenderer. Any items which may not be specifically mentioned in the tender specifications, but which are necessary to be provided to complete the installation, commissioning work, the tenderers should bring out such items in the tender separately and their charges/value should be included in the tender offer by giving specific details.

It shall be the responsibility of the successful tenderer to have comprehensively insured the goods against any risk i.e. against the damages that may be caused during the stage of transition, execution, trials, fire, theft etc. till final handing over of the entire equipment to Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. after satisfactory trials.

The tenderer should furnish details of relevant past experience, along with the list of clients and with details of orders for similar jobs executed.

37. Contacting the purchaser (Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.): -

From the time of tender opening to the time of contract award, if any tenderer wishes to contact Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. on any matter related to the tender, it should do so in writing. Any effort by a tenderer to influence the Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. in its decision on evaluation, tender comparison or contract award may result in the rejection of the tender.
38. Clarifications: -

During evaluation, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. may, at its discretion, ask the tenderer for the clarification of its tender. The request for clarification and the response shall be in writing and no change in the prices or the substance of the tender shall be sought, offered or permitted.

39. The price will not be the only criteria for acceptance of the offer. The party should furnish benefits of the equipment offered. Due weightage will be given to the performance, effectiveness, efficiency, relevant past experience etc. while finalizing the offer for the acceptance.
40. The new plant and machinery/equipments arrangement, etc. shall be accommodated in the existing space/area available. The interested parties may visit (Satellite Dairy Unit, Udgaon, Shirol – Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. at Process and Packing Section in office hours from 10.00 to 17.00 hours and discuss the technical details, space availability etc. The parties should prepare the layout of the plant and machinery/equipments/refrigeration arrangements etc. which will be supplied and accommodated in the area available. The parties can have the detailed discussions for the clarifications, if any, at Gokul Dairy, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.), Kolhapur.
41. For disputes, if any, the decision of the Chairman , Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., shall be final.
42. Legal disputes, if any, are subject to Kolhapur Jurisdiction.
43. The total charges mentioned in the Purchase Order are inclusive of all the Taxes and Duties, any change in the same after submitting the offer shall be a responsibility of the Tenderer.
44. The successful tenderer has to enter into the 'Contract Agreement', if required, for completion of the job, performance guarantee, etc., before disbursement of any payment.
45. The successful tenderer shall maintain a register to maintain record of daily progress of the project / work and shall take the signature of the concerned person in that register, on the same day. This register shall be produced before the project authority, as and when asked, during the progress of the project / work and shall be submitted after the completion of the project / work.
46. The bidder is required to quote for the scheme as per tender specifications.
47. The Contractor shall not sublet the contract without our written permission.
48. For any Technical queries you may contact Mr. A. S. Swami (Manager Engg.) Mr. P. A. Padwal (Manager Engg.) on his Mobile No. **9689496363 & 9881402721** having e-mail elect@gokulmilk.coop, engg@gokulmilk.coop and for any other commercial queries you may contact Mr. K.N.Molak Incharge (Purchase) on his Mobile No. **9422775977** having e-mail purchase@gokulmilk.coop

Managing Director

TENDER FORM

FOR

AUTOMATED MILK PASTEURIZER, CAP-20 KLPH

MILK HOMOGENIZER, CAP-20 KLPH

MILK BACTOFUGE ,CAP - 20 KLPH

Centralised automation system for above equipments and display of parameters of present 10 KLPH Pasteurizer, 10 KLPH Homogenizer, Two raw milk chillers, Raw milk silos 2 Nos, Dispatch chillers, Pasteurized milk silos 3 nos. All parameters should be displayed on scada screen.

AT

**Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd, Kolhapur
At Satellite Dairy ,Udgaon , Shirol,Dist – Kolhapur- 416120**

1.

1.1. 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.

1.2. Commercial Bid:

- ✓ Bid form filled

1.3. 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

1.4. Bid Currency

All prices shall be quoted in Indian rupees ONLY

1.5. SCOPE OF SUPPLY

Following main component shall be supplied:

- 1.5.1. Shall be as per Bill of Material (BOM) in the tender document
- 1.5.2. Drawing & Documents including input drawing and loading data.
- 1.5.3. Logic and Software solution (SCADA, MES and MIS) with graphical representation, networking of all processing patterns along with the standard and other features required by the dairy and engineering department.
- 1.5.4. Logic and Software solution (SCADA, MES and MIS) should have the network, reporting, Production Planning, Production execution and Production analysis capability for real-time operation.
- 1.5.5. Deputation of engineering team for checking the correctness of Engineering work pertaining to the existing (already constructed) building.
- 1.5.6. Any other items required for installation and commissioning of entire system

- 1.5.7. Two sets of operation , instruction manuals, drawings and electrical and PLC wiring diagrams of the entire system and machines and one set of required tool kit for each machine and two sets of consumables (rubber parts) for all machines should be supplied.

1.6. SCOPE OF SERVICES

- 1.6.1. 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.

- 1.6.2. Complete assembly, erection, connections, testing and commissioning, putting into successful and satisfactory operations of all above equipment's and automated systems.

1.6.3.

- 1) Typical drawing of all equipment, piping and instrumentation to be supplied and disposition of various fittings and loadings.
- 2) Proposed P&I drawing for process section including all details for
 - Automated Milk Pasteurizer, Cap – 20 KLPH
 - Homogenizer, Cap – 20 KLPH
 - Milk Bactofuge, Cap – 20 KLPH
 - Central Automation system for above equipments and display of parameters of present 10 KLPH Pasteurizer, 10 KLPH Homogenizer, Two raw milk chillers, Raw milk silos 2 Nos, Dispatch chillers, Pasteurized milk silos 3 nos. All parameters should be displayed on scada screen.
- 3) I/O Details of DDC panel , networking details and I/O distribution details across the process section.
- 4) All annexures of specification duly filled in and signed by the supplier.
- 5) Catalogue of all equipment and components explaining construction features
- 6) Latest version of Software (SCADA) , PLC logics platform , Windows OS, MES (Manufacturing Execution System), communication and networking and MIS (Management Information System) and instrument details
 - Software architectural, information flow drawing and sufficient details.
 - 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, Pasteurizer control in abnormal situations, etc.
- 7) Detailed documents related to Effectiveness, accuracy and Benefits provided by the whole system.
- 8) Test / calibration certificates for all equipment / instruments .
- 9) Demonstration capability details.

1.6.4. 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, networking details ,line and wiring diagram for Electrical and PLC/DCS panel, terminal connection, wiring diagram with physical location of components, networking details , and line diagram for for all equipment.
 3. Project execution schedule as per details mentioned under Project Management head
 4. Cable and power layout drawing for electrical and instrumentation.
 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.
 9. Loop check reports for all I/O's
- 1.7. Submission of Drawing and automated system details for approval of union authority from successful bidder.
- 1.8. **Prices:** Shall include: Basic Price, Packing and Forwarding, GST, Freight up to site, Insurance.

◆ **CO-ORDINATION**

The supplier shall co-ordinate with Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. Project team at site for execution of his part of work.

The Supplier shall at all times work in close co-ordination with the Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. supervising personnel and afford them every facility to become familiar with erection, maintenance and working of the equipment.

◆ **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.

◆ **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 Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. as per terms and conditions of contract.

◆ **GUARANTEE**

At the close of the work and before issue of final certificate of virtual completion by Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., the supplier shall furnish a written guarantee indemnifying the Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.

against defective materials and workmanship for a period of **24 months** after completion. The supplier shall hold himself fully responsible for re-installation or replacement free of cost to Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd..

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

◆ **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.

◆ **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, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd, Kolhapur 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 KOLHAPUR.

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, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. shall not bear any liability what so ever the entire responsibility primary and final in this respect will be that of supplier.

The successful tenderer should register himself with the labour commission in order to use labours at site.

You will not employ minor as a contract labour. You will have to submit age proof documents of your labour.

In case of accident to your contract labour , you are supposed to pay for expenses. In case if you failed to do so and we receive complaint, the proportionate amount will be deducted from your bill.

You will have to pay a lumpsum amount with mutual understanding for the usage of water and electricity by your staff at your site office in our premises.

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.

Technical committee of Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. may visit project already implemented by vendor; and may ask end customer's view about implementation and overall effectiveness of complete system

Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. management reserves the right to accept or reject any / or all the tenders without assigning any reason thereof.

For any technical clarification / interpretation decision of Managing Director (Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.) shall be final.

Lowest price shall be considered on totality basis. Break-up price shall be for indication purpose but it is mandatory to be filled.

For Disputes if any decision of Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. management shall be final.

Kolhapur Zilla Sahakari Dudh Utpadak Sangh will conduct FAT (Factory acceptance test) with successful bidder before despatch of the material.

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 – 7.5%
3.	Milk Solids not fat content	7.5 – 9.5%
4.	Plate count less than	5 million/ml
5.	Temperature	8-10 Degree C
6	PH	6.65 – 6.75

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 and configuration of trends of all parameters, user account management , access control and audit trails functionality
- ✓ Minimum Energy consumption & Product losses.

3. Milk Processing

Following equipment's to be provided

- a) Fully Automated Milk Pasteurizer Module of 20,000 LPH capacity, Temperature profile (4-55-65-80-3), Holding time 20 Seconds.
 - i. The Processing line is consisting of Pasteurizer and homogenizer
 - ii. The pasteurizer is provided with booster pump.
 - iii. In processing line Flow meter are considered for the flow measurement and Feed Pump speed control.
 - iv. Milk Pasteurizers shall be having 93% (min.) regeneration efficiency.
 - v. All the process line pumps rating and capacity shall be suitable for process requirements & CIP.
 - vi. All valves, pipes & fittings and equipment's shall be of sanitary type. Welded connections shall be provided wherever practical to minimize on the use of fittings.
- b) Milk Homogenizer, cap – 20,000 LPH
- c) Bactofuge, cap – 20,000 LPH

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.

SS 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. VENDOR/CONTRACTOR shall supply all piping materials like pipes, fittings, flanges necessary to hook up with the existing system.

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, milk 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 two month or as mutually agreed by Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. 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 Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd..

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 Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. shall be operating and maintaining the plant and equipment's for a minimum period of three 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 provide hands on training to the staff deputed by Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. 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
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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
Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. shall provide water at available supply point from which VENDOR/CONTRACTOR shall connect temporary piping for testing water.					

ELECTRICAL WORKS

- **Scope**

- 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.

- **Standards**

- 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 Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.. Some of the relevant Bureau of Indian Standards is listed in Table-1
- 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

- **Equipment and accessories specifications**

- This defined specifications and requirements mainly for the equipment and accessories which are going to be supplied by TENDERER
- 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.
- All similar materials and removable parts shall be uniform and interchangeable with one another

- **Constructional features**

Metal enclosed Panel body shall be of ss – 2 mm thick

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.

cable gland plates should be removable . Cable entry shall be from bottom rare side unless otherwise specified m

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.

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

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.

All knobs should be Quarters Tern Type, side covers slided type and compartment and back covers should be openable – hinged type

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.

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

- **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.

- **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.)

- **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.

- **Cable, Wire Indicators**

Individual symbols / numbers on yellow strips of glossy PVC should be used for

each
cable / Wire indicator

- **Pipes for Cables**

- 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.

- **Motor Isolators**

- 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.
- Motor Controls
All motors should be controled through VFD
All motors should be conected through industrial pin socket fixed on IP 65 SS box.

- **Control Junction Box**

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

- **Remote Push Button Stations**

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

- **Erection of Equipment**

- The cases containing equipment shall be handed over to Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.. 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 Inpresence of engineer in-charge (from Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. side). Theses 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.

- **Power control Centers, distribution Board, control Panels and Bus ducts**

- 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.
- 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.
- 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
- 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 causes a lockout to occur. Trip breaker either manually or by applying current or voltage to each of its associated protective relays. Before switchgear is energized, the test covered above shall be repeated with each breaker in its normal operating position.
- All electrical equipment alarms shall be tested for proper operation by causing alarm to sound under simulated abnormal conditions.

- **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.

- **Erection and Testing of Motors**

- 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.
- 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.
- 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.
- TENDERER shall run all motors uncoupled for a maximum period of 4 hours before the driven equipment is placed in regular service.
- All outdoor installed motors shall be shrouded with cover made of 14 gauge GI sheet with lifting hook and for indoor motors shall be shrouded with cover made of SS 304-1.5 mm thick.

- **Installation of Cable Network**

- 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.

- **Handling of cables**

- 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.
- 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.

- Sharp bending and kinking of cable shall be avoided.
 - 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.
 - A/C cable (230 V and above) and other control & network cables shall be separated from each other by adequate spacing or running through independent pipes/trays.
 - Armored cables shall never be concealed in walls / floors/ roads without GI pipe conduit pipes.
 - 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.
 - 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.
 - 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.
 - 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.
- **Laying of cables (underground system)**
 - 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.
 - 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.
 - 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.
- **Laying of cables under Floors**
 - 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%
 - Ends of pipe shall be sealed temporarily while laying with cotton/jute/rubber stopper etc. to avoid entry of building material.
 - Ends of pipe shall be sealed permanently after completion of work.

19. List Of Approved Make

Sr.No.	ITEM	MAKE
1.	CONTACTOR	SIEMENS
2.	O/L RELAY	SIEMENS
3.	MCB	SIEMENS
4.	MCCB	SIEMENS
5.	SFU	SIEMENS
6.	TIMER	SIEMENS
7.	LED IND. LAMPS	ESBEE
8.	DIGITAL AMMETER	MECO
9.	DIGITAL VOLTMETER	MECO
10.	LOAD MANAGER	MANACO ENERGY
11.	C.T.	MECO
12.	PUSH BUTTON	ESBEE
13.	TERMINALS/CONNECTOR,	CONNECTWELL
14.	LUGS	DOWELLS / LAPP
15.	CABLE GLAND	COSMOS / LAPP
16.	CAPACITOR BANK	SIEMENS
17.	Cu. ARMOURED / FLEXILE	POLYCAB
18.	Al. ARMOURED CABLE	POLYCAB
19.	SOFT STARTER	TELEMECANIQUE
20.	APFC RELAY	L & T
21.	PVC FLEXIBLE PIPE	CONTROLLWELL
22.	VFD	DANFOSS

EQUIPMENT'S DETAILED SPECIFICATIONS

I) FULLY COMPUTERIZED MILK PASTEURIZER [HTST]	
Capacity	20,000 Litres Per Hour
Type	Fully Computerized, Skid Mounted Plate heat exchanger
MOC of Plates	AISI 316
Thickness of Plates	0.6 mm
Product	Milk Total Solids (17.0)
Temperature Program	4-45-65-76-82-3
Regeneration Efficiency:	93% (Separate extra thermo wells should be provided to check the upword and downword efficiency manually)

Holding Time	20 Seconds
Hydro cyclone	Suitable capacity with required accessories.
Heating Media	Hot water
Steam and Hot water Heat Exchange	It shall be plate type heat exchanger with make-up water provision which shall work with auto operated valve
Hot water pump	Suitable capacity
Hot water Flow Rate	30,000 LPH
Chilling Media	Chilled water @ 2 Degree C, Flow Rate – 40,000 LPH
Plate Pack Details	Make: GEA / ALFA LAVAL / APV/ <u>Tetra pack / I.D.M.C</u> Material of Connections: SS 316 Material of Plates: AISI 316 Material of Gasket: Nitril / EPDM (<u>Food grade</u>) Gasket Type: Clip-ON
Finish	150 grit
Other Components	
Pasteurizer Feed Pump	Capacity: 20 KLPH (VFD operated) Centrifugal with VFD & quick opening sanitary fitting, monoblock, free standing with adjustable ball feet Make: Fristam / APV Seal: Double Mechanical
Booster Pump	Capacity: 20 KLPH Centrifugal with VFD & quick opening sanitary fitting, monoblock, free standing with adjustable ball feet Make: Fristam / APV Seal: Double Mechanical
Steam Trap	Make: Spirax
Power cable	Make: Polycab / RR Cable
Balance Tank	Capacity: 350 Litres Material of construction: SS 304 Level should be maintained by low level & high level sensors. Accessories = Cover with handle ,high and low level switch/Tr Probes ,LT CIP spray ball emergency water rush and all other std accessories

	SS Feed Pump Capacity= suitable for 20 kl pasteurizer with VFD Flow controller Capacity-Matching to pasteurizer capacity. Qty- 1 nos M.O.C-SS316
Pneumatic Control Valves (Chilled water)	Duty: Pneumatic Control Valves for Chilled water Line Make: samson
Pneumatic Control Valves (Steam)	Duty: Pneumatic Control Valves for Steam Line Make: Samson
Filter	Type: Duplex (Horizontal) Duplex strainer(PIP type with auto change over for 20 KLPH pasteurizer) Duty- for filtering of raw milk Type- pipe in pipe type(duplex with valve based auto change over) MOC-SS304
Automation	a) This shall be fully Computerized Pasteurizer with Top end Instruments, Higher End PLC Processor with sufficient I/O Modules, Touch Screen PC/ Workstation, Laser printer and Next generation software application with SCDA, MES (Manufacturing Execution system) and MIS (management Information system) for miscellaneous report generation b) 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. c) 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 on whole milk without CIP. d) One separate balance tanks of 300 liters before homogenizer with low level & high level sensors & suitable pump interlocked to avoid starving of the homogenizer.
Pasteurizer PHE (Milk heating section) (seperate unit)	Capacity : Suitable to generate adequate hot water at requisite temperature for the above milk pasteurizer (expansion tank based with soft/RO water make up arrangement & PID based temp. control system. Plate : SS 316. Gasket : Clip on type NBR No. of Sections : 1 Section Frame : Free standing SS clad carbon steel frame on SS –

	304 ball feet Accessories : All std accessories Holding Tubes : Type : Tubular / rack mounted Holding time : 15/20 Sec. Quantity : One set Material : SS –304 Pasteurizer PHE (Regeneration – 3 Sections, Chilling – 1 Section) : Capacity : 20 KLPH Plate : SS 316. Gasket : Clip on type NBR Section block : Each & every section block having provision of temp. sensors, thermowell to sense the temperature for calculating upward & downward pasteurizer regeneration efficiency physically. Frame : Free standing SS clad carbon steel frame on SS-304 ball feet Separate heating section Accessories : All std. accessories. Hot water generation PHE (Single section) Capacity : Suitable to generate adequate hot water at requisite temperature for the above milk pasteuriser with necessary S.S. 304 piping. Low pressure steam(at 140 °C) will be provided for hot water generation. Plate : SS 316, EPDM/Viton SNAP ON gaskets on both sides suitable for 160°C. Frame : Free standing SS clad carbon steel frame on SS – 304 ball feet Steam at low pr of 3.5 bar, steam controller complete with isolation valve. Condensate – Float trap assembly Accessories : All std. Accessories PLC Control System & Instruments : Temperature indication at Desktop for all inlet & outlets of milk heating, regeneration, chilling, all Inlet & Outlets of hot water PHE, milk flow diversion. Product outlet flow measurement by magnetic flow meter. All pump operations status indicated on Desktop and control pump desktop /HMI. The Automation system shall calculate online regeneration efficiency & indicate in the Desktop. SCADA/Desktop/HMI is included in the scope. The all system should run through seimens/ABB/Allen Bradley PLC system. Note : Constant pressure valve at product outlet & pressure transmitter (at required locations), FDV operation based alarm system shall be provided to prevent entry of utilities into product sections of the PHE SCADA /Desktop/HMI is included in the scope. The pasteurizer should run continuously at rated capacity and efficiency for a period of 8 hours without CIP and have the connecting facility of
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	separator & homogenizer. Accessories : Necessary instruments, indicators, recorders, valves including FDV for chilling and heating section, controls etc. mounted in separate water proof SS 304 panel. Tools : Essential special tools including torque wrench should be supplied with the machine without charging any extra cost. – 1 Set. Following information shall be provided by the supplier during detail engineering. The type and the number of the plate, plate area, finishing, heat load, pressure drop and utility consumption in the various section of the heat ex-changer, operating hours between two successive CIP programs, CIP schedule		
INSTRUMENTATION	S.N O.	INSTRUMENTS	REMARK
	1	Balance Tank - High Level switch	Required
	2	Balance Tank - Low Level switch	Required
	3	Feed Pump (with VFD)	Required
	4	Flow Meter (Magnetic - Sanitary)	Required
	5	Milk Inlet Temperature Sensor (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	6	Milk Regeneration Out Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	7	Milk Heating Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	8	Booster Pump (with VFD)	Required
	9	Flow Diversion Valve (Pneumatic controlled along with Feedback unit)	Required
	10	Milk temperature after Holding (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	11	Milk temperature before Chilling (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	12	Constant Pressure valve Make – APV / Alfa Laval / Equivalent	Required
	13	Milk Chilling Temperature (Milk Out) (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	14	Hot water Inlet Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	15	Hot Water Outlet Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	16	Chilled water Inlet Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	17	Chilled Water Outlet Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	18	Pressure Transmitter Upstream side	Required
	19	Pressure Transmitter Downstream side	Required

	20	Heating Module - Make-up water Valve	Required
	21	Heating Module - Steam control valve with I2P Positioner, solenoid coils, AFR and necessary gauges	Required
	22	Heating Module - Steam Pressure	Required
	23	Heating Module - Steam Temperature	Required
	24	Hot water Re-circulation Pump (with VFD)	Required
	25	Chilled water Control Valve with I2P Positioner, solenoid coils, AFR and necessary gauges	Required
	26	Milk Recirculation Valve (Pneumatic controlled along with feedback unit)	Required

1)	GENERAL		
1.1	Type of Equipment :	Plate Heat Exchanger	
1.2	Service :	Milk Pasteuriser	
1.3	Quantity :	1 No.	
2)	DESIGN PARAMETERS		
2.1	Capacity :	20KLPH	
2.2	Raw Milk Feed Temperature :	4° C	
2.3	Milk Take Off Temp. to bactofuge :	53° C	
2.4	Milk Take Off Temp. to Homogenizer :	65° C	
2.5	Milk Pasteurization Temp :	80° C	
2.6	Holding Time for Pasteurization :	20 Sec	
2.7	Holding Tube Diameter :	suitable	
2.8	Milk Discharge Temp. :	Less than 4	
2.9	Heat Regeneration :	93% minimum	
2.10	Chilled Water Inlet Temp :	2° C	
2.11	Max Total Pressure Drop on Milk Side :	25 MWC	
2.12	Max Pressure Drop on chilled water side :	10 MWC	
2.13	Max Pressure Drop on Hot water side :	10 MWC	
4)	MATERIAL OF CONSTRUCTION		

4.1	Plate Material	:	SS 316		
4.2	Type of Plate /HTA per plate	:	As per design		
4.3	Wetted Parts	:	SS 304		
4.4	Gaskets	:	Snap in type EPDM, shall with stand a Hot Water Temperature of 160° C & 2% Caustic and 1% Acid Solution at 80° C. Gasket Material shall NBR/HNBR (In Hot Water Heating Section). The Gaskets shall be suitable for Food Application.		
4.5	Frame	:	CS Cladded with 1.2 mm THK SS 304		
4.6	End Block	:	CS Cladded with 1.2 mm THK SS 304		
4.7	Tie Rods	:	SS 304		
4.8	Carrying Bar	:	SS 304		
4.9	Spacers	:	SS 304		
4.10	Hydro Test Pressure	:	130 MWC		
4.11	Frame Details	:	To be Submitted by Vender		
4.12	Thermowells	:	Stainless Steel (AISI 304) Pocket for Probe on all the inlets & outlets (Utility Side) shall have ½" NPT male connection. At the inlet of final heating section ½" NPT male connection 6mm OD Stem dia thermowell is required wells at milk in to heating & milk in to chilling to be provided to measure regeneration efficiency.		
4.13	Ball Feet	:	The frame shall be provided with adjustable stainless steel ball feet with provision for height adjustment of 50 mm.		
4.14	Finish	:	All weld joint shall be ground smooth. All stainless steel surfaces shall be polished to 180 grit.		
5)	DOCUMENTS REQUIRED	:			
			FOR APPROVAL	FOR RECORDS	SOFT COPY
5.1	G.A. Drawings	:	2 Hard Copies	6 Copies	One
5.2	Foundation Drawing	:	2 Hard Copies	6 Copies	One
5.3	Cross Sectional Drawing	:	2 Hard Copies	6 Copies	One
5.4	OP. & Maintenance Manual	:	---	6 Copies	One
5.5	Guarantee & Warranty Cards	:	As per Norms		
5.6	Material Test Certificates	:	---	6 Copies	---
5.7	Plateage Diagram	:	2 Hard Copies	6 Copies	One
	TECHNICAL INSFORMATION TO BE FURNISHED BY VENDER				

6)	OPERATINGPARAMETERS	:	Unit	Heating	Heating	Rege 2	Rege 1a	Rege 1b	Chilling
6.1	STEAM HEATED	:							
6.1.1	Medium Flowing	:		Water	Milk	Milk	Milk	Milk	Ch. water
6.1.2	Density	:	Kg/m3	*	*	*	*	*	*
6.1.3	Viscosity	:	CP	*	*	*	*	*	*
6.1.4	Operating Pressure	:	MWC	*	*	*	*	*	*
6.1.5	Max. Working Pressure	:	MWC	*	*	*	*	*	*
6.1.6	Actual Pressure Drop	:	MWC	*	*	*	*	*	*
6.1.7	Flow Rate	:	KLPH	*	*	*	*	*	*
6.1.8	Temperature In	:	Deg C	*	*	*	*	*	*
6.1.9	Temperature Out	:	Deg C	*	*	*	*	*	*
6.1.10	No. of Passes	:		*	*	*	*	*	*
6.1.11	No. of Flows In Each Pass	:		*	*	*	*	*	*
★ = to be filled by vender									
6.2	STEAM COOLED	:							
6.2.1	Medium Flowing	:		Hot water	Milk	Cream Milk	Milk	Milk	
6.2.2	Density	:	Kg/M3	*	*	*	*	*	
6.2.3	Operating Pressure	:	MWC	*	*	*	*	*	
6.2.4	Permissible Pressure Drop	:	MWC	*	*	*	*	*	
6.2.5	Actual Pressure Drop	:	MWC	*	*	*	*	*	
6.2.6	Flow Rate	:	LPH	*	*	*	*	*	
6.2.7	Temperature In	:	Deg C	*	*	*	*	*	
6.2.8	Temperature Out	:	Deg C	*	*	*	*	*	
6.2.9	CIP Flow Rate	:							
06/02/10	No. of Passes	:		*	*	*	*	*	
★ = To be filled by the Supplier									
7)	HEAT TRANSFER DATA	:							
7.1	Heat Load	:	Kcal/Hr	*	*	*	*	*	
7.2	Over All Heat Transfer Coefficient	:	Kcal/Hr Sq. M deg. C	*	*	*	*	*	
7.3	Fouling Factor	:		*	*	*	*	*	
7.4	Effective Heat Transfer Coefficient	:		*	*	*	*	*	
8)	Accessories	:							

8.1	Balance Tank	: Suitable L with SS 304, half close type circular with ball fit, high level low level prob and L T with rotating CIP spray ball arrangement.
8.2	Skid arrangement	: MOC: SS 304, All the items shall be mounted on skid and pre assembled.
8.3	Control Panel with PLC & OP	: For controlling. monitoring & recording the pasteuriser data. The pasteurization and chilling temp if not correct, divert to balance tank through pneumatically operated valve. Hot water flow control valve shall be operated based on the pasteurization temperature. All the hardware and software is included in the scope including the instruments, pneumatic valves & CIP programs. A separate P & ID shall be submitted with instrument & control valve list. Chartless recorder to be provided.
8.4	Milk transfer pump	: Suitable nos in sanitary design SS 304
8.5	Hot Water Pump	1 no. grundfoss make
8.6	Hydro - cyclone	For removing the dirt/solid particles in incoming milk.
8.7	Pipes valves & Fittings	Wherever necessary with support etc.
8.8	Expansion tank with automatic water make up arrangement	For hot water circulation
9.0	GURANTEE	The supplier shall be responsible and be liable for free replacement or repair at our option the unit supplied that need replacement or repair because of any defect in the material. Workmanship or in the design (obtaining design conditions) brought to the notice of supplier within twenty four months from the date of suppliers or eighteen months from the date of commissioning whichever is later.

Notes :-

1. Mating Flanges/Union joint shall be supplied on the inlet and outlet ports of the PHE by The Supplier
2. Temperature indication points are to be provided on inlet and outlet ports of the PHE.
3. Standard accessories include tool kit which is in The Venders scope.
4. P & I Diagram shall be submitted with instrument & control valve list for approval.
5. Separate PHE should be provided for hot water generation & circulation along with steam mixing battery.

II) SUPPLY INSTALATION AND COMISSIONING OF HOMOGINIZER

High pressure homogenizer Capacity- 20KLPH

Make- APV/GEA/TETRA

Product : Cow milk, Buffalo milk, recombined milk, reconstituted milk & milk mixed with butter & butter oil.

Constructional feateurs- The design of the homoginizer should be robust, sturdy and self supported on staillesssteel ball feet. All milk contact surfaces should be made from stainless steel conforming to AISI 304. The complete unit schould be provided with removable type SS enclosure to give sanitary outlook.

Finish : All welding joints are to be ground smoothly. All stainless steel sufaces are to be poilshed to 150 grits.

Joint Curvatures: There should not be any sharp corners or edges on the milk contact surfaces. There should not be any thread in contact with the product.

Suitability: The homoginizer schould be suitable for use milk mixed with fat (in the form of cream, molten butter or butter oil) at a temperature of 60 to 70 Deg Cent. The fat content of the mixed would not exceed 12 %

Working pressure: The homoginizer should be of two stage design. The pressure of 1 st and second stage would be normally be 220 kg/sq cm and 35 kg/sq cm. The pressure mentioned are indicative only and the homoginizer should actually be capable of producing at least 95 % efficiency in homoginization of milk.

Cleaning : The homogenizer should be suitable for CIP cleaning in the line with pasturizer and bactofuge.

Homoginising valve assembly: The valve assembly should be of two stage design. Adjustment for both the stages should be hydraulically actuated. The pressure of both the stages once adjusted should remain at the set value unless changed. Creation and release of pressure in both the stages should be by suitable ON/OFF system.

Noise Level: The homoginizer should be designed with noise abatement accessories to have noise level less than 85 dB.

Vibration Level: The homoginizer should be desigend to produce minimum vibration.

Power transmission : The drive with gear box, v belt, pulley shoud be on the main frame inside the SS shroud.

Lubricating system-Suitable and effective system for the plunger lubrication and oil cooling should be done automatically spring loaded. The plunger packing material should be suitable for hot water, hot caustic 2% and hot nitic acid 2% cleaning at 75 to 80 deg C.

Scope of supply

The body: The body of the homoginiser should be made from cast iron which should be SS shrouded and rusting free.

High pressure pump block: This should be in one piece forged stainless steel block.

Gear oil- shall be required as

The Valves: The homoginising valves should be made from stellite material to be handle low/ high viscous material. The valve seat should be eaisly replaceble design.

Accessoires

Inlet/outlet: Inlet and out let of suitable size for product

Strainer: Built-in strainer at inlet

Pressure adjustment: The pressure adjustment mechanism for the homogenizing pressure should be hydraulically actuated.

Pressure Gauge : Flat diaphragm type, range 0 to 250 kg/cm sq. for the first stage and 0- 100 kg/cm sq for second stage. The pressure gauges should be liquid filled.

Lubricating system: Forced-feed lubrication system with gear type oil pump.

Thermometers- Thermometers should be provided with fixing arrangement.

Oil pressure gages- liquid filled

Low pressure safety switch- For low lubricating oil pressure for safety of machine against under lubrication.

Oil filter and oil cooler: Oil coolers for lubricating oil and HVA cooling and oil coolers to be designed for cooling water temperature up to 32 deg C.

Homogenizing head:

It should be of energy saving design, removable type and made of wear resistant material.

Painting - MS part and cast steel part of the body of the homogenizer should be painted with a coated epoxy primer followed by two coats of epoxy paints after thorough de-rusting.

Tools: Essential special tools should be supplied with the machine without charging any extra cost.

HOMOGENIZER CAP - 20,000 LPH	
Product	Milk
Viscosity	Up to 200 cPs
Maximum particle Size In Feed	Up to 200 microns
Operating temperature	<95 Degree C
Execution	Sanitary
Capacity	20,000 LPH
Homogenizing Stage	2 (Two)
Maximum working Pressure	210 Bar
Electrical Supply	3 Phase/415V/50 Hz
Water Supply	minimum 2 Bar
Air Supply	5-6 bar
Sterilization Temperature	140 Degree C
Transmission Type	AC Motor (IE 2, High Efficiency)
Make	GEA / APV GAULIN

Other Components	
Pasteurizer Feed Pump	Capacity: suitable Make: Fristam / APV

Steam Trap	Make: Spirax		
Power cable	Make: Polycab / RR Cable		
Balance Tank	Capacity: 250 Litres Material of construction: SS 304 Float: Mechanical Float		
Pneumatic Control Valves (Chilled water)	Duty: Pneumatic Control Valves for Chilled water Line Make: samson		
Pneumatic Control Valves (Steam)	Duty: Pneumatic Control Valves for Steam Line Make: Samson		
Filter	YES, Type: Duplex (Horizontal)		
Automation	This shall be fully Computerized Pasteurizer with Top end Instruments, Higher End PLC Processor with sufficient I/O Modules, PC Workstation, software application with SCADA, MES (Manufacturing Execution system) and MIS (management Information system) for miscellaneous report generation		
INSTRUMENTATION	S.N O.	INSTRUMENTS	REMARK
	1	Balance Tank - High Level switch	Required
	2	Balance Tank - Low Level switch	Required
	3	Feed Pump (with VFD)	Required
	4	Flow Meter (Magnetic - Sanitary)	Required
	5	Inlet Temperature Sensor (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	6	Regeneration Out Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	7	Heating Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	8	Flow Diversion Valve (Pneumatic controlled along with Feedback unit)	Required
	9	temperature after Holding (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	10	temperature before Chilling (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	11	Constant Pressure valve Make – APV / Alfa Laval / Equivalent	Required
	12	Chilling Temperature (Cream Out) (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	13	Hot water Inlet Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	14	Hot Water Outlet Temperature (Accuracy Class 'A' with Transmitter 4-	Required

		20 mA)	
	15	Chilled water Inlet Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	16	Chilled Water Outlet Temperature (Accuracy Class 'A' with Transmitter 4-20 mA)	Required
	17	Pressure Transmitter Upstream side	Required
	18	Pressure Transmitter Downstream side	Required
	19	Heating Module - Make-up water Valve	Required
	20	Heating Module - Steam control valve with with I2P Positioner , AFR, solenoid coil and necessary gauges	Required
	21	Heating Module - Steam Pressure	Required
	22	Heating Module - Steam Temperature	Required
	23	Hot water Re-circulation Pump (with VFD)	Required
	24	Chilled water Control Valve (with I2P Positioner , AFR, solenoid coil and necessary gauges	Required
	25	Cream Recirculation Valve (Pneumatic controlled along with feedback unit)	Required

III) SUPPLY INSTALLATION AND COMMISSIONING OF SELF CLEANING TYPE BACTERIA CENTRIFUGE

Make- GEA

Capacity- 20 KLPH

Functional Requirement- Bacteria clarifier shall be used for reduction of bacterial count in milk.

- Aerobic Spore Count
- Anaerobic Spore Count
- Total Bacterial Count

Bacteria clarifier shall be self –cleaning type and shall intermittently discharge the bacteria concentrate, as the heavy phase.

Trial result of milk quality :

MBRT of raw milk varies from half an hr to one hr

MBRT of bacteria removal clarifier outlet milk ranges from 4.5 to 6 hrs

MBRT of pasturized outlet milk ranges from 6.5 to 8 hrs

Shelf life of pasteurized milk (Market milk) : More than 48 hrs

Percentage reduction in microbial load from raw to milk inlet to bacteria removal clarifier outlet

Av Reduction in total spores count 95 %

Final milk total plate count 2000 cfu/ml

Av reduction in Somatic cell count 89.5 %

Reduction in coliform count 100%

MOC: AISI 316 construction and hygienic design of the clarifier shall meet 3A sanitary standards. Unit shall be mounted on CI Base frame.

Sluge Dischare. : The clarifier should have automatic sluge discharge system with auotomatic control unit equipped with timers and other accessories required for this system. The self – clening bowl shall eject the separated sludge automatically at pre-selected time intervals through sediment ejection port at the bottom of the bowl by means of the hydraulically operated mechanisam whilst the bowl is roatating at operating speed. The opening and closing of the sludge ejection port should be done byb soft water, which should be controlled by the part of supply (if rquired as per manufacturer).

Cleaing in Place(CIP)

The machine should be desigend for cleaing in place and it should be possible to incorporate the same in the plant CIP sytem controlld by Programmable logical sysem control. It should be possible to clean the clarifier with **2% lye and 2 % nitric acid solution at about 90 deg C without any adverse effect on the metal or gasket etc.** All part of the clarifier in contact with milk as well as outside the bowl, the inside of frame hood and the sludge discharge outlet should be cleaned perfectly without any manual labour.

Noise Level: Shall be lower than 85 dB at all times during operation.

SCOPE OF SUPPLY

Clarifier: Bowl body, bowl hood, disc stack & internals with milk contact parts in AISI 316.

Power transmission: Bowl of the clarifier shall be of belt driven. Motor shall be 3 phase, 415V, 50 Hz, IE 2 or better motor with variable frequency drive.

ACCESSORIES:

Cyclone/ discharge manifold of AISI 304

Lubricating system: Forced feed with gear type oil pump or splash type lubrication system.

Contols- Flow meter for continuous measurment of flow of milk

Recirculation line- Manual valve with flow indication.

Pressure indication: Pressure sensor and control valve for adjustment of back pressure with pressure gauges in the feed line and clarifierd milk line

Speed Indicator : Digital display of seperator RPM in screen.

Gasekt- The gasket should be of food grade rubber. It should be non-toxic, fat resistant and non-absorbent. It should have smooth surface.

Sluge collection tray: Of suitable capacity with transfer pumps.

SS Control Panel:The clarifier should be supplied with a SS control panel with HMI having required display of vital parameters with monochrome display complete with PLC,motor starter,emergency stop facility with operator keyboard all housed in SS 304 enclosure close to the clarifier. Sludge discharge should be programmable. - 1 No.

Vibration sensors : Sensors for vibrations should be provided for alarm & stoppage. -1 set

Foundation frame: Cast iron duly painted complete with foundation bolts and nuts

Tools- essential tools for disassembling the clarifier is to be supplied.

Manual : 3 set of operation and maintenance manuals shall be supplied with machine.

Hydroflow system: Small dedicated system for auomated slude discharge shall be supplid and installed with connected piping. A constant water pressure unit (pressure pump in SS construction with diaphragm tank and controls) shall be part of supply.

Sludge vessal: SS 304 with level switches and discharge pump. SS line from pump to the nearest drain chamber/point shall be provided.

Gear oil- shall be supplied as required quantity and grade.

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

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

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

SS PIPES	
Sizes	All new piping's for milk, cip and air has to be done in AISI304 with all required supporting structure. All SS pipes should be welded except the unions wherever necessary.
Type	TIG welded, annealed and de-scaled pipe manufactured as per standard ASTM-A 270
Material	AISI 304
Make	Alfa laval
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.

AUTOMATION & INSTRUMENTATION

AUTOMATION & INSTRUMENTATION

1) PLC system for plant operation including Suitable Panel

The entire control & Automation PLC based System shall be " A totally integrated process control system " for centralized operation of the new plant. Generally but not limited to, following operations are controlled from Automation system;

1.1 Milk Pasteurizer & Homogenizer & Bactofuge Operations

1.2 Facility of using pasteurizer, bacofuge and homogenizer in series.

- 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. No password protection for any programs and logic
- AS-i Based control / Communication system should be provided for all valves.
- All the components use single RDBMS database server
- Scalability: the offered system shall be suitable for future expansion of phase II & III.
- 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 provide with suitable indication for easy identification of faulty module. Hot swap facility should be provided
- The processer / final control element interface section of PLC shall comprise of various signal interface cards suitable for communication with distributed I/O stations, local control panel, actuator/sensor, frequency drives and motor control system.
- All the original software licenses, paper licenses (if applicable) back up of all PLC programs, SCADA programs shall be supplied .

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 : 03 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.

One engineering station (with license of development of SCADA and PLC) with no password protection and two operator stations with run time licenses.

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. Necessary separate earth pit/s shall be providing for system earth bus (electronic earth) and shield 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) Power and instrument cable should not be laid on single tray

10) Network Hardware

- STP Cables – 1 Lot
- Switches – As required

11) 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.

12) 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. System shall have open protocol For Future Interconnectivity with SAP (or any ERP) System;

1. Milk Pasteurizer Report (Milk production report & Pasteurizer status report)
2. Utility Consumption.
3. Maintenance Report.

4. Equipment running hour
5. Plant efficiency report.
6. Flow diversion valve report.

Technical Specifications

◆ GENERAL INFORMATION

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

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

- a) Ambient Temperature : 40 ° C
- b) Relative Humidity : 70 %

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

- a) Voltage variation : ± 10%
- b) Frequency variation : ± 5%
- c) Combined voltage & Frequency Variation : ± 10%

◆ DESIGN CRITERIA

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

- a) 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.
- b) All equipment, accessories and wiring shall have tropical protection, involving special treatment of metal and insulation against fungus, insects and corrosion.
- c) All equipment / parts & components of identical type / size shall be physically interchangeable.

SPECIFIC REQUIREMENT

SOFTWARE (SCADA)

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

- 1) Software should support Cross Tab, aggregates along with drill down reports. Reporting should facilitate following –
- 2) It should support Charts following chart type for data representation
 - Bar
 - Stacked Bar
 - Line
 - Area
 - Stacked Area
 - Pie
 - Gantt
 - Bezier Line
 - Spline line
 - Bubble
 - Point
- 3) 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.

- 4) Report Viewer – It should have windows or web report viewer
- 5) Software shall provide the facility for printing reports and exporting data to PDF, Word file, excel file, TIFF, JPG, GIF, PNG, BMP and webpage.
- 6) This requires customization to a greater extent to suit day to day working so all functional requirement has to meet exactly with the software system.
- 7) Shall possess network capability to communicate with laboratory section through Giga Bit Ethernet connectivity.
- 8) 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.
- 9) All screens should be designed for minimum resolution of 1920x1080
- 10) Error and warning messages should be located appropriately and in a common place to draw user's attention.
- 11) Consistency: all data formats should be consistent across the entire application.
- 12) Milk lot computation functionality should be incorporated in the system
- 13) All valve, pumps etc. shall have option for forcing and masking through computer display.
- 14) All CIP line adjustments – Like setting-up and configuration of CIP recipes, configuration of valves, pumps, pasteurizer settings etc. shall be done from computer
- 15) Software customization flexibility to a greater extent to suit out day to day working so all functional requirements has to meet exactly with the software system.
- 16) All Pumps shall be controlled through VFD based on required Flow Rate setting done by operation based on selected destination to be cleaned
- 17) Report viewer shall support drag and drop for sorting or segregation.
- 18) **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 (Cross tagging at junction box side & instrument side).
- ❖ 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 (make of all instruments should be same as new dairy instruments).

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 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.

- **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. All pressure transmitters should be connected to process thorough isolation valves.

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

- **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.

- **Magnetic/Turbine flow meters**

Quantity : 1 Lot

1. 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.

2. Accuracy of magnetic/Turbine flow meter shall be plus or minus 0.5% of flow rate or better.
3. Digital flow rate as well as totalizer display shall be provided. 4-20 mA signals shall be used for DCS connectivity.
4. Earth ring of SS 316 shall provide for proper grounding of magnetic flow meters.
5. Isolation for flow meter shall be provided other than product line

- **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 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 give 4-20 mA output to be transmitted to central control room through AI/AO panel mounted in field. Wherever required isolation valves to be provided for maintenance or replacement of instrument

- **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. Upstream and downstream distance to be kept as per the standard or as per manufacturer recommendation
- ➔ 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 give 4-20 MA output to be transmitted to central Control Room through AI/AO panel mounted in field.

- **Control Valves**

Quantity : 1 Lot

- Pneumatic control valves complete with suitable analog type Positioner, air filter regulator, solenoid coil and necessary pressure gauges
- 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 stroke/throughput Characteristic shall, dependent on the Purpose. The valve stems shall be well guided and the valves shall operate without excessive Vibration and noise. The above shall achieve a stable fluid control over the entire flow range. (All control valves should be supplied with positioners, air filter regulators, solenoid coils and necessary gauges.)
- 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.

- **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.

SCOPE DETAILS - BILL OF MATERIAL

PROJECT: ALL EQUIPMENT'S AND CENTRALIZED AUTOMATION SYSTEM				
S.N O.	PARTICULAR	CAPACITY	QTY	UNIT
1	MILK PASTEURIZER, CAPACITY – 20,000 LPH			
1.01	Fully Automated Milk Pasteurizer Capacity – 20,000 LPH Plate Pack Make – Alfa Laval / GEA / IDMC / Tetra pack / APV Note: Skid mounted complete with all accessories	20,000 LPH	1	Nos.
2	MILK HOMOGENIZER, CAPACITY – 20,000 LPH			
2.01	Milk Homogenizer Make – Tetra pack / APV Gaulin / GEA	20 KLPH	1	Nos.
3	AUTOMATION & MIS			
5.01	Higher end System shall be complete with centralized control panel, Remote I/O panels Supply Items Shall Include - 1) PLC Panel Centralized: 01 Nos. (PLC – Control Logix, Allen Bradley) 2) Remote I/O Panels 3) Centralized Panel shall have enclosure with IP-65 protection 4) All kinds of protection as per international standards like Isolation Transformers, Redundant CPU , Redundant power supply for CPU, redundant communication , Fuse based connectors, PCB card based Power distribution module.		1	Nos.
5.02	1) Higher End Server - (For MIS Report Storage and Generation): 01 Nos. 2) Workstation Grade PC with 24" Ultra Sharp Display: 1no		1	Lot
5.03	System Software - Includes software licenses for 03 No. of terminals (one no engg station and two nos operator stations) with MES (Manufacturing Execution System) and MIS (Management Information system)		3	Nos.
5.04	MIS Software		1	Lot
5.05	Accessories for Gigabit Ethernet set-up at Centralized Control room		1	Lot
5.06	Functional Details: Centralized Automation system shall be controlling all supplied equipment's like Milk Pasteurizer, Cream Pasteurizer, Central CIP System and along with this it shall be used for integration with existing 01 Nos. of Pasteurizers , one homogenizer and one no bactofudge		01	Set
6	VFD PANELS			
6.1	VFD Panel – complete with IP 65 enclosure and accessories. VFD (VARIABLE FREQUENCY DRIVE) For Milk Pasteurizer Pumps NOTE – VFD sizing shall be suitable for Milk pump		<u>01</u>	<u>Nos.</u>

	motor capacity MAKE – DANFOSS			
6.2	VFD Panel – complete with IP 65 enclosure and accessories. VFD (VARIABLE FREQUENCY DRIVE) For Homogenizer. NOTE – VFD sizing shall be suitable for motor capacity MAKE – DANFOSS		<u>01</u>	<u>Nos.</u>
7	Self Cleaning Type Bacteria Centrifuge Make - GEA	20 KLPH	<u>1</u>	<u>Nos.</u>

MAKES OF MAJOR EQUIPMENTS

S.N O.	EQUIPMENT	MAKE
1.	SS Pneumatic Valves	SPX
2.	Milk Pasteurizer Plate pack	AlfaLaval / GEA/ IDMC/ Tetra/APV
3.	Steam Control Valves	Samson / Forbes Marshal
4.	Level Switch	Endress & Hauser
5	Pressure, Conductivity, Flow Transmitter/Meter,Level transmitter	Endress & Hauser
6.	RTD	Radix
7.	Temp. Transmitter	Endress & Hauser (Head mounted)
8.	PLC	Allen Bradely
9	Flow Switch	IFM
10	Proximity switch	IFM
11	Control valves	Samson
12	SCADA	Rockwell automation
13	HMI	Rockwell automation
14	UPS	APC
15	Steam Traps	Spirax / Thermax
16	Insulation	Armashell / Lloyds
17	Water pumps	Grundfoss/WILO
18	ACB,Relays,Staters,Timers,SFU,PB etc	Siemens
19	Workstation/PC (Industrial Grade)	Dell
20	Pnuematic tubes & accesories	Festo
21	S S Pipes & Fittings, NRV, Butter fly valves	Alfa laval / IDMC/ Rensa
22	Homogenizer	GEA/Tetra Pack/ Gaulin
23	Bactofuge	GEA

Sr.Officer(Instru)

A.M.(Mech)

A.M.(Elect)

A.M.(Dairy)

Manager(Dairy)

Manager(Project)

Manager(Engg)

General Manager(Dairy)

FORMAT
(Technical offer)

The Managing Director,
Kolhapur Zilla Sah.Dudh Utpadak Sangh Ltd.
B-1, M.I.D.C., Gokul Shirgaon,
Kolhapur - 416 234

Sub - Technical offer for Centralized Automation System at Satellite Dairy Udgaon, Shirol

Dear Sir,

With reference to the Tender Notice published in Daily _____ on _____, I/ we submit the Technical offer design, supply, installation, hooking up with present system, commissioning, user training and trial run of all equipments and centralized automation system at our Shirol Dairy on turnkey basis. We also agree upon Terms conditions

Yours faithfully

Seal & Signature of Tenderer

Encl -

3. D D towards EMD
4. Company Profile

FORMAT

COMPANY PROFILE

Name of the Tenderers	-	
Address	-	
Tel. Nos.	-	
web site	-	
E - mail	-	
GST Registration No.	-	
Name of Authorised Signatory	-	
Designation of the authorised Signatory	-	

Seal & Signature of Tenderer

FORMAT
(Commercial Offer)

(To be given on Letter head of Tenderer)

To,
The Managing Director
Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.,
B-1, M.I.D.C., Gokul Shirgaon,
Kolhapur - 416 234

Sub - Tender for Centralized Automation System at Satellite Dairy Udgaon, Shirol

Dear Sir,

With reference to the Tender Notice published in _____, I/we submit our Tender offer for design, supply, installation, hooking up with present system, commissioning, user training and trial run of all equipments and centralized automation system at our Shirol Dairy. We have thoroughly studied specifications of required centralized automation system & also Terms & Conditions of this Tender.

Total all inclusive price of design, supply, installation, hooking up with present system, commissioning, user training and trial run of all equipments and centralized automation system at our Shirol Dairy **Rs. _____ + GST**

(In words Rs. _____)

(Price details are given in the price schedule attached herewith)

Required Delivery Period --

Other information if any --

Place --

Date --

Seal & Signature of Tenderer

FORMAT

PRICE SCHEDULE

(To be given on Letter head of Tenderer)

PRICE DETAILS -

1.	Basic Price for design, supply, installation, hooking up with present system, commissioning, user training and trial run of all equipments and centralized automation system at our Shirol Dairy	Rs.
2	Installation & commissioning	
3	GST	Rs.
Total Price is 1 + 3		Rs.

(In words Rs)

Date

Seal & Signature of Tenderer