

TENDER NOTICE

Sealed Tender offers are invited from equipment manufacturer or their authorized dealer for Supply, Installation, Testing, Commissioning and Performance Trial of 2TPH capacity of Automatic continuous butter making Plant & machinery. Plant & Machinery details, terms-conditions of the Tender are available at our Gokul Shirgaon, Kolhapur office and also on our web site www.gokulmilk.coop Sealed Tender offers should be submitted at our Gokul Shirgaon, Kolhapur office on or before **14.01.2025**. Right to accept or reject any Tender without assigning any reason is reserved.

Managing Director **Chairman**
Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., Kolhapur
B-1, M.I.D.C., Gokul Shirgaon, Tal Karveer, Dist. Kolhapur 416 234

KOLHAPUR ZILLA SAHAKARI DUDH UTPADAK SANGH LTD., KOLHAPUR

GENERAL TERMS & CONDITIONS OF TENDER

1. The contractor should submit their Tender offer on their letter heads in the prescribed format
2. The job should be treated as 'TURN KEY' excluding civil work. Details as regards scope of work, technical details of required equipment are given in the Tender.
3. The work scope includes Supply, Installation, Testing, Commissioning and Performance Trial of 2 TPH capacity of Automatic continuous butter making Plant & machinery specified in the Tender.
4. The Contractor must obtain for himself, on his own responsibility and at his own expense, all the information which may be necessary for the purpose for filling this tender and for entering into a contract for the execution of the same and inspect the site of the work and acquaint himself with all local conditions and matters prevailing there to.
5. Each of the tender document is required to be signed by the person or persons submitting the tender in token of his / their having acquainted himself / themselves with the general conditions, special conditions, conditions of the contract etc. as laid down. Any tender with any of the documents not so signed will be rejected. In case, of partnership firm, the Tender shall be signed with co-partnership name by a member of the firm who shall sign his own name and give the name, address of each member of the firm and attach a copy of the power of attorney with the Tender.
6. In case of Tender submitted by a company, it shall bear official seal of the company.
7. The Contractor should give all the information in the prescribed form.
8. The tender form must be filled in English.
9. The above details are to be submitted in two separate sealed envelopes, one containing the technical portion and the other the commercial bid.

Cover – I (Technical Bid)

1. A complete description of the Goods and Services the Bidder intends to supply, install & commission.
2. A separate folder containing the documents evidence in respect to qualification and eligibility criteria.
3. Detailed technical offer with flow sheet, P & ID and Layout.
4. The complete tender document duly stamped and sign by the bidder shall be submitted and shall be part of technical bid.
5. Bidders shall also submit list of equipments with their quantities.

6. The bidder has to submit the following documents
Valid GST registration certificate.
Proof regarding payment of E.M.D.
Experience Certificate

Cover –II (Commercial Bid)

The price quoted for the items should be F.O.R. at Kolhapur unit inclusive of all charges for packing, forwarding, transportation, loading, unloading, shifting to location, transit insurance, assembling, supply, erection, installation, commissioning, trial run, training etc. complete on TURN KEY BASIS. No price escalation will be allowed.

10. Sealed Tender offer duly marked **TENDER FOR CONTINUOUS BUTTER MAKING PLANT & MACHINERY** along with requisite EMD should reach our Gokul Shirgaon, Kolhapur office on or before **14.01.2025 up to 17.00 hrs.**
11. The Tender received after specified time is liable to be rejected.
12. No escalation in the price will be given once the order is finalized.
13. Work is to be carried out without hampering our routine work
14. The intending Contractor shall deposit with **KOLHAPUR ZILLA SAHAKARI DUDH UTPADAK SANGH LTD. (GOKUL DAIRY, KOLHAPUR) Rs.6,00,000/-** by demand draft or by RTGS as the Earnest money, as a guarantee of good faith which amount shall be forfeited as liquidated damages in the event of any refusal, or delay in signing the contract. The deposit of the unsuccessful Contractor will be returned without interest immediately after a decision is taken regarding award of the contract. The earnest money of the successful Contractor will be adjusted towards initial security deposit. A tender without Earnest money deposit will not be considered.

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

15. The Employer reserves the right to reject the lowest or any, or all Tenders without

assigning any reason thereof.

16. The successful bidder EMD 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. EMD will be refund after satisfactory installation, commissioning and one month successful trial of ordered Plant
17. The decision of the employer will be given within 120 days from the date of opening the Tenders within which period the terms and rates are binding on the Contractor.
18. The successful Contractor shall be bound to enter into the contract by signing an agreement in accordance with the agreement and conditions of the contract within 15 days of communication of decision in this regard and handover to the Employer agreement stamp paper of the required value. Contractor's failure to comply with this requirement within the time, shall give right to the employer to revoke the acceptance of Tender and forfeit his earnest money.
19. The right is reserved to revise or amend the contract documents prior to the date notified for the receipt of tenders or extended date. Such deviations, amendments or extensions, if any shall be communicated in the form of corrigendum by letter or /and by notice in News papers as may be considered suitable.
20. The notice inviting tender shall form part of the tender agreement.
21. The bidder or his authorized representative must be present at the time of opening the tender.
22. We reserve right to accept or reject any bid without assigning any reason.
23. If the contractor requires any crane for this work, then arrangement of crane etc will be the responsibility of contractor.
24. The storage of the contractor tools, workers material etc will not be KZSDS responsibility. To keep the project material , KZSDS will provide the empty space.
25. Unloading of equipments at site & shifting to its location is in supplier's scope.
26. Successful bidder will submit all the test certificates of machine. Operation & maintenance manual to be submitted in three sets.
27. PAYMENT TERMS :
 - a) 30% advance of total contract value (Excluding GST) will be given as an advance after getting order acceptance and on submission of Bank Guarantee of equivalent amount of nationalized bank.

b) 40% payment of supply items of Invoice value along with 100% GST will be released on safe receipt of equipment / material at site.

c) 60% payment of Invoice value of Installation & Commissioning alongwith GST. will be released after satisfactory installation, commissioning and one month successful trial of ordered Continuous butter making plant & machinery

d) Next 20% payment of supply items will be released after satisfactory installation, commissioning and one month successful trial of ordered Continuous butter making plant & machinery .

e) Final 10% amount of total contract value (excluding GST) will be released after satisfactory completion of Turn key job on submission of Performance Bank Guarantee for equivalent amount valid for a period of 1 year from the date of successful trial.

28. In case of any dispute or arbitration the Chairman's decision of KZSDS will be final.

29. Any accidental damages to contractor staff are in contractor scope.

30. If contractor fails to complete the job, his EMD / security deposit will be forfeited by be KZSDS.

31. The contractor should provide labour license to KZSDS for their workers.

32. If any mischief occurred due to the contractor staff ; then it will be the responsibility of contractor to compensate the loss to KZSDS .

33. If the Contractor shall fail to achieve completion of the works within the time prescribed in the order then the contractor shall be penalized till the completion of project at the rate 1% of the contract value per month. Subject to maximum of 3% of the tendered cost of the contract.

34. The successful bidder should follow all the rules and regulations of KZSDS.

35. 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 consecutive 30 days without interruption.

36. During the erection, commissioning and trial runs, the bidder shall train the staff of the Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., for operation and maintenance of the machinery and equipment.

37. The bidder shall supply:-

- Three sets of hard copy of service and maintenance manual for each machine / equipments.
- Three sets of hard copy of operating instructions for each machine/equipment.
- Any other technical literature/drawing (Electrical, P & ID, equipment drawings) required by Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. in three sets of hard copies.
- Soft copy of all above.

38. The successful bidder must work as per instructions given by our officer , engineer and consultant .
39. Bidder should submit the working drawing & layout to Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. before executing the work..
40. The bidder 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 & commissioning, 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 bidder. No any type of accommodation, food & travel expenses will be provided by us to your employees or workers. The safety equipments should be used at the time of work by your employees & workers.
41. Necessary safety guards, SS platforms, safe approach SS ladders etc. for the operation of machinery and equipment required under the Factories Act & convenience of operation shall be provided by the bidder and included in the offer.
42. The minor modifications in layout to suit the site requirements / conditions shall be undertaken by the party within the cost of the tender
43. The contractor should provide all safety equipment's to their staff.
44. The new plant and machinery/equipments arrangement, etc. shall be accommodated in the existing space/area available. The interested parties may visit Gokul Dairy in office hours and discuss the technical details, space availability etc. The parties should prepare the layout of the plant and machinery/equipments. 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.
45. Clarifications: -

During evaluation, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. may, at its discretion, ask the bidder 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.
46. Bidders to fill in technical details in the prescribed format for Technical Specification. Envelope having technical details of all the bidders will be opened first. In case of any ambiguity or non-clarity in technical specifications, concerned bidder will be asked to clarify it. Only after having satisfied on technical bids, envelopes containing financial bids will be opened.
47. All costs are to be mentioned with financial bid only. No cost details to be mentioned in Technical specifications sheet.
48. One year Warranty against any manufacturing defects.
49. If anything is missing in the tender to mention & is requirement of plant to function or work the project ,then bidder should consider it while submitting the tender. No any extra cost will be given to bidder for such requirements.

50. 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.
51. The conditional, incomplete, defective or ambiguous tenders, as decided by the Managing Director, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., shall be rejected.
52. For disputes, if any, the decision of the Chairman, Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd., shall be final.
53. Interested parties may visit the site to check actual location of installations
54. The successful bidder 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.
55. The Contractor shall not sublet the contract without our written permission.

56. Address for Communication:

Project and Engineering office,
Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.
B -1, M.I.D.C, Gokul Shirgaon, Tal.: Karveer.
District: Kolhapur - 416 234.
Maharashtra. India

Phone No. + 91 231 267 2311 - 15

Contact Person:

For Technical: 1) Mr. A. S. Swami M. No. 9689496363

2) Mr. P. A. Padwal M. No. 9881402721

For Commercial: 1) Mr. K. N. Molak M. No. 9422775977

57. Subject to Kolhapur Jurisdiction.

Managing Director

CHECK LIST FOR ELIGIBILITY

Tender for Supply, Erection, Testing & Commissioning of Automatic Continuous Butter Making Plant & Machinery with fat recovery, Butter silo, automatic bulk packing machine and CIP system for Gokul Dairy, Kolhapur.

Following listed documents have to be furnished to claim the eligibility

SL No	Particulars	Status
1.	<p>Prescribed EMD amount Equivalent to 6,00,000/- (Rs. Six lakhs only) shall be submitted only in the following manner;</p> <p>The EMD should be in the form of DD/RTGS shall be in Indian currency (INR) only</p>	Document to be furnished.
2	<p>The bidder should be a manufacturer/ Authorized Representative of manufacturer/Reputed Dairy turnkey contractor with manufacturers authorization, who deals with similar kind of job to the type specified in the schedule of requirements i.e. having experience in execution of automated Continuous Butter Making plant & machinery and CIP system adhered to all Indian/international Dairy/ food safety standards. The firm shall be in successful operation (Dairy Field) for at least last 3 years as on date of bid opening.</p>	Proof of document to be furnished.
3	<p>The original Equipment manufacturer/ Authorized Representative of manufacturer/Reputed Dairy turnkey contractor with manufacturers authorization, should have satisfactorily completed a minimum two contracts of similar works such as supply, erection and commissioning of Automatic Continuous butter making plant & machinery of capacity 2 Tons/Hour or higher with accessories such as fat recovery and CIP System for Co-operative Unions / Private Dairies of anywhere in the world in last TEN years.</p> <p>If the Bidder is Authorized Representative of manufacturer / Reputed Dairy turnkey contractor with Authorization letter of OEM then the work executed by the original Equipment manufacturer shall be considered.</p> <p>An approved OEM of (Continuous Butter Making plant & machinery) can issue only one authorization letter and he should stand guarantee for the performance of complete system.</p>	Proof of document to be furnished.

4	Reports on financial standing of the bidder such as profit and loss statements and auditors report of the past three years etc.,	Document to be furnished.
5	GST registration certificate & PAN No details to be Attached by the bidder.	Document to be furnished.

DESIGN BASIS AND TECHNICAL SPECIFICATIONS

1. OBJECTIVES

Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. well known with its popular brand 'Gokul' is an Operation Flood cooperative dairy project established on 16th March 1963. Since then achieved many land marks in Milk Procurement, Extension, Animal Health, Breeding, Milk Processing, Product making and Marketing. At present Gokul has modern 17 Lakh Liters/day capacity dairy plant, M.I.D.C, Gokul Shirgaon, Tal.: Karveer and 4 Nos. of chilling centers having 7 Lakh Liters/day milk handling capacity with modern Packing Unit at Navi Mumbai.

The tender comprises of design, supply, installation, testing and commissioning of Automated Butter Making Plant of capacity 2 TPH (**Make- IDMC, Egli, Simon, Shmech**), Butter storage silo of capacity 2 TPH (**Make- IDMC, Egli, Simon, Shmech**) and Auto Bulk butter packing system of capacity 2 TPH with auto CIP of each equipments & with accessories, inter connection of piping with existing product lines, utility lines and laying of power cables and automation on Turnkey basis.

Site Information:

Name of Site	M/s. Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd.
Project Authority	M/s. Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. B -1, M.I.D.C, Gokul Shirgaon, Tal.: Karveer. District: Kolhapur - 416 234. Maharashtra. India
Site Address	M/s. Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. B -1, M.I.D.C, Gokul Shirgaon, Tal.: Karveer. District: Kolhapur - 416 234. Maharashtra. India
Nearest Railway Station	Kolhapur
Nearest Airport	Kolhapur

2. SCOPE OF WORK

Design, Supply, installation and commissioning of Automated Continuous Butter Making Plant complete comprising of automated Pasteurized cream transfer section, Continuous Butter making machine, Butter Milk handling section, Butter washing section, jacket cooling system, Moisture dosing system, Salt & annatto color dosing system, Vacuum working system, Fat recovery and transfer section, Butter storage silo, auto butter bulk packing system and auto CIP system for entire equipment.

The equipment shall be Supplied and installed in accordance with the prevailing and applicable standards.

The work shall have to be executed in the premises of Gokul Dairy which is operating round the clock 365 days of the year. Therefore, the site work of every nature has to be carefully planned and executed in a phased manner, without any interruption to normal operational & production routines of the existing plant. The design and layout of the additional facilities,

selection of equipment and services, methodology of execution, testing and commissioning will be carefully planned, keeping these points in mind.

The bidders shall visit the project site, so as to get a clear perspective of the nature and the quantum of work involved prior to submission of the bid.

The general technical specification of the major components and the ancillary item described in the technical section by the Purchaser is furnished in the basis of design. However, bidders are requested to get themselves familiarized /acquainted about the nature and the quantum of work involved and submit their offer without deviating the basic configuration of the equipment.

The Bidder has to study the existing vacant space available and carefully design the machinery layout to suit the same.

Water, Electricity, Air Steam for installation and testing shall be provided at the site, free of charge.

3. INSTRUCTION TO BIDDERS

This part of the tender document defines the way the bidders are required to structure the presentation of the technical section of the bid.

All the technical data required by the tender is to be provided in the format given in this section. If no format is given for any specific item, then the bidder may request formal approval of their own format.

Any bidder not following the required bid document structure or furnishing technical data that is not as per the required format is liable to be deemed non-responsive.

Bid Structure of Technical Section:

The technical section of the bid is to be structured in the same order as the tender document. Each statement is to be numbered with the same sub-section & paragraph number as in the tender document. Every page of the document of the bid is to be numbered.

The bidder shall cover each requirement of the tender document by statements technical data & descriptive material and, in particular to detail the following:

Introduction

The bidder is to describe his technical proposal in detail, stating the processes and systems, which he has applied in designing the equipment. Also, to highlight any special technical innovations that the bidder proposes to include in the equipment that will improve the performance, reduce the operating cost, or improve product quality. Any such highlights should be cross-referred with the bid sub-section and paragraph number as applicable.

4. RESPONSIBILITIES

4.1 Responsibilities of the Bidder:

The bidder is required to specifically state his acceptance or non-acceptance of each clause in this subsection. Non-acceptance shall be deemed a deviation from the tender, and should be mentioned in the subsection. Deviations from technical requirement.

Design Basis

The bidder is required to follow the design basis in the tender, and indicate clearly if additional equipment are considered to be necessary for achieving the optimum operating efficiency and optimum product quality within the standards specified.

It is not the intent of these technical specifications to specify completely all details of design and fabrication of equipment, nevertheless, the equipment shall conform in all respects to high standards of engineering design & workmanship and be capable of performing in continuous commercial operation up to agreed performance standards in a manner acceptable to the purchaser/client.

Scope of work

The bidder is required to follow the scope of works in the tender and indicate clearly the scope of work considered to design, manufacture, supply, install, test and commission the complete equipment and accessories as per requirement indicated in the basis of design and the schedule of items for the proposed Automated Butter Making plant as within the battery limits. In particular the Supplier shall be responsible for:

Developing the complete engineering design, manufacture and/or supply of all goods and services and ensuring best performance of equipment.

Development of automation schemes, software's, interfaces etc. and their incorporation in the equipment to the entire satisfaction of the Purchaser/clients.

First charge of oil, lubricants and consumables. First charge means that these items shall be replenished until the successful completion of product trials.

Ensuring satisfactory performance and after-Sales service of all items included in the scope.

Drawings & Tables

The list of drawings and technical documents required for technical evaluation are included in this subsection. This includes a number of data sheet formats to be completed by the bidder. The completion of these formats is mandatory, and failure to comply will make the bid liable to be deemed non responsive.

Project Management

Time Schedule for completion of the project is **10 Months** from the date of release of Purchase Order.

The bidder is to state in this sub-section the proposed programme of implementation from receipt of order to commencement of product trials, in the form of project bar chart/MS Project/PERT network.

Management Team

The bidder is to detail the make-up of the management team in terms of designation, qualifications & proposed man days of attendance in accordance of this section of the tender. Also it is to quantify the support that will be given by foreign collaborators if any, with designation and man-days attendance at Site in India as the continuous butter manufacturing technology is the state of art and expertise from the OEM need to be involved in the installation, commissioning and performance trial.

The bidder is to ensure that the following sections are fully detailed and quantify the duration

and man-power applied to each.

- Execution especially installation
- Commissioning
- Product and Performance trials
- Training

Performance guarantees with regard to the following:

- Rated performance of equipment.
- Product quality standards conforming to the prevailing International Standards.
- Consumption of utilities for the complete system.
- Training of clients personnel in use of the automation systems, equipment operation and control, maintenance and repair of equipment.

Battery Limits

Any point in the battery limits that are not clear to the bidder should be raised for clarification.

Deviation from technical requirements

All technical deviations are to be stated. This is mandatory, and failure to comply will make the bid liable to be deemed nonresponsive.

4.2 Responsibilities of the Purchaser

Making available of the building and utilities as per the agreed time schedule

Uninterrupted power and water supply during the installation testing and commissioning

Raw material as specified in the tender document

Right Man Power to train and operate the plant.

Test equipment, test kits, instrumentation & materials required for the testing of the product i.e., cream, butter and butter milk for establishing performance parameters.

5. DESIGN BASIS:

The new Continuous Butter Making system shall operate as given below;

The cream transfer line from inlet of cream transfer pump, Continuous butter making machine (CBMM), Butter Milk handling section, Butter washing section, jacket cooling system, Moisture dosing system, Salt & annatto color dosing system, Vacuum working system, Fat recovery and transfer section, Butter storage silo, auto butter bulk packing system and auto CIP system for entire equipment with ancillaries and utility tapping are in the scope of the bidder.

GENERAL DESCRIPTION

The New Butter Plant will be an additional facility established within Gokul Dairy premises. This will include the total work involved in Design, Engineering, Supply, Installation, Testing and Commissioning of butter making and related work.

CONTINUOUS BUTTER MAKING:

Automated continuous butter making machine of capacity 2.0 TPH shall be provided at the Gokul Dairy Butter Plant. The plant shall be designed to make the unsalted butter and salted butter manufacturing at a later stage with vacuum section, second working, color dosing and brine dosing section, etc.

The surplus cream (35% to 45%) would be separated in LMP at 45 to 55 deg. C. from cow/ Buffalo milk shall be pasteurized and aged in ageing tanks at around 9-13 Deg. C for a period of minimum 6 hours by the Purchaser.

The cream shall be made available at the inlet of cream transfer pump as per the requirement. Further transfer as required by the CBMM shall be carried out by the bidder.

The continuous butter making system (cream churning, Butter Milk and Butter Separation & working section) shall include all process & mechanical adjustment facilities to produce unsalted butter & salted butter of desired quality from the aged cream and should provide working section 2 and vacuum section.

The bidder shall be responsible for supply and installation of all equipment, valves & piping (process & utility), supports and structures, electrical equipment including switchgears, electrical cabling, cable trays, all power and automation, Preparation of new 02 Nos earthing for required panels as per std. procedure, controls, control cabling, instrumentation, electronic systems to all consumption points inside the butter plant.

CBMM internal Product contact part shall be in SS316 MOC suitable for the salted butter application. All pipe work and machinery parts coming in contact with product shall be in stainless steel AISI 304/AISI 316 as the case may be

The Butter plant shall have the following sections;

- Pasteurized cream transfer section
- Continuous butter making machine (CBMM)
- Butter milk handling section
- Butter washing section
- Jacket cooling system for CBMM
- Moisture dosing system
- Salt and colour dosing system
- Vacuum working system
- Fat recovery and transfer section
- Butter storage silo
- Auto butter bulk packing system
- Auto CIP system for the entire equipment

UTILITIES

Distribution of all Utilities and services as required to achieve desired butter production & CIP shall be in scope of the tender. All the utilities / services shall be arranged by Gokul Dairy at one point inside the butter making room and it is responsibility of the bidder to tap from these points and carry out the distribution to the equipment as required.

STEAM DISTRIBUTION AND CONDENSATE RECOVERY

- a) Steam shall be made available at one point in the proposed butter plant building at 3.5 bar pressure by the purchaser. Distribution there after including pressure reduction if required and LP steam distribution including pipes, valves & Fittings and insulation shall be in the scope of this tender.
- b) The piping for Condensate return from all the equipment shall be looped in and left at one point in the butter plant area. Depending on the feasibility Gokul dairy will carry out balance works like taking condensate to boiler feed water tank/where ever required.

CHILLED WATER DISTRIBUTION

- a) Chilled water forward & return lines shall be made available by Gokul Dairy at one point nearby CBMM. Distribution thereafter, including pipes, valves, fittings, supports and cold insulation shall be in the scope of supply.

COMPRESSED AIR SUPPLY AND DISTRIBUTION

- a) Compressed air shall be made available in suitable size pipe line (Bidder to specify the line size) at one point in the plant area, near CBMM. Distribution thereafter including pipes, valves & fittings shall be in the scope of supply. The required quality of air shall be informed by the successful bidder.
- b) All the compressed air pipes in entire process area shall be of SS 304 only.
- c) Minimum flexible PU piping shall be used (Max length should be 1.5 m)

WATER- RAW & SOFT DISTRIBUTION SYSTEM:

The proposed scheme shall be as follows:

- a) Raw water and soft water shall be made available at one point in suitable size of pipe line (Bidder to specify the size) by purchaser and further distribution at constant pressure for new plant requirements is part of this tender.
- b) Raw and Soft water distribution system up to all duty points inclusive of water piping, valves and fittings shall be in the scope of supply.

POWER DISTRIBUTION

The scope includes supply of one no. MCC panel to cater the entire electrical connections of butter plant. MCC shall consist of suitable one number incomer and required no. of various capacities outgoing feeders (Bidder can design the capacity details based on the load of equipment)

Required power supply to MCC panel should be arranged by contractor from nearest distribution panel of Gokul with suitable cable ,termination, S. S. cable tray's etc.

All automation system (HMI, PC, PLC, Control Panel) required UPS power supply (UPS Make - APC).

Bidder to consider exclusive MCC for entire new set up. MCC incomer shall be of MCCB with metering facilities. The SS RCP's for individual section / equipment shall be in the scope of supply.

Entire power & control cabling, SS conduit, cable tray with top cover, earthing and other electrical hardware as required is included in the scope.

GENERAL

All the pipe supports in the process area shall be of SS 304 square sections only.

6. TECHNICAL SPECIFICATIONS

6.1 CREAM TRANSFER SECTION:

Gokul Dairy shall make available ripened cream at the outlet of cream storage tank only.

Thereafter all work is in the bidder's scope.

6.1.1 Duplex Strainer

Qty : 2
Capacity : 5 KLPH
Type : Pipe in Pipe
MOC : AISI 316

Strainer easy opening design with manual isolation valves

6.1.2 Cream Transfer Pump.

The pump shall be used to transfer the ripened cream from cream tank to CBMM. It shall be supplied with suitable capacity variable frequency drive working in tandem with volumetric flow meter.

Qty : 3
Capacity : 5 KLPH
Type : Positive displacement lobe / Screw pump type VFD operated
MOC : AISI 316
Fittings : Quick opening sanitary fittings
Mounting : Free standing with adjustable SS ball feet
Shaft sealing : Mechanical shaft seal
Gasket : Nitrile / EPDM rubber
Shroud : AISI 304
Motor : 415V, AC, 3 phases, 50 Hz. Squirrel cage induction motor with TEFC/IP 55 Enclosure, IE 3

Product contact parts in AISI 316, the pump shall be used for transfer of ripened cream to the inlet of continuous butter making machine.

These pumps shall have mechanical seals. The gasket shall be made of long lasting type food grade rubber and the pump shall be provided with SS base frame, motor and adjustable speed unit of VFD.

A suitable SS 304 cover shall be provided to meet the hygienic Requirement. The motor shall be suitable for 440 V AC, 3 Phase, 50 Hz Supply and would be squirrel cage induction motor, TEFC IP 55.

6.1.3 Pipe line

Required pipe line from outlet of storage tank No. 1, No. 2 and from storage tank no. 3, No. 4 and no. 5 to both cream transfer pump (VFD operated lobe pump) with required pneumatic valve for each storage tank is in the bidder scope.

6.1.4 Mass Flow meter

Quantity : 1 No.
Make : E & H
MOC : SS 316

Flow meter shall be in scope to measure the flow of Cream with an accuracy of 0.2%.

6.1.5 SS Cream Buffer tank capacity 500 lits.

This tank is acts as a buffer tank for cream supplied to the CBMM. The tank shall be with adjustable ball feet and a spray ball for CIP.

Material of construction	:	AISI 304
Quantity	:	1 No.
Capacity	:	500 liters.
Filter net	:	1.5mm hole.
Level control	:	Level Sensor- Fork type.

6.1.6 CIP supply pump

6.2 CONTINUOUS BUTTER MAKING MACHINE

Functional Requirement:

Cream having fat content of 38-45 % would be fed to the machine for continuous production of white / table butter as per required specifications from the cream.

Qty : as per BOQ

Capacity : as per BOQ

Cream To be Made available by the Purchaser:

Cream Composition (Input to CBMM)	Unit	Min	Max	Remarks
Fat	Range %	38	45	Variation in running not more than +/-0.1%
Aging	Hour	➤ 6 hours		
Temperature	Deg. C.	9	13	Variation in running not more than +/-0.2 Deg C.
Acidity	%LA	0.08	0.108	

Desired White butter quality:

Milk Fat : > 80%

Curd : < 1.5%

Moisture : 15% to 16% (+0.15% variability in running)

Outlet temperature of Butter : 10 -18 °C

Cream capacity : > 4000 kg approx. / hr.

Microbial quality of Butter :

Aerobic plate count < 10000 cfu / gm

Coliform cfu / gm : Absent

E. coli. cfu / gm : Absent
Salmonella cfu / 25 gm : Absent
S. Aureus cfu / gm : Absent
Yeast mould cfu / gm : Absent
Listeria monocytogenes cfu / gm : Absent

Desired Table butter quality:

Milk Fat : > 80%
Curd : < 1.0%
Common Salt : < 2.50%
Moisture : 15.6% to 16% (+0.1% variability in running)
Outlet temperature of Butter : 10 -18 °C
Cream capacity : > 4000 kg approx. / hr.
Microbial quality of Table Butter
Aerobic plate count < 10000 cfu / gm
Coliform cfu / gm : Absent

E. coli. cfu / gm : Absent
Salmonella cfu / 25 gm : Absent
S. Aureus cfu / gm : Absent
Yeast mould cfu / gm : Absent
Listeria monocytogenes cfu / gm : Absent

Desired butter quality for ghee:

Milk Fat : > 83%
Curd : < 1.5%
Moisture : 15% to 16% (+0.15% variability in running)
Outlet temperature of Butter : 10 -18 °C
Cream capacity : > 4000 kg approx. / hr.

Microbial quality of butter
Aerobic plate count < 10000 cfu / gm
Coliform cfu / gm : Absent
E. coli. cfu / gm : Absent
Salmonella cfu / 25 gm : Absent
S. Aureus cfu / gm : Absent
Yeast mould cfu / gm : Absent
Listeria monocytogenes cfu / gm : Absent

Available Services:

Chilled water at 1.5°C
Pasteurized chilled water at 10°C

Electric Power 415 V, 3 Phase, 50 Hz.

Construction:

- Stainless steel framework on level adjustable wheels and feet with integrated equipment: each mechanical element is fitted in this frame, but is independently assembled.
- This concept guarantees that the entire unit is perfectly rigid and vibrations are completely reduced.
- Main components completely made of stainless steel.
- Outside glass blasted, inside polished or sandblasted.
- The various elements are accessible for a quick dismantling.
- Equipment always modified to most modern developments.
- This type of machine with separated motors and frequency converted drives to have different running speeds for each stage, is specially adapted to produce butter with very low initial moisture content.

The machine shall be completed with the following:

a) Churning and Separation Section

Churning vessel.

Material of construction : AISI 316

Quantity : 1 No.

Inside surface : Sand / Shot blasted

Cylindrical churning and separation section shall have separate drives with adjustable or fixed beaters allowing complete churning at low output. The churning and separation cylinder shall have cooling arrangement and variable speed control system depending upon the requirement. Separate sets of speed indication shall be provided.

The churning section shall consists of a horizontal cylinder and a beater. Large diameter churning cylinder with cooling. Beater with churning blades. This allows churning at very low level. The distance between the cylinder wall and the beater is only a few millimeters.

The cream is pumped at the rear end of the cylinder. It is immediately pressed outward against the cylinder wall and forced forward. This action of the beater churns the cream into butter grains and butter milk

The separating section shall consists of a horizontal, cylinder. In principle, the section is divided into two, a post churning section and a draining section.

In the post churning section the small butter grains clump together to form larger clumps before the butter milk is drained off in the draining section.

Product Contact Parts : AISI 316

b) Working Section 1

Butter milk separation and Butter working sections shall be provided with jacket cooling arrangement with chilled water. Butter washing shall be done with pasteurized chilled water.

Butter squeezing section shall consists of squeeze drying unit with capacity regulation and highly efficient to eliminate butter milk and produce butter with low initial moisture content.

This section shall comprises of both, two counter rotating augers for transportation of the butter and working elements: working vanes and perforated plates. In this section, the buttermilk is worked out of the butter before dosing of water or salt.

The working section 1 consists of:

- An extra-long buttermilk separation section with cooling jacket and separate buttermilk tank.
- A highly efficient squeeze-drying block to eliminate all the butter milk and
- produce butter with a very low initial moisture content

Product Contact Parts : AISI 316

c) Working Section 2

The working section 2 shall be complete with blending, color, brine and moisture injection sections with sufficient number of compartments and injectors, vacuum working section with vacuum pump and final working to obtain desired texture. Working sections shall have VFD driven for accurate control of speed.

Pasteurized chilled water shall be made available by the purchaser at the inlet of the pasteurized wash water transfer pump. The required amount of pasteurized wash water shall be transferred for butter washing application.

Jacket Cooling system shall have a balance tank of suitable capacity with specially designed flutes for water distribution, Chilled water recirculation pump, PHE chiller and necessary integrated connections with the machine for recirculation

All product contact parts of CBMM and working section shall be made of special stainless steel with anti-sticking surface finish of very high quality.

Arrangements shall be made for connecting nozzles at the outlet of the CBMM for transferring Butter from CBMM to butter storage silo and further for auto bulk butter Packing line.

Product Contact Parts : AISI 316

CIP for Butter Manufacturing Equipment:

The CIP of CBMM shall be done by adding detergent on-line through detergent hopper / in the butter milk balance tank to be installed at the suction of a CIP pump at the outlet of buttermilk buffer tank. The detergent solution shall be heated in a PHE enroot to the CBMM and its working sections. The recirculation of CIP solutions done through the butter milk buffer tank and ultimately be drained.

The same PHE can be used for heating of water for sterilization of the CBMM. The CIP pumps shall be designed to ensure adequate liquid velocity for effective cleaning of the CBMM, butter working sections, butter storage silo, auto bulk butter packing system and butter working sections.

The CBMM shall have sturdy framework on adjustable feet, designed to reduce vibrations. The body of CBMM shall be satin polished stainless steel AISI 304L cladding. It shall have suitable doors to access inside of the machine.

CBMM shall have churning unit, direct/suitable driving of the beater by a motor with frequency variation.

All parts in contact with butter shall be specially treated to avoid butter sticking. They shall be sandblasted and chemically passive. Outside parts shall be polished.

PLC terminal fitted with HMI on the side of the machine. This terminal is connected with the PLC in order to control the different parts of the machine. On the screen of the terminal, the parameters are shown (cream feed rate , cream temperature, churning speed, churning motor current, working section speed and current, wash water temp, jacketed cooling water temp, etc, ..).

Plant operation shall be monitored through a PC (Personal Computer) placed in the control room where all the parameters of HMI shall be replicated to show the real-time operating parameters.

Control Panel for CBMM:

The control panel would be of totally enclosed, dust and vermin proof SS-304 construction. The panel would be complete with PLC, frequency controller for variable speed motors, Motor Starters, Instrument feedback, automation components, various indications for speed & current etc. for all the imported machineries and local supplied items.

The PLC shall be geared up for selection of various running mode control of various elements of CBMM, display of production parameters etc.

The following major equipment would be connected to the control panel.

1. Cream feed pumps (2 Nos) from cream storage tank to cream buffer tank of CBMM
2. Cream feed pump to CBMM
3. CBMM & working sections
4. Moisture dosing injection pump
5. Color, Salt & moisture dosing injection pumps
6. Salt dosing tank agitator
7. Wash water circulation pump
8. CBMM Jacket Cooling Pump
9. Vacuum Pump
10. Butter milk transfer cum CIP pump
11. Pump for Butter silo
12. Pump for butter auto packing system.
13. CIP of CBMM
14. Supply arrangement for instrumentation

6.3 BUTTER MILK HANDLING SECTION

The butter milk having fat percentage of approx. 0.7 which is generated during butter production shall be collected in butter milk balance tank of 300 L.

Butter milk shall be chilled to 4°C in an plate heat exchanger with the help of chilled water.

The system shall have partial recirculation of butter from butter milk balance tank to CBMM, with correction of temperature as per the requirement, in the recirculation butter milk chiller with chilled water.

Butter washing with recycled butter milk and fresh chilled pasteurized water in the CBMM shall be controlled in such a way that desired curd content in butter is maintained with generation of butter milk for storage having maximum SNF level.

6.3.1 Butter milk Re-circulation System

Qty : as per BOQ

Capacity : As per BOQ

Function: Part of the mixture of buttermilk and the butter wash water shall be chilled through PHE / THE and recycled to the butter making machine for butter washing.

Type : Tubular heat Exchanger and Integral part of the machine

Product Contact Part : AISI 304 and totally made up of AISI 304 MOC.

Inlets/ Outlets: The inlets and outlets for chilled water and product shall be provided with complete stainless steel (AISI 304) SMS unions.

Temp. Probes: Temperature probes shall be provided.

Inlet & outlets (HMI indication). Local indication shall also be provided for water & product outlet.

Ball feet : the frame shall be provided with adjustable stainless steel ball feet with provision for height adjustment of 50 mm or mounted on the CBMM frame.

Chilled water feed temp.: +1.5 (min) / + 2.0 (max) deg C. Maximum permissible chilled water flow rate 1.5 times the wash water flow rate Temp.

Probes: Temperature probes shall be provided for buttermilk inlet & outlets (HMI indication). Local indication shall also be provided for buttermilk outlet.

6.3.2 Butter milk recirculation pump

Qty : as per BOQ

Capacity : as per BOQ

MOC : AISI 316

Fittings : Quick opening sanitary fittings

Coupling : Mono-block

Mounting : Free standing with adjustable SS ball feet

Shaft sealing : Mechanical shaft seal

Gasket : Nitrile / EPDM rubber

Shroud : AISI 304

Motor : 415V, AC, 3 phases, 50 Hz. Squirrel cage induction

motor with TEFC/IP 55 Enclosure, IE-3

6.3.3 Butter milk buffer tank

Qty. : as per BOQ.

Capacity : as per BOQ

The tank shall be fabricated from 2 mm thick stainless sheet conforming to AISI 316.

The tank shall be provided with part removable hinged cover & spray ball connection. - inlet, cup type outlet, over flow, high & low level probes, temp. Probe and level transmitter and adjustable stainless steel ball feet shall be provided

6.3.4 Butter milk chiller

The butter milk chiller shall be used to chill the butter milk coming from CBMM and shall be transferred to existing butter milk storage tank through SS pipe line. Bidder to specify the duty requirements.

6.3.5 PHE for CIP of CBMM

Qty : as per BOQ

Capacity : as per BOQ, 20 Deg. rise

Application : To maintain temperature of solutions/Water at the required levels.

MOC : Plates of AISI 316

Type : PHE

Heating Medium : LP Steam

Accessories : Heater should have necessary accessories, control system

Supporting frame: The supporting frame for the plate pack shall be of a self-supporting design made of MS, clad with AISI 304 SS sheet with a manually operated tightening device. The frame and tightening device shall prevent the plates from deflecting under pressure differential of minimum 4 kg./cm sq.

Inlet & outlets (HMI indication). Local indication shall also be provided for water & product outlet.

Ball feet : the frame shall be provided with adjustable stainless steel ball feet with provision for height adjustment of 50 mm

6.3.6 Butter milk transfer/CIP pump

Qty : as per BOQ

Capacity : as per BOQ

MOC : AISI 316

Type : Centrifugal, VFD operated

Fittings : Quick opening sanitary fittings

Coupling : Mono-block

Mounting : Free standing with adjustable SS ball feet
Shaft sealing : Mechanical shaft seal
Gasket : Nitrile / EPDM rubber
Shroud : AISI 304
Motor : 415V, AC, 3 phases, 50 Hz. Squirrel cage induction motor with TEFC/IP 55 Enclosure IE-3

6.4 BUTTER WASHING SECTION

6.4.1 Wash water circulation pump

Qty : as per BOQ
Capacity : as per BOQ
MOC : AISI 304
Type : Centrifugal, VFD operated
Fittings : Quick opening sanitary fittings
Coupling : Mono-block
Mounting : Free standing with adjustable SS ball feet
Shaft sealing : Mechanical shaft seal
Gasket : Nitrile / EPDM rubber
Shroud : AISI 304
Motor : 415V, AC, 3 phases, 50 Hz. Squirrel cage induction motor with TEFC/IP 55 Enclosure, IE-3

6.5 Jacket cooling system for CBMM

Arrangement as required for jacket cooling (with chilled soft water) of the continuous butter making machine & working section(s) .

6.5.1 PHE chiller for soft water

Qty. : as per BOQ
Capacity : As per BOQ
Function : Soft water shall be chilled through the PHE and transferred to jacket of CBMM for cooling . Chiller should be design to chill the pasteurized water as per the design/requirement of OEM
Finish : All welding joints shall be ground smoothly. All stainless steel surfaces shall be polished to 150 grits

Plates : The plate shall be made from stainless steel conforming to AISI 316 & shall be of sanitary design. All contact and exterior surfaces shall be easily accessible or readily removable for cleaning and inspection.

Gasket : The sealing gaskets shall ensure complete sealing and prevent any cross leakage between product and service liquids. Gasket shall be of sanitary type (SNAP IN TYPE). It shall be continuously bonded to the heat transfer surface.

The gasket material shall be of EPDM/food grade nitrile rubber and shall withstand a water sterilization temperature of 100 deg. C and 2% caustic solution at 80 deg. C. Gasket material shall be non-toxic, fat resistant, non-absorbent and shall have a smooth surface.

Supporting frame: The supporting frame for the plate pack shall be of a self-supporting design made of MS, clad with AISI 304 SS sheet with a manually operated tightening device. The frame and tightening device shall prevent the plates from deflecting under a pressure differential of minimum 4 kg./cm sq.

Inlets/ Outlets: The inlets and outlets for chilled water and product shall be provided with complete stainless steel (AISI 304) SMS unions.

Temp. Probes: Temperature probes shall be provided for wash water

Inlet & outlets (HMI indication). Local indication shall also be provided for water & product outlet.

Ball feet : The frame shall be provided with adjustable stainless steel ball feet with provision for height adjustment of 50 mm

Chilled water feed temp.: +1.5 (min) / + 2.0 (max) deg C. Maximum permissible chilled water flow rate 1.5 times the wash water flow rate Temp.

Probes: Temperature probes shall be provided for buttermilk inlet & outlets (HMI indication). Local indication shall also be provided for buttermilk outlet.

6.5.2 Chilled water balance tank

Qty. : as per BOQ.

Capacity : as per BOQ

This tank shall be used to receive chilled water from the water chiller and pump the water to CBMM jacket. The tank shall be insulated. The balance tank shall be complete with cover, SS ball feet, inlet and outlet, over flow

The inner / outer shell shall be fabricated from 2 mm / 1.5 mm thick stainless sheet conforming to AISI 304.

The tank shall be provided with a partially removable hinged cover, connection, outlet, over flow, high & low level probes, temp. Probe and adjustable stainless steel ball feet shall be provided

6.5.3 Chilled water recirculation pump

Qty : as per BOQ
 Capacity : as per BOQ
 MOC : AISI 304
 Fittings : Quick opening sanitary fittings
 Coupling : Mono-block
 Mounting : Free standing with adjustable SS ball feet
 Shaft sealing : Mechanical shaft seal
 Gasket : Nitrile / EPDM rubber

 Shroud : AISI 304
 Motor : 415V, AC, 3 phases, 50 Hz. Squirrel cage induction motor with TEFC/IP 55 Enclosure IE-3

6.6 MOISTURE DOSING SYSTEM

6.6.1 Moisture Dosing tank

Qty : as per BOQ
 Capacity : as per BOQ
 MOC : SS-304

The tank shall be insulated and clad with AISI 304. The tank would be CIP cleaned after use.

6.6.2 Moisture dosing pump and injectors

Qty : as per BOQ
 Capacity : as per BOQ
 MOC : AISI 316
 Type : Diaphragm, VFD driven

This pump would be used to dose pasteurize chilled soft water in the CBMM for moisture control of butter being produced. The water dosing would be controlled manually depending on the moisture content of the butter. The motor shall have a suitable enclosure to protect from water entry. A vortex flow meter shall be provided to measure the water dosing rate and manual adjustment would be done accordingly.

Salt Solution Dosing system : **Quantity: 1 Lot.**
 M.O.C. : SS 316

Vacuum Working Section: **Quantity: 1 Lot**

Material of construction : S.S.316

Texture Forming Section: **Quantity: 1 Lot**

Material of construction : S.S.316

Salt Slurry Preparing Blender: Quantity: 1 Lot

Material of construction: S.S.316

SALT DOZING SYSTEM: Quantity: 1 Lot

Material of construction : S.S.316

6.7 FAT RECOVERY SECTION

The first stage of fat recovery system shall comprise water purge with Soft water. Timer based water purging is carried out ensuring minimum dilution. The water purge shall affect in the following lines:

- i) Cream lines, butter milk line and tanks shall be flushed with Soft water for recovery.
- ii) The butter milk lines shall be flushed with soft water and the flushing shall be taken to the butter milk storage tanks.

The CBMM with working section shall be flushed with hot Soft water and the flushing shall be taken to the existing butter melting vat. The scope shall be as defined in the battery limit.

6.8 Butter storage silo 2 MT/ HOUR

1. Butter Silo Housing -

The butter Silo acts as a buffer storage between the CBMM to the auto bulk butter packaging machines. The closed butter silo offers the possibility of butter storage under perfectly hygienic and preservation conditions for several hours. The butter silo can feed the butter to auto bulk butter packing machine.

The Butter Silo ensures a continuous butter production via the CBMM & acts like a buffer even when the packing machines are not operational.

MOC : SS 316

Working Principle:

- The butter silo is driven by a gearbox which in turn drives 2 augers which are very large in diameter and rotate at a very slow speed to maintain the optimum texture of butter. The whole system is controlled via VFD.
- The butter silo has adjustable legs and load distribution plates.
- The inner surface & all contact parts of the silo are sand / shot blasted assuring excellent anti sticking qualities to the parts.
- The butter silo has 2 outlet nozzles
- The butter line shall be heat traced & provided with insulation and cladding.

Suitable system should be provided to collect the butter from pipeline.

2. Accessories

- Manhole for maintenance & inspection – 1 piece
- Cleaning spray balls 360 degree – 2 pieces
- Breather plug to prevent vacuum built up – 1 piece
- Sight glass with LED light – 1 piece
- Outlet nozzles to connect 2 butter pumps – 2 pieces
- Sight glass – 2 pieces

3. Butter Pump

- Make – ITT Bornemann
- Quantity – 2 pcs
- Capacity – 3 MT per hour (VFD operated)
- Type – positive displacement
- Fitting – SMS 100 (quick opening sanitary fitting)
- Motor Rating – 7.5 HP (5.5 KW)
- Motor Type – IE3
- Geared Motor Make – Siemens/ Crompton Greaves

List of Equipment

Sr. No.	ITEM	Capacity	Make	Quantity
1	Butter Silo	2 MT	Simon/Shmech/IDMC/ Egli	1 Pc
2	Butter transfer pump	3 MT/ hr	ITT Bornemann	2 Pc
3	Butter distribution line with valves & fittings			1 Lot
4	Heat tracing of butter line			1 Lot
5	Fat recovery system			1 Lot
6	CIP system for Butter Silo			
7	PHE for CIP	15 KLPH	Alfa Laval/ Kelvion / IDMC/ Tetra /Egli	1 Set
8	Detergent Hopper with lid & level sensor	50 L		1 Pc
9	CIP Supply Pump	15 KLPH	Alfa Laval/ GEA / IDMC / Zutech / Fristom	1 Pc
10	SS pipes		IDMC/Rensa/ Alfa Laval	1 Lot
11	SS fittings & supports		IDMC/Rensa/ Alfa Laval	
12	MCC & PLC panel (combined with CBMM panel)			1 Lot

13	Electrical items			1 Lot
14	Automation System (combined with CBMM panel)		Rockwell (Allen Bradly)	1 Lot
15	Spare Parts			1 Lot
16	Installation & Commissioning			1 Lot

Auto Butter Bulk Packing System –

The auto butter bulk packing system shall be able to pack 15-25 kg bulk butter blocks. The system shall comprise of twin heads which shall be fed by 2 butter pumps connected at the outlet of the Butter Silo. These headers shall discharge the butter via 4" outlet pipes to the preformed butter outer/ carton placed on the conveying bed manually by operator. The system shall involve the filling, weighing via load cells & transferring by SS roller conveying system with automatic pneumatic valve to bush the butter cartoon automatically to the final semi automatic check weigh system. After the weight has been checked on the weigh scale, the butter carton is fed to the semi automatic taping machine via roller conveyors. After the packing these butter cartons can be sent to cold storages.

S.NO	ITEM	QTY
1	Auto Butter Bulk Packing System	1 LOT
1.1	Load cells (Automatic initial weight check)	2 sets
1.2	SS 304 Roller conveyors	1 set
1.3	Pneumatic system to push the butter carton automatically	1 set
1.4	Semi-automatic check weight system (Final checking)	1 set
1.5	Semi-automatic taping machine along with SS 304 roller conveyors	1 set

6.8 SS PIPING WITH FITTINGS, INSULATION & PIPE SUPPORTS

Pipes:

Type: TIG welded; annealed and de-scaled tubes shall be manufactured as per the standard ASTM-A270.

Material: AISI 304 as per requirement

Finish: Outer surface of the tubes shall be with dairy finish and inner surface should be as per dairy standard

Thickness: The average wall thickness of tubes should be 1.6 mm up to 63.5 mm OD and 2.0 mm for diameters above 63.5 mm OD.

For pipelines sizing following velocities of the fluid shall be considered.

Milk / Water (Suction & discharge) : <1.5 m/s & 2 m/s.

Cream and Butter milk : <1.5 m/s & 2 m/s.

SS Fittings:

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

In-line Sight Glass: The in-line sight glass should be complete with SMS unions at both ends having toughened heat resistant glass and protective stainless steel cover. It should have quick replacing arrangement for replacement of glass by flange and bolts. The material of construction shall be AISI 304 unless otherwise specified. All the inside as well as outside metal surfaces shall be with dairy finish.

Bend, Tee, Elbow: These fittings shall be made out of AISI 304 unless otherwise specified, process tube, TIG welded, annealed, de-scaled having outer surface mirror polished and inside pickled, manufactured as per ASTM A270. The thickness of the fittings made from the tube section should not be less than 1.6 mm up to 61.5 mm dia and should not be less than 2.0 mm for above 61.5 mm dia. The wall thickness at any point shall not vary more than 12.5% over and under from the average wall thickness specified.

Bends and elbows shall be free from wrinkles. Tee shall have uniform flaring on the branch connection. The ovality on the open ends shall be within the permissible limit specified in the ASTM A270.

Pipe Clamp: Shall be quick openable type of sturdy design.

Insulation:

The cream line shall be insulated with PUF with density of 40 kg/cu.m and aluminum cladded. The insulation shall be provided wherever required.

SS 304 Rectangular Hollow section for Pipe support:

Pipe support shall be three tiers in the support structure, top first tier shall be for power and control cable tray. Middle tier for utilities & services piping and bottom tier shall be SS piping for product and CIP.

SS SANITARY PNEUMATIC VALVES – BUTTERFLY, SEAT AND MIX PROOF TYPE

Sanitary Pneumatic Seat Valves

Type : Two way / three way / Four way pneumatically operated sanitary valves of mix-proof, Shuttle Valves, Shutoff valves, Mix proof shuttle valves, Flush bottom Valve, .. etc. shall be provided with ASI connectivity. All the valve battery valves shall be of self-cleaning type mix proof valves having 3 solenoid (each)

Material : AISI 316

Sealing : Positive

Controls: Electrically/electronically operated

The Pneumatic valves shall have the following features to cater to fulfill the above functional requirements:

Housing shall be ball shaped for the ideal flow characteristics to ensure 100% cleanability by CIP. Housing closed by cover plates should not create a sump or dead corners. Housing interconnections shall be by detachable type clamp connection. The seals such as housing seals, stem seals and disc seals shall be flush mounted.

Digital valve positioners shall be suitable for two way digital communication based on field run bus technology (ASI or equivalent open network), this shall ensure real time notification of current and potential valve and instrument problems.

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

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

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

The Supplier to quantify the number of transmitters required, based on the tender as well as functional requirement & offer accordingly.

All pneumatic connections from the header up to individual valves shall be of SS-304 through suitable SS-304 distribution headers connected with FRL units/moisture separator etc. 500 mm pneumatic flexible tubing to be considered at control unit side for all valves.

The pneumatic valves should have required diagnostic features, to be monitored & recorded in the system. The valves should also be configurable from the operator console.

SS Pneumatic Valves (All Types other than Mix Proof Type)

In addition to cream, butter & CIP lines, SS pneumatic valves shall also be provided for water & air connections (after tapping from main header) to process application. The valves shall be sanitary type. All pneumatic valves in product & CIP lines shall be piston type seat valves.

Required number of valves shall be finalized during detail engineering as per tender/functional requirement & standard engineering practice.

As per general description given in basis of design, all pneumatic valves must have ON/OFF & fault feedback facility.

SS MANUAL PROCESS BUTTERFLY & NRV VALVES

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

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

6.9 SERVICE PIPES, VALVES, FITTINGS & SUPPORTS

Steam distribution piping for butter section

For steam distribution, MS 'C' class pipes (ERW) IS 1239/3601/4736 shall be used. Steam shall be provided at one point in the butter section.

Hot Insulation of the pipeline is considered in the scope.

All the support, structure, valves, NRV, control valve etc required for steam distribution inside the butter section and in CIP section (if required) are considered in the scope. All the supports inside the process & packing area shall be of SS square box type of suitable thickness only.

STEAM DISTRIBUTION AND CONDENSATE RECOVERY

1. Steam shall be made available at one point in the proposed butter plant building at 3.5 bar pressure by the purchaser. Distribution there after including pressure reduction if required and LP steam distribution including pipes, valves & Fittings and insulation shall be in supplier's scope.
2. The piping for Condensate return from all the equipment shall be looped in and left at one point in the butter plant area. Depending on the feasibility the purchaser will carry out balance works like taking condensate to boiler feed water tank/where ever required.

Raw & Soft Water Distribution piping for butter section

For Raw & Soft water distribution, Galvanized steel (ERW) IS 1239, 3589, 3601, 4736 (medium duty) shall be used. Raw & Soft Water shall be provided at one point in the butter section by the Purchaser. Supplier shall take the tapping with isolation valve.

All the support, structure, valves, NRV, control valve etc. required for raw & soft water distribution inside the butter section are considered in the scope. All the supports inside the process & packing area are of SS square box type of suitable thickness only.

WATER- RAW & SOFT DISTRIBUTION SYSTEM

The proposed scheme shall be as follows:

a) Raw water and soft water shall be made available at one point in suitable size of pipe line by purchaser and further distribution at constant pressure for new plant requirements shall be in supplier's scope.

b) Raw and Soft water distribution system up to all duty points inclusive of water piping, valves and fittings shall be in the scope of supply.

Chilled water distribution piping for butter section

For Chilled water distribution, Galvanized steel (ERW) IS 1239, 3589, 3601, 4736 (medium duty) shall be used. Chilled Water Supply shall be provided at one point in the butter section.

Supplier shall take the tapping with isolation valve.

Cold insulation (PUF) of suitable thickness for CW forward & return line to be considered in the scope.

All the support, structure, valves, NRV, control valve etc required for chilled water supply & return distribution inside the butter section shall be considered in the scope. All the supports inside the process & packing area shall be of SS square box type of suitable thickness only.

CHILLED WATER DISTRIBUTION

Chilled water forward & return lines shall be made available by the purchaser at one point nearby CBMM. Distribution thereafter, including pipes, valves, fittings, supports and cold insulation shall be in the scope of supply.

Compressed Air distribution piping for butter section

For compressed Air distribution, SS 304 pipe of suitable thickness shall be used. Compressed air shall be provided at one point in the butter section.

Supplier shall take the tapping with isolation valve.

All the support, structure, valves, NRV, control valve etc required for steam distribution inside the butter section shall be considered in the scope. All the supports inside the process & packing area shall be of SS square box type of suitable thickness only.

COMPRESSED AIR SUPPLY AND DISTRIBUTION

1. Compressed air shall be made available in suitable size pipe line (Bidder to specify the line size) at one point in the plant area, near CBMM. Distribution thereafter including pipes, valves & fillings shall be in the scope of supply. The required quality of air shall be informed by the supplier.

2. All the compressed air pipes in entire process area shall be of SS 304 only.

Insulation and cladding of the butter, steam and chilled water pipe line

Hot & Cold insulation and cladding of cream, steam and chilled water pipe line of suitable thickness to be considered in the scope

6.10 AUTOMATION COMPLETE INCLUDING REQUIRED INSTRUMENTS, BASED ON SCADA

Qty : as per BOQ

Automation system shall be provided for details of entire plant parameter monitoring, control and recording of cream transfer pump of cream storage tank, CBMM, manufacturing of butter, Butter milk handling, CIP & utilities.

6.10.1 AUTOMATION

AUTOMATION HARDWARE

PC -PLC based automation system :

The High End PLC/DCS system offered shall have open architecture and shall use common engineering tool for operator station, automation system, communication system, engineering system and I/O. Sub systems are integrated together with standard & proven networks with fully optimized & standard open protocols. All the components use single database.

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

HUMAN MACHINE INTERFACE (HMI) /OPERATOR CONSOLE PC cum MIS PC

Type : Quad or better Processor PC with 27" color LED screen

The SCADA- Operating station shall be high end PC & shall have DVD_RW drives with back-up data recording facility. The hard disc shall have data storage capacity of at least 90 days plant data. Suitable software shall support multi-screen technology.

Necessary RDBMS software either ORACLE or SQL Server and D2K or Visual Basic as front end will be considered for data storage and MIS reports generation.

Printing of graphs/trends & report would be possible from this PC.

The SCADA software shall support multi-screen technology and station shall consist of keyboard, mouse, graphic and necessary hardware & software. Printing of graphs/trends & report would be possible from the HMIs. The size of HMI shall be of minimum 10" Size.

It should be located in control room.

PRINTERS

Multi function (Scan, Print) printer A4 size_ 1 no

NETWORK HARDWARE

- Ethernet cable/ fibre optic cable_ 1 lot
- Field run bus/ similar bus cable_ 1 lot
- ASI/Suitable open bus network cable for valves_1 lot
- Switches – as required
- Remote I/O complete with communication & power unit_ 1 lot
- Other hardware – as per requirement

AUTOMATION / SYSTEM SOFTWARE

The system software shall be based on open architecture/protocol and shall support minimum 32 bit processing platform. 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. For networking TCP/IP or ISO-OSI model will be in use.

Required effective antivirus software with 1 year's license shall be provided

MIS SOFTWARE

This shall be based on open architecture/ protocol. Following minimum reports are envisaged from the system. Necessary forms to be developed on the network PC's for entering the data for butter plant. All the reports shall be developed after the discussion with the purchaser. However following reports are to be considered for development

- Production report
- CIP report
- Equipment and Plant Log Reports
- Other reports will be specified at the time of finalization

CONTROL DESK AND CABINET

The design of all console / panels/cabinets and layout shall be based on human engineering consideration, fully keeping in view of the convenience of operation and maintenance personnel.

Operators' console shall be free standing type. All keyboards and other cursor control devices will be mounted on the horizontal part of the console. The monitors will be mounted on the raised part of the console.

All system modules, power supply components as required for completeness of the systems shall be housed in system cabinet. The cabinet shall be totally enclosed freestanding type equipped with fully height front and rear doors. Cabinets shall be designed for front access to system modules and rear access to wiring. The cabinets shall be in general designed for bottom entry of cables and shall have non-welded construction only.

Total 3 Nos of Revolving Chair shall be supplied.

FIELD HMI

Minimum 10" color LCD Display with touch screen shall be provided with suitable water dust proof SS 304 enclosure having transparent cover for field operation. These shall be with EEPROM memory. Operating console/MMI integrated with main PLC system.

6.10.2 FIELD INSTRUMENTS, CONTROL VALVES AND ACCESSORIES

PROCESS TRANSMITTERS

Quantity : 1 Lot

All the Process Transmitters will be based on Field bus technology and shall support serial, two way digital communication system . Transmitters shall be provided with Local Digital Indicator.

Measuring ranges of transmitters shall be selected in such a way that the rated value of the measuring variables appears at approx. 50-70% of the span.

The sensing elements and internal parts shall be constructed with AISI 316 . In case of stock and corrosive fluid application, diaphragm seal type transmitter with capillary is foreseen.

Transmitters shall generally be installed on Instrument Stands made of 2" SS pipes located at convenient points.

PROCESS GAUGES

Quantity : 1 Lot

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

Pressure gauge sensing element shall be Bourdon / Bellow / Diaphragm type in general depending upon the process condition. Direct reading Pressure / Differential Pressure gauges shall be used of SS 316 sensing element and AISI 304 movement material.

All accessories, such as 2-valve manifold etc. shall be provided with pressure gauges according to application. Where process temperature exceeds 70°C, siphon loops shall be utilized.

Local temperature measurement shall be done bi-metal Temperature gauges. Temperature gauges may be direct mounted type (multi-angle) or with SS capillary extension (at least 3 Mtrs) as per the application area.

The sensing element / bulb / capillary etc. shall be of SS 316 for temperature gauges.

TEMPERATURE ELEMENTS

Quantity : 1 Lot

All Temperature Sensors Elements shall be of Duplex type with SS 316 sheath and MgO filled. Depending on temperature ranges, Pt-100 Resistance Temperature Detector (RTD) or thermocouple shall be used

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

PROCESS SWITCHES

Quantity : 1 Lot

Local switches for pressure, differential pressure, temperature, level etc. shall be blind type and shall be suitable for Field bus communication.

Set points shall be adjustable throughout the range. Switching differential shall be adjustable.

FLOW ELEMENTS

Quantity : 1 Lot

Measurement of flow for clean fluids and employing differential pressure principles, flow nozzles or concentric square edge orifice plates shall be provided. All flow element calculation, design and construction shall be based on BS / ASME standard.

Beta ratios (d / D) for flow nozzles and orifices shall not be less than 0.5 and not more than 0.70.

Flow nozzles and flow orifice plates shall be 316 stainless steel.

Accuracy of the primary element shall be plus or minus 0.25% or better.

MAGNETIC FLOW METER

Quantity : 1 Lot

Magnetic flow meters shall be true smart type with Field bus output. The flow tube material shall be of AISI 304 with PTFE lining. The electrode material shall be either SS 316L or Hastelloy depending upon process condition. In general, SMS type process connection may be used for magnetic flow meters.

Accuracy of magnetic flow meter shall be plus or minus 0.5% of flow rate or better.

Local digital flow rate as well as totalizer display shall be provided.

Earth ring of SS 316 shall be provided for proper grounding of mag flow meter.

MASS / DENSITY FLOW METER

Quantity : 1 Lot

The Mass flow meter shall be used for evaporator inlet & outlet service. The Mass flow meter envisaged shall be Coriolis straight tube type. The electronics part shall be microprocessor based. The Mass flow meter shall be capable of measuring mass flow rate, density, temperature, volumetric flow rate and totalized flow.

Mass flow meters shall be true smart type with Field bus output. The flow tube / wetted parts material shall be SS 316 / SS 316L or as per the requirement of process fluid. SMS type process connection may be used for mass flow meters.

Accuracy of Mass flow meter shall be plus or minus 0.2% of flow rate or better.

Digital display of mass flow rate, density, temperature, volume flow rate as well as totalized flow shall be provided.

LEVEL INSTRUMENTS

Quantity : 1 Lot

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

For clean liquid, water, condensate service etc.(other than milk applications) normal differential pressure type level transmitters shall 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 connections, 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 / float type instruments and switches shall be mounted in external cages with flanged connections, rating same as the vessel. This type of instrument shall not be used for

applications 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.

CONTROL VALVES

Quantity : 1 Lot

Pneumatic control valves complete with microprocessor based electro-pneumatic positioners.

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 valves shall be at 75-80% open. Valve bodies shall be no more than two (2) line sizes smaller than the pipe in which they are installed.

Leakage class ANSI IV

All control valves (independent of their type) shall have a tight shutoff against at least 110% of the maximum design pressure. The stroke/throughput characteristic shall, dependent on the purpose. The valve stems shall be well guided and the valves shall operate without excessive vibration and noise. The above shall achieve a stable fluid control over the entire flow range. Control valve design and location shall take into account flashing and cavitation conditions.

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

Digital valve positioners shall be suitable for two way digital communication based on Field bus technology, this shall ensure real time notification of current and potential valve and instrument problems

6.11 ELECTRICALS

Required power supply to mcc panel should be arranged by contractor from nearest distribution panel of gokul with suitable cable ,termination, S.S cable tray's etc. complete.
50METER

It shall be responsibility of the bidder to design a suitable electrical system as per the latest IS specification, Indian electricity rule, including special requirements of concerned state electricity Inspectorate. The system shall be designed to receive, control & distribute electrical power at 415V, 50 Hz AC in sheet steel housing powder coated finished in Siemens grey. The acceptable

variation in voltage is +/- 5% & frequency is +/-3%.

The scope would consist of design, supply, installation; testing and commissioning of Motor Control Centres with complete switch gears. Incomer feeder, all outgoing non-motorized feeder & all ancillary panels with complete switchgears & electrical shall be Non-intelligent type.

Supply, laying and termination of required quantity of armored LT power cables from nearest distribution panel of Gokul, PCC to MCCs (Armored XLPE aluminum cable)and MCC to respective motors (steel braided flexible rodent proof FRLS cable up to 50sq.mm copper conductor sizes above 50sq.mm copper armored cable of approved make)/copper flexible steel braided flexible rodent proof FRLS control cables & Instrument cables(with shield & sheath)of suitable sizes with accessories on SS-304 cable trays. GI/FRP/GRP cable tray shall be provided for out door aluminum incomer power cables. Necessary SS cage/ perforated cable trays, SS conduit pipes within plant area, earthing conductor, earth pits, and emergency stop and motor isolator, DB sin SS enclosures shall be provided.

The sizes of power cables for different capacity of loads/motor rating shall be as indicated in cable selection charts. All the outgoing power, control & instrument cables shall be laid through SS cage/perforated tray, SS shrouds for all pumps & motors shall be provided. Supply & placement of rubber mat s of proper size as per Electrical Inspectorate rules shall be provided.

The installation of the electrical shall be carried out as per respective clause of the tender. The detailed specification of the required electrical system is provided in subsequent sections

6.11.1 MCC panel for CBMM

Qty : as per BOQ

It shall be used to receive, control and distribute electrical power at 415 V, 50 Hz, AC in sheet steel housing to all prime movers & other consumption points with all necessary controls and communicate real time operating parameters to main control DCS/ High end PLC system through Energy management PLC(entry level).

All motor feeders of the MCC shall be Soft starter with communication module & communicable VFD`s (as specified). Power cables from PCC to MCC would be Al armored to be laid on GI/FRP ladder type cable trays. All power, control cables from MCC to individual motors shall be copper (flexible) laid on SS-304 cage/perforated cable trays.

Design Requirement and Scope of Supply:

Statutory Requirements:

Motor Control Centre is to be manufactured/ assembled as per the latest applicable Indian Standards, Indian Electricity Rules, Indian Electricity Act, Fire Insurance Regulations and comply with all currently applicable statutory requirements of concerned State Electricity Inspectorate and safety codes in the locality where the equipment will be installed and as per the detailed specifications mentioned below.

All switchgear used in the switchboard shall be of the same manufacturer to allow better interoperability, seamless integration and installation.

The Bidder shall provide the outgoing feeder to all the electrical drives in the cream handling & conditioning section, butter making section, butter milk handling section, CIP, Butter storage section, packing section etc as per requirement.

The MCC shall be suitable for indoor installation. It would be fabricated as per detailed specification described and as per IP 42.

Additional 15 % spare feeders for future load of different shall be provided in MCC.

6.11.2 Power cable, control cable to all the equipment from MCC, PLC with cable tray rubber mats, conduits etc

Qty : as per BOQ

Power cables for use on 415 V system shall be of suitable grade, copper conductor, XLPE insulated, metal braided, rodent proof (upto 50 Sq.mm) & unless otherwise specified, aluminium conductor (above 50 Sq.mm), XLPE insulated, PVC sheathed, armoured and overall PVC sheathed strictly as per IS : 7098 PART 1/1988

Control cables for use on 415 V system shall be of suitable volts grade, copper conductor, PVC insulated, metal braided, Rodent proof armoured PVC sheathed armoured and overall PVC sheathed, strictly as per IS: 1554 (Part I) – 1976

Cable trays are used (based on the site condition) for laying the power and control cables as per approved cable layout drawing.

Fabrication: These shall be perforated type, heavy duty, return flange or inward bend shape, manufactured from mild steel conforming to IS-226 and hot dip galvanized as per IS- 2629/BS-729. Width of cable tray shall be as per the requirement. Height to be minimum 50 mm and thickness of plate to be 1.5 mm up to 300 mm cable tray width. For cable trays having width more than 300 mm, height to be 75mm and thickness of plate to be 2.0 mm.

Cable trays shall be supplied to site in standard lengths of 2.5 M. Necessary accessories of cable trays such as coupler side plates for joining cable trays, bends, riser, inside riser, tee etc. must also be factory fabricated. Plain cable tray covers 1.5 mm thick to be supplied if specially required. Sample of cable tray to be got approved from purchaser before supply. Suitable MS supports required for installation of cable trays shall also be supplied/installed along with cable trays.

6.11.3 Earthing for electrical power and automation system

Earth Bus, Earthing Lead & Earth Wire/Strip

All electrical equipment is to be doubly earthed by connecting two earth strip/ wire with SSnut bolts conductor from the frame of the equipment to an earthing pit 2 nos.

The earthing ring will be connected via links to several earth electrodes. The cable armored will be earthed through the cable glands. Conductor size for connection to various equipment shall be as specified in the drawing. However, the length of the branch leads from equipment to earthing grid/ ring shall not be more than 10 to 15 meters. All hardware for earthing installation shall be hot dip galvanized.

Spring washers shall be used for all earthing connections of equipment having vibrations. While deciding type & size of earth lead, the resistance between the earthing system and the general mass of the earth shall be as per IS code of practice. The earth loop impedance to any point in the electrical system shall not be in excess of 1.0 Ω in Contract to ensure satisfactory operation of protective devices. G.I. wire/ Copper wire shall be connected to the equipment by providing crimping type socket/ lug.

Wherever earthing strip to be provided in cable tray, it shall be suitably bolted on cable tray and electrically bonded to the cable tray at regular interval. Excavating & refilling of earth, necessary for laying underground earth bus loops shall be the responsibility of the Supplier.

Wherever earth leads/ strips/ wire are laid in cable trenches, these shall be firmly and suitably cleared to the walls/ supporting steel structure on which cable is clamped.

Earth Pit as required for the power and control shall be provided by the contractor.

POWER DISTRIBUTION

The scope includes supply of one no. MCC panel to cater the entire electrical connections of butter plant. MCC panel shall consist of suitable incomer and required no. of various capacities outgoing feeders (Bidder can design the capacity details based on the load of equipment) Required power supply to MCC panel should be arranged by contractor from nearest distribution panel of purchaser with suitable cable ,termination, S.S 304 cable tray.

Entire power & control cabling, SS conduit, cable tray with top cover, earthing and other electrical hardware as required is included in the scope.

6.12 SPARE PARTS FOR 1 YEAR OF OPERATION

Qty : as per BOQ

Bidder should consider critical spare parts of 1 year of operations as per manufacturers recommendations of all the Key equipment supplied under this contract. The list of the spare parts considered to be supplied under this head shall be furnished along with the technical bid.

6.13 INSTALLATION, TESTING, COMMISSIONING AND TRAINING

Inspection

For indigenous items, the bidder shall invite client for inspection and preliminary testing. Inspection may be required at various stages of manufacture/assembly for some items. For

imported items, however the Bidder shall do the inspection at his cost and submit the necessary test certificate.

Site work and installation

Protection of electronic equipment

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

Bidder is responsible to ensure that delicate electronic equipment used during construction, such as orbital welders, testing devices, etc. are protected against damage from main supply.

Commissioning

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

Commissioning shall be consider complete after successful completion of product run of entire plant for 7 days with acceptable product quality.

Product trials and performance guarantee

After satisfactory completion of the commissioning, the plant shall be operated at full capacity to establish plant performance on capacity, quality and consumption for minimum of 7 days.

Training

Necessary staff as may be deputed by the Gokul Dairy shall be trained by the Supplier for operating the plant. The personnel will be associated for the training during the installation; testing, commissioning and start-up period and the training tenure shall be extended for a minimum period of one months from the date of commissioning and start-up. This training will be a continuous process during commissioning and stand by period and as described in the Technical Specifications.

Trainer shall include the experts from Bidder and OEM and their visit at site shall be arranged as per the approved training schedule. Training Material shall be provided to the participants during the training.

The Training shall cover:

- Exposure to the working and construction of the various equipment comprising the various systems of the plant, including instrumentation and controls.
- Exposure to and training on the operations and maintenance of the various equipment (including OEM`s) in the plant including the testing, calibration setting of instruments both

local and panel mounted.

- Familiarization with startup procedures, management operations, basic principles of controls, control during operation and adjustments, fault of the plant.

Managers and senior personnel training supervisors and section heads training Supervisors, operators and maintenance staff operators and maintenance staff training

7. BATTERY LIMITS

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

Item	Purchaser Scope	Supplier Scope
Civil works	Necessary foundations for equipment based on the details provided by the equipment supplier.	Required input for civil work related to equipment foundation if any.
Cream	Ripened cream at the outlet of cream storage tanks (at two location) at required temperature and fat percentage.	Scope of work start from outlet of cream storage tanks (at two location) onwards.
Butter milk/Recovered fat	Storage tank to receive the molten butter.	Butter milk shall be pumped through the butter milk chiller to existing butter milk storage tank.
CIP lines		CIP system for Butter making, Working and moisture dosing system, butter silo and auto butter bulk packing system.
Pasteurized Chilled Water	Pasteurized Chilled Water shall be made available at storage tank in butter section	Distribution of pasteurized chilled water as per the process requirement for wash water and dosing water.
Raw/RO Water lines	Termination at one point in butter section.	Termination points for consumption shall be specified.
Compressed air lines	Termination at one point in butter section.	Termination points for consumption shall be specified.
Chilled water Supply & Return	Termination at one point in butter section.	Termination points for consumption shall be specified.
Steam & Condensate	Termination at one point in butter section. Collection of condensates from Generation point.	Control and Regulation of LP steam line at usage points. Condensate shall be left at the generation point.

Item	Purchaser Scope	Supplier Scope
Power Supply	Power shall be made available at the MCC located at butter plant.	Distribution of power and controls from the respective MCCs up to the consumption points. Necessary earthing Pits for Power and Instrument shall be provided. Power and Instrument earthing till the earthing pits.
Automation		Networking up to Butter control room. Butter plant complete automation including all third parties interfacing inside the plant.

8. GENERAL GUIDELINES

The following shall apply to all the equipment in various sections of the Plant.

- All MS structures and equipment to be given one coat of anticorrosive paint followed by two coats of paint of approved shade.
- All motors in production units shall be covered with SS shrouds. Shrouds should be easily removable and should allow free air circulation as well as entry of electrical cables. All motors installed outside the building shall have SS shrouds. Suitable safety guards should be provided wherever required.
- All weld joints shall be ground smooth. All corners should be well-rounded.
- In case of SS surfaces, external & internal surfaces shall be polished to 150 grits. DP tests shall be carried out for all welds after polishing for all holding vessels/tanks.
- All SS joints should be argon-arc welded only. Stainless steel tables, ladders of required size and at appropriate locations shall be provided for work-in- process inventory and other such activities..
- All fittings/equipment are to conform SMS/DIN standard.
- Detailed preventive maintenance schedules as well as operational manuals of all equipment shall be provided by the Bidder in the form of computer software after commissioning along with printed copies.

The manual shall cover the following aspects:

- Brief Process Description & Flow sheet.
- Unit-wise function and description.
- Equipment-wise details, operational instructions, maintenance procedures and schedules.
- Plant start-up, commissioning, normal operation, and emergency operation.
- Trouble-shooting & preventive maintenance schedule.
- As built drawings of the equipment as build drawing connection diagrams.
- Spares inventory and services of supply.

The manuals and drawings are to be supplied as follows:

- 4 sets of manuals and drawings in hard copy.
- 3 sets of above in soft copy in PEN Drive.

9. LIST OF EQUIQMENTS:

S.No	ITEM DESCRIPTION	CAPACITY	QTY	UNIT
1	CREAM TRANSFER SECTION			
1.01	Duplex Strainer		2	No
1.02	Cream buffer tank	500L	1	No
1.02	Cream Transfer Pump	5 KLPH	3	No
1.03	Mass flow meter	suitable	1	No
1.04	CIP supply pump	20 KLPH	1	No
2	CONTINUOUS BUTTER MAKING MACHINE COMPLETE WITH CONTROL PANEL AND AUTOMATION.	2 TPH	1	No
3	BUTTER MILK HANDLING SECTION			
3.01	Butter milk recirculation pump	Suitable	1	No
3.02	Butter milk buffer tank	400 L	1	No
3.03	Butter milk chiller for recirculation	Suitable	1	No
3.04	Magnetic flow meter	suitable	1	No
3.04	PHE for CIP of CBMM	20 KLPH	1	No
3.05	Butter milk transfer/CIP pump	20 KLPH	1	No
4	BUTTER WASHING SECTION			
4.01	Wash water circulation pump	Suitable	1	No
5	JACKET COOLING SYSTEM FOR CBMM			
5.01	PHE chiller for soft water	Suitable.	1	No
5.02	Chilled water balance tank	suitable	1	No
5.03	Chilled water recirculation pump	suitable	1	No
6	MOISTURE DOSING SYSTEM			
6.01	Moisture Dosing tank	Suitable		
6.02	Moisture dosing pump and injectors	Suitable		
	<u>Salt Solution Dozing system</u>	suitable	1	Lot
	<u>Vaccuum Working system</u>	suitable	1	Lot
	<u>Texture Forming system</u>	suitable	1	Lot
	<u>Salt Slurry Preparing Blender System</u>	suitable	1	Lot
7	FAT RECOVERY SECTION	suitable	1	Lot
8	Butter storage silo	2 MT/hr	1	Lot
	Butter transfer pump(Lobe pump)	3 MT/hr	2	No
9	Auto butter bulk packing system	2 MT/hr	1	Lot
8	SS PIPING WITH FITTINGS, INSULATION & PIPE SUPPORTS		1	Lot
9	SERVICE PIPES, VALVES, FITTINGS & SUPPORTS		1	Lot
10	AUTOMATION COMPLETE INCLUDING REQUIRED INSTRUMENTS, BASED ON SCADA			

S.No	ITEM DESCRIPTION	CAPACITY	QTY	UNIT
10.01	AUTOMATION		1	Lot
10.02	FIELD INSTRUMENTS, CONTROL VALVES AND ACCESSORIES		1	Lot
11	ELECTRICALS			
11.01	MCC panel for CBMM		1	Lot
11.02	Power cable, control cable to all the equipment from MCC, PLC with cable tray rubber mats, conduits etc		1	Lot
11.03	Earthing for electrical power and automation system with 2 nos earthing pits.		1	Lot
12	SPARE PARTS FOR 1 YEAR OF OPERATION		1	Lot
13	INSTALLATION, TESTING AND COMMISSIONING		1	Lot

10. LIST OF APPROVED MAKES

Recommended Makes of Major Items		
Sr. No	EQUIPMENT	MAKE
1	CBMM	EGLI / IDMC / Simon / Shmech
2	Milk & CIP Pumps	Fristam / Zutech
3	Butter silo	EGLI / IDMC / Simon / Shmech
3	Motors	ABB / Siemens
4	SS Pneumatic Valves	SPX-APV
5	Pneumatic Butterfly Valve	GEA Tuchenhagen / SPX-APV
6	Manual Butterfly Valve, plug	Alfa Laval/Cipriani / L&T
7	SS Pipes Valves, SS Fittings	Heavy Metal / JINDAL / TATA
8	Milk/Cream Chiller, Water Chiller & CIP Heaters	KELVION /IDMC/Tetra Pak/Alfa laval
9	Cream flow Meter (Mass)/ Butter Milk -Magnetic flow meter	Only E&H
10	Level / Pressure/ Temp. Transmitter	Only E&H
11	Water Flow Meter	E&H
12	Manual Valves for Utility	Audco
13	Control Valves - Steam/Chilled water	Only Samson
14	Valves for Utility	Audco / /L&T
15	SS manual valves	IDMC / Alfa Laval
16	SS pipes, SS Fittings	IDMC / Alfa Laval / Rensa

Recommended Makes of Major Items		
Sr. No	EQUIPMENT	MAKE
17	VFD	Danfoss
18	Power Cable	polycab / CCI/ Finolex
19	Control & Instrumentation Cable	Finolex/ Polycab
20	Energy Meter	L & T / Siemens
21	Level Switch	E&H
22	RTD	RTD Sensor: Radix and Transmitter: E+H
23	Pr. & Temp Gauges	Wika / Warea / GIC/ Pyroelectric
24	Solenoid valve	Festo / SMC / Danfoss
25	PLC / Automation	Allan Bradley (Rockwell)
26	PRS & Steam Traps	JNM / Thermax
27	M.S./G.I. Pipes	TATA /Jindal
28	PUF Insulation	Beardshell/Lloyds/Frick / Equivalent
29	Control Room Furniture	Pyrotech/ Reputed
30	PC	Quad processor PC with 27" LED screen HP or Dell
31	Printer	HP/Dell
32	Water Valves	Audco / Intervalves/ L&T
33	LT Switchgears	Siemens / Scheineder / L&T
34	ACB, Relays, Starters, Timers, SFU, PB, Indicating Lamp, MCB etc	Siemens / Scheineder / L&T

11. List of Drawings/ Documents to be submitted.

1. Process Flow Diagram
2. P&I Diagram
3. Layout Diagram
4. Bar Chart for project execution

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 Continuous Butter Making Plant & Machinery

Dear Sir,

With reference to the Tender Notice published in Daily _____ on , _____ I/ we submit the Technical offer as supply, installation, testing, commissioning & performance trial of Continuous Butter Making Plant & Machinery. We also agree upon Terms conditions

Yours faithfully

Seal & Signature of Tenderer

Encl -

1. D D towards EMD
2. 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 Continuous Butter Making Plant & Machinery

Dear Sir,

With reference to the Tender Notice published in , I/we submit our Tender offer for supply, installation, testing, commissioning & performance trial of Continuous Butter Making Plant & Machinery. We have thoroughly studied specifications of required Plant, & also Terms & Conditions of this Tender.

Total all inclusive price supply, installation, testing, commissioning & performance trial of Continuous Butter Making Plant & Machinery.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 supply, installation, testing, commissioning & performance trial of Continuous Butter Making Plant & Machinery	Rs.
2	Installation & commissioning of Continuous Butter Making Plant & Machinery	
3	GST	Rs.
Total Price is 1 + 3		Rs.

(In words Rs) _____

Date

Seal & Signature of Tenderer