

BUNDELKHAND SAHAKARI DUGDH SANGH MARYADIT

SIRONJA, SAGAR (M.P.) 470004

AN ISO 9001 : 2015 Certified Organization

E-mail: sanchimccsagar@gmail.com

Ref No: 163/BKDS/IM/2023

Dated: 28/07/2023

E-Tender Notice

Bundelkhand Sahakari Dugdh Sangh maryadit, Sagar is a milk union of MP State Cooperative Dairy Federation Ltd. (MPCDF), Dugdha Bhavan, Habibganj, Bhopal, an apex cooperative organization in Madhya Pradesh, invites Tender for “**Supply of bulk milk cooling tanks 5KL (complete unit) -5nos**” strictly adhering to the terms and conditions prescribed in the tender document. The cost of tender document is Rs.1000/- (Rupees One Thousand Only).

The tender document can be obtained from the site of MP e-portal www.mptenders.gov.in on remitting online payment of the cost. The details relating to the tender can also be referred at MPCDF website www.sanchidairy.com & www.sanchisagar.com.

Key Information

EMD required Online mode	Tender Fee (Rs)	Bid submission due date & time	Technical Bid opening Date & time	Financial Bid Opening Date & Time
Rs.100,000	1000/-	18.08.2023 4.00 pm	19.08.2023 4.00 pm	21.08.2023 11.00 am

CHIEF EXECUTIVE OFFICER

Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar
Main Dairy Plant, narsinghpur road, sironja, Dist.- sagar (M.P.) 470004
Tender Document

Schedule I	General Terms and Conditions (Page No. 3 to 7)
Schedule II	Technical Specifications (Page No. 8 to 17)
Schedule III & IV	Mandatory Declaration Forms (i) Form - A (Page no.18) (ii) Form - B (Page no. 19)
Schedule V	Price Bid – Form ‘C’ (Page No. 20)
Last date and time of purchase of tender form	18.08.2023 up to 3:00 PM
Last date for online upload of Tender Form	18.08.2023 up to 4.00 PM
Venue for submission of Tender documents:	
(i) Price bid online (mandatory)	(i) Online at www.mptenders.gov.in
Date & Time of Opening Technical Bid and EMD	19.08.2023 at 04.00 PM
Date & Time of Opening Financial Bid	21.08.2023 at 11:00 AM
Venue of bids opening	Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar Main Dairy Plant, narsinghpur road, sironja, Dist.- sagar (M.P.) 470004
Cost of Tender Form	Rs. 1,000/- (Rupees One Thousand only)
EMD	RS. 100,000/-
Contact person for queries	Mr.Jitendra Gehlot Mob:- +919407452890 Bkdsim789@gmail.com

Chief Executive Officer

SCHEDULE - I

General Terms & Conditions of Tender

Bundelkhand Sahakari Dugdh sangh Maryadit, Sagar is a union Of MP State Cooperative Dairy Federation Limited (MPCDF), Dugdha Bhavan, Habibganj, Bhopal (MP) invites online tenders through MP e-procurement portal www.mptenders.gov.in from manufacturers / or their authorized dealers for **Supply of bulk milk cooling tanks 5KL(complete unit) - 5nos.** at dairy plant Sagar adhering to the quality benchmarks and technical specifications prescribed in the tender.

The CEO, Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar solely reserves the rights to accept or reject, partially or fully, any or all tenders without assigning any reasons thereof.

1.0 DECLARATION :

1.1 Mere submission of a bid by a tenderer itself implies that he/she has read all the instructions, terms and conditions stipulated in the tender and has completely made himself / herself aware of scope, quality & technical specifications of **Supply of bulk milk cooling tanks 5KL (complete unit) - 5nos.** with technology/features, supplies to be made at the defined destinations and, have fully satisfied himself / herself with all related bindings that were expected from him / her through conscious participation.

2.0 EMD & RATE VALIDITY PERIOD :

2.1 EMD should be submitted online only and attach copy of proof for payment of EMD in technical bid.

2.2

MSME industries of The Madhya Pradesh State will be exempted from payment of the tender fee. MSME certificate should be of relevant category of supplies/materials/works. (MSME Certificate to be uploaded online mandatory)

2.3

Any tender which is not accompanied by Earnest Money deposit are liable to be rejected. Earnest money deposit of unsuccessful tenderers will be returned within 90 days from the date of opening of the tender. The earnest money deposit of the successful tenderers will be released on completion of supply/work as the case may be within the stipulated period.

2.4 No interest will be paid on the earnest money for the period during which (the EMD) lies in deposit with Bundelkhand Sahakari Dugdh Sangh.Maryadit.

- EMD may be forfeited:
 - If successful Bidder/supplier fails/denies to perform work
 - If any bidder/supplier withdraw its bid during the bid validity period

3.0 TENDER SUBMISSION :

- 3.1 A tenderer will not submit more than one tender. No Individual or firm shall be allowed to submit more than one tender under different names.
- 3.2 The tenderer will ensure to clearly indicate his / her position in the bidding firm in signing the tender and related documents.
- 3.3 The Bidder should possess a valid GST registration certificate, PAN income and income tax return of previous two financial years. (2020-21,2021-22)
- 3.4 The tenderer has to submit Earnest Money Deposit (EMD) of Rs. 100,000/- (one lakh only) for 5KL BMC online only. In no case the other modes of EMD deposition would be entertained if submitted physically by any bidder.
- 3.5 The tenderer will have to submit the technical bid papers online only.

4.0 OTHER PRE-REQUISITES :

- 4.1 The tenderer should clearly indicate their mailing address, telephone, mobile, fax, e-mail, PAN and GST number. Any change in the address should immediately be communicated to the **CEO, Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar** for exchanging future correspondence.
- 4.2 Negligence or carelessness on the part of the tenderer in filling the tender form / price / quote etc. shall not lend him / her any rights to withdraw from the tender once it is opened.
- 4.3 The tenderer shall submit the tender in the prescribed form only. Conditional tenders, in any case, are liable for outright rejection.
- 4.4 The tenderer will ensure to seal & sign at the bottom of each page of the tender document in token of their acceptance to the terms and conditions of the tender.
- 4.5 The tenderer cannot sublet or assign wholly or partially the approved supply order to any other party/parties. In any case, if it is found so, then the assigned supply order will immediately be cancelled and the party will be solely liable for black listing by **Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar**.

5.0 EARNEST MONEY DEPOSIT (EMD) :

- 5.1 Any tender not accompanied with EMD shall be liable for rejection. Earnest Money Deposit of unsuccessful tenderers will be returned from the e procurement side automatically as per the MP e tender norms.
- 5.2 The EMD of the successful tenderer will be released only on completion of supplies, testing and warranty thereby covering replacement and after one year of rate validity period.
- 5.3 No interest will be paid on the Earnest Money for the period during which (the EMD) lies in deposit with the **CEO, Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar**.

6.0 ELIGIBILITY CRITERIA: -

- 6.1 Tenders not accompanied the prescribed Online EMD thereon shall be tender rejected.
- 6.2 The tenderer should be manufacture/supplier of Bulk Milk cooler.
- 6.3 The tenderer should have previous experience in having supplied and commissioned same capacity or above of 5 KL Bulk Milk Cooler, in India either to any cooperative institution or reputed dairies/firm.
- 6.4 The tenderer should have supplied and commissioned same capacity or above of 5 KL Bulk Milk Cooler, for which tender called for and enclose copies of purchase order/supply order within a period of 3 years.
- 6.5 The performance certificate for above such supply for which purchase order/ supply order furnished as per 6.4 from the reputed purchaser shall be enclosed in the technical bid. The performance certificate received from purchase/client should be of within a period of 3 years.
- 6.6 The tenderer should have minimum experience of 3 years in the manufacturing (OEM), the tenderer shall furnish the authorization letter from the original equipment manufacturer (OEM) for supply of 2 KL Bulk Milk Cooler. The original equipment manufacturers (OEM) can authorize only one dealer/supplier.
- 6.7 If the tenderer is an authorized dealer/supplier for 5 KL Bulk Milk Cooler, then the experience of the manufacture for supplier for 5 KL Bulk Milk Cooler, their performance shall be taken for evaluation of technical bids, even if the supply has been made either by the manufacture directly or through other agencies.
- 6.8 The tenderers should submit copy of IT Return for Last 2 Financial Year (2020-21, 2021-22)
- 6.9 The tenderers should submit copy of GST and PAN Card.
- 6.10 The tenderers should submit Filled Form of Annexure -D and attached scan copy of related document and undertaking form as per Annexure -D.
- 6.11 The tenderers should submit copy of Firm Registration certificate.

7.0 PRICES:

- 7.1 The tenderer is required to quote price of Supply of bulk milk cooling tanks 5KL (complete unit - 5nos). (FOR basis at Main dairy plant, Sagar)
- 7.2 Correction of errors, if any, in the tender document should be duly followed with initials/signature of the tenderer / firm at the places of every such correction made.
- 7.3 The prices offered by the tenderer should be firm and free from all anticipated escalations. In the dare validity period of one year for the date of tendering of opening of tender.
- 7.4 The lowest rate shall not be the only criteria in particular for awarding the tender until the supplier satisfies the stakeholder specifications and requirements.
- 7.5 After successful opening the tender, rates will be finalized and approved of rates will

be given by Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar within 30 days.

8.0 MODE OF DISPATCH:

- 8.1 The Supply of bulk milk cooling tanks 5KL (complete unit - 5nos.) to be supplied by successful tenderer shall be dispatched to the main dairy plant, sagar under intimation to the purchaser with proper carrying to avoid damages during transit.
- 8.2 Wharfage / demurrage etc. on account of incorrect or delayed dispatch of material of documents shall be the responsibility of supplier and shall be recovered from the bill.
- 8.3 Delivery schedule: However, the Supply of bulk milk cooling tanks 5KL (complete unit -5nos) should be supplied in the stipulated time which shall be within **one months** from the date of purchase order.
- 8.4 The supplier shall bear the insurance charges of the equipment's during transit.

9.0 LIQUIDATED DAMAGES:

- 9.1 If for any reason the successful tenderer refuses to accept purchase order / fails to supply as per purchase order / backs out at a later date then the respective milk union(s) reserve the right to cancel the order and make purchases from other available alternate sources, at the risk and cost & expenses of the defaulting tenderer supplier and supplying firm could be blacklisted for all future dealings. Also the EMD/Security deposit would be forfeited by **Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar**.
- 9.2 Once firm delivery schedule is fixed then it shall be strictly adhered to by the supplier. In case of supplies and services are not fulfilled as per the schedules, the liquidated damages may be charged on the goods/services not so delivered as under.

No.	Delay	Penalty
1	Up to 15 days	1% the Purchase order value.
2	Between 16 to 30 days	2% Purchase order value
3	Beyond 30 days	Up to 5% the Purchase order value.

- 9.3 After supply of the tanks, the supplier should ensure that the Leak proof trials will be done within 07 days of the supply by the expert service engineer.

10.0 MATERIAL DESCRIPTION:

- 10.1 Specifications of the Supply of bulk milk cooling tanks 5KL (complete unit - 5nos) are given in Schedule-II. If in case any amendment required will be loaded in at MP tender's website www.mptenders.gov.in and official website www.sanchidairy.com

11.0 INSPECTION:

- 11.1 Milk tanker after delivery are subject to inspection at dairy plants before acceptance. If tanker are rejected due to any defect, deficiency transit damage or wrong supply, the report of our inspector in this respect shall be final and no correspondence on the subject would be entertained. The rejected Tanks should be removed from our premises by the tenderer within 15 days after receipt of our inspection report failing which the same shall be returned to the supplier at his risk and expenses or disposed off in auction and the proceeds, if any, less expenses shall be credited to the suppliers account.

12.0 PAYMENT:

- 12.1 50% payment shall be released on safe receipt of **Supply of bulk milk cooling tanks 5KL (complete unit - 5nos)** at site subject to acceptance after inspection by the concerned section/department at dairy plant sagar. 40% after Installation, Commissioning & successful trial run of BMC at particular site. Rest 10% payment will be released after one year from the date of commissioning.

13.0 AGREEMENT:

- 13.1 If the successful tendering firm / its authorized dealers commit breach of any of the conditions of tender even at a later date then the CEO, Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar reserves the right to cancel the award and authorize to purchase the material from other sources at the risk of the firm.

14.0 DISPUTE ARBITRATION & FINAL AUTHORITY:

- 14.1 It should be clearly understood that in the event of a successful tenderer failing to accept or / and execute the supply order, then decision of the CEO, Bundelkhand Sahakari Dugdh Sangh Maryadit, Sagar in this respect will be final and binding on the tenderer. For all disputes, the venue shall be at sagar, MP.
- 14.2 It should be clearly understood that once agreement is executed, the successful tenderer then in the event of the successful tenderer failing to accept and execute the work order or any dispute arising thereof, then the content thereof shall be referred to the Arbitrator as per the Arbitration Act, 1996 and the award shall be at the discretion of the arbitrator.
- 14.3 For all disputes, the venue of the jurisdiction shall be at Sagar, MP.

Sangh

Chief Executive Officer
Bundelkhand Sahakari Dugdh

Maryadit, Sagar
Agreed to above terms & conditions of the tender
Signature & Seal of Tenderer

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SCHEDULE – II

TECHNICAL SPECIFICATION FOR

Supply of bulk milk cooling tanks 5KL (complete unit) -5nos.

o. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dairy Products and Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

0.2

The bulk milk cooling tank is intended to cool and store milk in chilled condition. The equipment is designed for bulk refrigeration of fresh raw milk and storage of refrigerated raw milk.

0.3

This standard was first published in 1966 and covered only rectangular tank geometry. In view of the technical advances in the bulk milk cooling technology, the standard was revised in 2019 to incorporate a number of different bulk milk cooling geometries (rectangular, vertical, cylindrical, open horizontal-semi cylindrical, horizontal cylindrical, elliptical, etc) and capacities varying from 250 litres to 20 000 litres, which are being used in the industry. Also, the specifications were updated and standard was made at par with international standards.

0.4

This second revision has been brought out to update the clauses on agitator, milk thermostat, dipstick, air ventilator, type of refrigerant used, switch gear, testing of electrical equipment, hygiene and CIP system, testing conformance for thermal resistance, cooling tests, protection by outer casing and covers against ingress of water, etc. Provision/clarification has been given for use of test liquid other than milk for testing certain requirements. References of Indian Standards have also been updated.

0.5

The composition of the committee responsible for formulation of the standard is listed in Annex E. For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (second revision)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard

1. SCOPE

1.1

This standard specifies methods of test and requirements for design, construction and performance of bulk milk cooling (BMC) tanks. It applies to bulk milk cooling tanks with automatic control intended for fixed installation in farms or at milk collecting points.

1.2 It only applies to tanks for two milkings (in 24 h) and four milkings (in 48 h).

2. TERMS AND DEFINITIONS

2.1 Bulk Milk Cooling Tanks — An equipment used for bulk refrigeration of fresh raw milk and bulk storage of refrigerated raw milk.

2.2 Automatic Control — An arrangement by which the equipment functions without requiring action by the operator under normal operating conditions.

2.3 Atmospheric Tanks — The tank whose inner vessel is designed to operate at atmospheric pressure.

2.4 Agitator — A device for mixing the milk to promote heat transfer and ensure uniform distribution of butterfat and achievement of uniform temperature.

2.5 Maximum Volumes — The volume (expressed in litres) to which the inner vessel can be filled without overflowing in its reference position and without agitation.

2.6 Gross Volume — The volume (expressed in litres) to which the inner vessel can be filled

without overflowing in its reference position and with agitation.

2.7 Rated Volume — The volume (expressed in litres) of maximum permissible filling of the tank under operating conditions, as specified by the manufacturer.

2.8 Direct Cooling System — The system in which the evaporator of refrigerating system is in direct thermal contact with the milk or the inner vessel.

2.9 Milking — It is the quantity of milk added to the tank at one milking operation.

2.10 Tank for Two Milkings — Tank is designed for cooling and storing its rated volume every 24 h and intended to be emptied for milk collection each day.

2.11 Normal Operating Conditions — The conditions when the tank is in use for the cooling and storage of milk in accordance with its design requirements and all accessories are functioning effectively.

2.12 Ambient Atmosphere — The atmosphere surrounding the tank and in front of the air-cooled condenser of the refrigerating plant.

2.13 Ambient Temperature — The average temperature of the ambient atmosphere.

2.14 Performance Temperature (PT) — The ambient temperature when milk cooling time is measured.

2.15 Safe Operating Temperatures (SOT) — The higher limit (range) of ambient temperatures at which the tank/equipment is expected/required to function effectively.

2.16 Initial Temperature — The average temperature of the milk at the time of its entry into the tank. IS 3661 : 2023

2.17 Storage Temperature — The average temperature to which the milk is reduced (cooled) by cooling for storage.

2.18 Cooling Time — The time required for cooling a milking from initial temperature to + 4 °C. 3.21 Cooling Cycle — The time period between two successive milk collections. For tanks, the cooling cycle is 24 h for two milkings and 48 h for four milkings.

2.19 Specific Energy Consumption — The energy consumption measured as the average consumption of all components (excluding cleaning) during a cooling cycle under the testing conditions appropriate to the performance class. It is generally expressed as watt hours per litre cooled milk (Wh/litre).

2.20 Milk — The normal mammary secretion derived from complete milking of healthy milch animal without either addition thereto or extraction therefrom.

2.21 Water — The water, suitable for human consumption which is as per the requirements specified in IS 10500.

2.22 Test Liquid — The water used, in place of milk, for test purpose. NOTE — The cooling time for water is almost same as that for milk.

2.23 Filling — It is measured volume of milk in the tank, at 4 °C.

2.24 Temperature of the Milk — The average temperature of milk at a particular moment.

2.25 Hot Point of the Milk — The maximum temperature of milk at a given point during storage.

3. Tank Construction

3.1 General—The equipment shall be designed for bulk refrigeration of fresh raw milk and storage of refrigerated raw milk. The tank shall be so designed that, all surfaces in contact with milk are readily accessible for either manual cleaning or cleaning in place (CIP). The tank shall consist of an inner vessel, an outer shell, a suitable insulation layer, a milk collection/receiving opening, a milk outlet, an agitator for agitation, a measuring device/system for volume and temperature of milk as basic requirement (see Fig. 1).

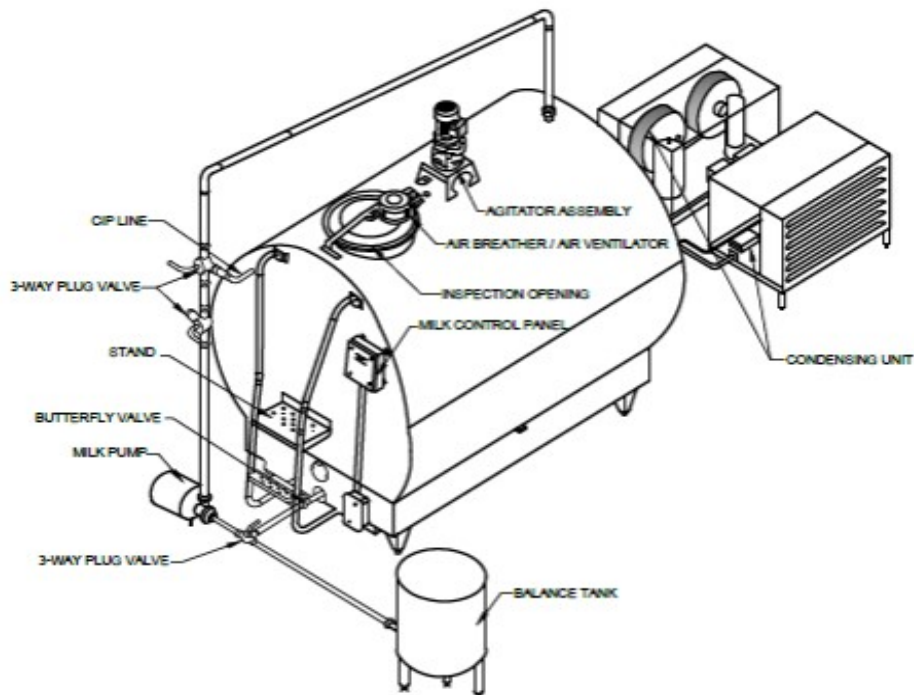


FIG. 1 TYPICAL BULK MILK COOLING TANK

The dimensions of the equipment shall be so designed that milk collection, discharge and inspection should not be a constraint at any condition. In case of such limitation with respect to optimum design standard, suitable arrangements shall be provided with the equipment to overcome the issues against above potential requirements. Stainless steel filters shall be provided at the top of balance tank or an inline stainless steel filter shall be provided between balance tank and milk pump or both may be provided.

3.2 The tank and the associated equipment shall be designed to provide sufficient mechanical strength for transportation and handling and to give satisfactory and safe operation under normal condition.

3.3 It shall be so constructed as to prevent any contamination of milk and any corrosion of materials of construction and enable cleaning, disinfection and inspection to be carried out without difficulty.

4. Classification and Design

4.1 Closed type Horizontal Cylindrical for 5KL BMC (see Fig. 2B)

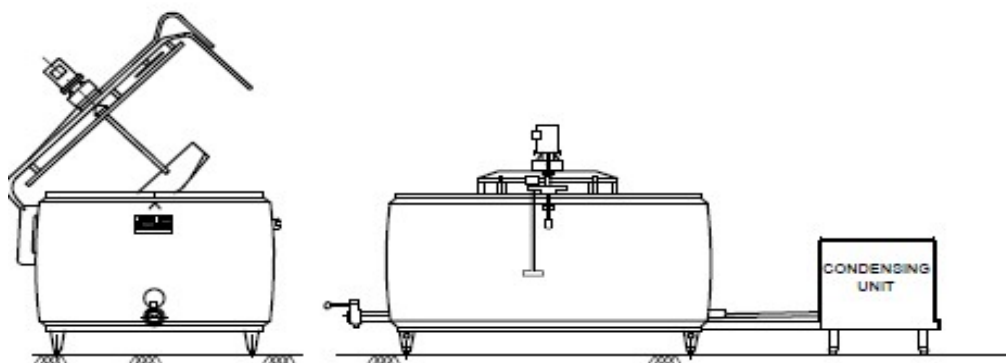


FIG. 2A OPEN TYPE BULK MILK COOLING TANKS

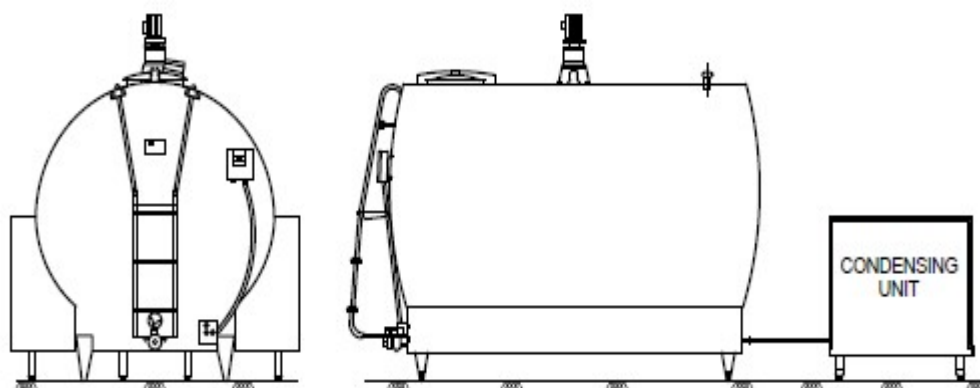


FIG. 2B CLOSED TYPE BULK MILK COOLING TANK

4.3 Inner Vessel – Thickness of the inner shell is 2mm and shall be so designed that the available volume of the tank should be 8 percent to 10 percent more than the rated volume at which it shall be tested, to avoid agitation spillage. Every component which is permanently attached within the inner vessel shall be tungsten inert gas (TIG)/laser welded to it. The weld joints to be used with filler material should be compatible with the parent metal. All components for which it is not practical to weld the same to the inner vessel, shall be fastened so that they can be easily removed for cleaning. All metallic surfaces including weld joints of the inner vessel should be ground smooth not less than 150 grit (or welds shall have radii not less than 3 mm and the angles shall be not less than 1.57 rad, that is 90°). If the tank is fitted with automatic or semi-automatic cleaning equipment, care shall be taken to ensure that all internal surfaces of the inner vessel can be cleaned effectively as per needs when the equipment is used in accordance with the manufacturer's instruction. If the tank is equipped with a device for measuring the volume of milk by reference to linear measurements in accordance with the regulations of the relevant authorities, the inner vessel shall be so constructed and supported that it is rigid and free from deformation under normal conditions of transport and use.

4.4 Actual capacities shall be determined with the tank filled to a level that the sprayers and sprinklers for clean-in-place (CIP) provision shall not come in contact with the milk and milk should not drain outside via the washing spray system, for example rotary sprayer and sprinklers/spray jet with forks and deflector plate.

4.5 All welded joints shall be free from porosity and brittleness. The joints shall be well-dressed and finished smooth, particularly those joints which come into contact with milk.

4.6 The breast piece/cover shall be made of stainless steel of designation SS 304 (Austenitic X04 Cr19 Ni9) conforming to IS 5522.

4.7 Any permanent attachment to the inner vessel shall be welded with fillet of radius not less than 3 mm.

5.Outer Casing- Thickness of the outer shell is 1.6mm and casing shall be rigid, shall prevent the ingress of water and shall be free draining. The distance between the outer casing of the tank and the floor shall be such that, the base of the tank (except the supports or feet and the outlet pipe) when installed on a horizontal floor shall be situated above two imaginary planes, having a gradient of 1 in 10 to the horizontal. The line of intersection being horizontal and minimum 100 mm above the floor.

5.1 The outer casing of the tank shall be made of stainless steel of designation SS 304 (Austenitic X04 Cr19 Ni9) conforming to IS 5522 or IS 6911.

5.2 While designing the tank, outer casing shall be designed with suitable number of air vents at the bottom for void free insulation in between inner vessel and outer casing. The vents to be plugged properly with suitable water and corrosion resistant non-toxic food grade material to prevent any insulation damage by external means.

5.3 The outer casing of the tank shall be designed such that, connections for cleaning in place

(wherever applicable), and refrigerant charging and agitator shaft holder shall not get damaged during assembly and transportation.

6. Thermal Insulation-

The insulating material shall be non-settling and shall not be liable to displacement during transit or service. The sides, ends, bottom and top of the tanks shall be insulated to reduce stray heat gains during cooling or refrigerated milk storage. The open type tanks shall be insulated from the sides, ends and bottom except top cover.

6.1 The amount of insulation applied shall be such that the rise in the mean temperature of the content of a full tank at rated capacity initially at 4 °C over a period of 12 h at performance temperature (38 °C for Class A) shall not exceed 3 °C.

6.2 The insulating medium to be employed shall be injectable polyols and isocyanides polyurethane foam (PUF) and shall be non-hygroscopic and non-settling type.

6.3 An effective vapour barrier shall seal the external surfaces of the insulating medium and prevent the ingress of moisture.

6.4 The insulation medium used and thickness of the insulation shall not create any adverse effect on thermo wells, thermometers, thermostats and temperature sensors.

7. External Finish - Vertical joints in the outer casing shall be sealed by lapping. Cover strips, where used, shall be overlapped by the breast piece at their upper ends by not less than 10 mm each side. In case of butt joint in outer casings, the welding bead shall be made smooth enough to visualize as an integral part. Any part of the outer casing which is not vertical shall drain effectively. The tank should be designed in such a manner that no stagnation of liquid shall occur on the outer shell.

8. TANK SUPPORT

A tank which is not designed for a mounting on a solid plinth shall be fitted with adjustable support of feet to permit a slope gradient not greater than 1 : 50 in any direction.

8.1 The rigid supports provided on the tank should be made of stainless steel of designation SS 304 (Austenitic X04 Cr19 Ni9) conforming to IS 5522 or IS 6911 with sturdy design. The number and position of support/feet shall be adequate to carry the load.

8.2 When the tank is installed, these supports shall be readily accessible, and shall be positioned not less than 350 mm from the nearest tank wall, unless the latter is curved in the vertical plane to give access to the underside of the tank.

8.3 If the tank is equipped with a device for measuring the volume of milk by reference to linear measurement, the support or feet shall be so constructed that they can be sealed after the tank has been levelled.

9. Fabrication and Surface Finish The tank and associated equipment shall be designed to provide sufficient mechanical strength to allow transportation and handling and give satisfactory and safe operation under normal condition. It shall be so constructed as to prevent any contamination of the milk and any corrosion of the material of construction and to enable cleaning, disinfection and inspection. The tank shall be fabricated so as to enable ease of material handling and packing to prevent any damage during transportation, installation and commissioning. All metallic surfaces including weld joints shall be ground smooth not less than 150 grit (or welds shall have radii not less than 3 mm and the angles shall be not less than 1.57 rad that is 90°).

9. The bulk milk cooling tank shall be fabricated in such a manner as to conform to the requirements laid down in the standard.

10. TANK FITTING The tank outlet connection shall be self drainable/gravity drainable to avoid stagnation of milk or cleaning/sanitation chemicals. The highest point on the inside of the outlet end of the outlet pipe including the outlet valve, shall be lower than the lowest part of the bottom of the inner vessel. This shall be verified by drainability test (with the tank in its reference position and containing 40 litres of test water, at least 39.8 litres shall run out in 1 min by gravity).

10. AGITATOR

a) The agitation device shall be so constructed that shaft seals shall be provided against any contamination of the milk which could enter the inner vessel from outside. A suitable oil cap/catch pan shall be provided to eliminate unexpected oil leak into the milk,

- b) All welds on agitator blades and shafts shall have fillet radii of not less than 3 mm. All surfaces of the blades and shafts shall be readily accessible for cleaning. Surfaces other than vertical shall be avoided where possible,
- c) The agitator shaft shall be provided with a retractable deflector between the drive units and the bridge or cover over the inner vessel,
- d) The deflector shall be: (1) Of stainless steel (SS 304 designation) or non-metallic (non-toxic) material, (2) Of a close fit on the shaft, and (3) So designed that in its lower position the aperture round the shaft is closed.
- e) Operating the agitator shall not cause milk to overflow when the tank contains any volume of milk up to 100 percent of its rated volume,
- f) The performance of the agitator shall be such as to produce throughout the content of the tank filled to 100 percent rated capacity a butterfat distribution uniform to within ± 0.05 of butterfat percentage [see IS 1224 (Part 1)] after operation for not more than four minutes in milk that has been cooled to 4 °C and has then remained undisturbed for 6 h,
- g) The design of the shaft, deflector and aperture shall be such that these components are readily accessible for cleaning above and below the bridge of cover. The agitator shaft shall incorporate a coupling above the maximum milk level, whereby the blade assembly may be removed from the tank for cleaning,
- h) The agitator motor assembly shall be guarded so that operator can not come in contact with moving parts,
- i) The agitator shall be so designed that it can be cleaned effectively. If the tank is fitted with an automatic or semi-automatic cleaning equipment, care shall be taken to ensure that the agitator is cleaned effectively when the equipment is used in accordance with the manufacturer's instruction, and j) In case of open type tanks, the agitator drive unit shall be mounted on the breast piece, the blade of agitator shall become accessible when the cover is raised. FIG. 8 DEFLECTOR 4.1.12.4 Milk thermometer Every tank shall be provided with an instrument to IS 3661 : 2023.

11. Milk thermometer- Every tank shall be provided with an instrument to measure the temperature of the milk at any volume between 10 percent and 100 percent of the rated volume when filled in from 0 °C to ambient (0 °C to 47 °C). If detachable instruments are used they shall be suspended above the rated maximum level of the milk and shall be easily accessible. The instrument shall be suitably protected to ensure that neither dust nor liquid can enter into it. The instrument shall not penetrate the inner vessel. The tank shall be provided with a suitable temperature transducer for sensing the temperature and transmitting it to the control panel for visualization. It shall also be capable of withstanding, without loss in calibration, temperature inside inner vessel from 0 °C to 100 °C and ambient temperature from 0 °C to the specified safe operating temperature (SOT). In ambient temperature from 5 °C to the specified performance temperature (PT), the error of the instrument shall not be greater than 1 °C, between 2 °C and 12 °C, when the milk temperature is changing at a rate not more than 10 °C/h.

11.1 Milk thermostat- The tank shall be provided with suitable thermostat for control of the cooling system, having external stem surfaces of polished stainless steel. The temperature-sensitive portion of the thermostat shall be so disposed that the instrument operates correctly when the tank contains 10 percent or more of its nominal capacity. It should provide a suitable signal to cut off the BMC at milk temperature of 4 °C (with tolerance of $- 2$ °C) in the ambient temperature so as to ensure that the temperature of any part of the milk does not exceed 9 °C. The operating head shall be robust and sealed to prevent the ingress of pest, dust or moisture and the minimum IP code shall be IP 23 as per IS/IEC 60529.

11.2 Combined milk temperature measuring- instrument A tank may be designed and constructed so that the milk temperature measuring instrument are synchronized through the controls. In case of direct exchange type cooling systems, the thermometer/temperature transducer (TT) output is connected to refrigeration control panel to make condensing unit 'ON' or Auto cut 'OFF' mode based on the operational parameters set into the controlling device.

12. Opening for cleaning- In closed type bulk milk coolers, the tank shall be provided with one or more cleaning devices of stainless steel of designation SS 304 (Austenitic X04 Cr19 Ni9) conforming to IS 5522 on the top of the tank so as to facilitate thorough cleaning of the

tank. In open type bulk milk coolers, the top cover of the tank is lifted for manual cleaning.

12.1 Air ventilator The closed type tanks shall be fitted with an air ventilator/breather (see Fig. 1) to remove entrapped gases, foul odour and air developed during the cleaning process and also converted during milk reception. The air ventilator shall be suitably constructed from corrosion proof material and mounted on the top of the tank, preferably on the manhole cover for easy access. The air ventilator shall be covered such that no foreign matter of size greater than 2 mm can enter into the tank from outside. In open type tanks, no air ventilator is required

12.2 Milk inlet The tank shall be provided with not less than one inlet pipe or with not less than one aperture or with both. Where an inlet pipe is part of the tank it shall be so designed that the formation of froth is prevented as far as practicable. Where an inlet perture for pouring milk is provided, it shall have a diameter of not less than 180 mm.

13. Balance tank- The balance tank (see Fig. 1), wherever required, shall be of sanitary design, fabricated from stainless steel of designation SS 304 (Austenitic X04 Cr19 Ni9) conforming to IS 5522. Outlet stainless steel cup and sufficient slope shall be provided at bottom of the tank for complete drainage of milk. The dimensions of the tank and fittings shall be suitable to meet milk collection operations at center. A stainless steel removable cover with handle shall be provided. Stainless steel filter made from stainless steel plate of adequate thickness with 2 mm diameter holes (removable type) shall be provided for placement in the balance tank to remove coarse suspended impurities from milk. Three to four ball feet shall be provided for height adjustment of 50 mm. All milk contact surfaces shall be finished to minimum 150 grit.

14. Stainless steel sanitary milk pump The stainless steel sanitary milk pump single phase 1.5HP for 2KL BMC and three phase 3HP for 5KL BMC (make ABB/WILO/FRISTOM/IDMC) , shall be supplied for transferring milk from balance tank to the cooling tank and cooling tank to road milk tanker. Pump impeller and casing shall be made of stainless steel of designation SS 304 (Austenitic X04 Cr19 Ni9) conforming to IS 5522. All milk contact surfaces shall be finished to minimum 150 grits. The pump should be of sanitary design. Inlet and outlet of the pump shall have ends with SMS union. The pump shall be provided with approved make motor having E/F class insulation, IP 55 protection and energy efficient. The flanged end motor shall have stainless steel shaft having hygienic mechanical sealing arrangement to prevent leakage from pump casing to rotor side of the motor. Pump shall have stainless steel shroud with air ventilation grill for circulating cooling air. The pump shall have stainless steel adjustable ball feet.

15. Clean-in-place (CIP) spray balls/spray nozzles -for close type tanks, CIP facility shall be provided, which shall include removable stationary 360 degree/self rotating spray ball system positioned at the top of the tank inside and piping from the balance tank through milk transfer pump to the bulk milk cooler.

16. REFRIGERATION- The refrigeration system cools the raw milk from reception temperature to 4 °C in the period specified for the cooler.

16.1 The TIG/Laser/more advanced welded evaporator(s) of the refrigeration system shall form a part of the milk tank body as dimpled jacket in the inner shell bottom to a height covering the bottom radius all around the rectangular type tanks to provide necessary heat transfer to confirm the performance requirement given in below table.

<i>Ambient Temperature</i>		
<i>Classification</i>	<i>Performance Temperature (PT)</i> °C	<i>Safe Operating Temperature (SOT)</i> °C
A	38	43
B	32	38
C	25	32

Milk Cooling Time

<i>Classification</i>	<i>Cooling Time In Hours</i>	
	<i>All Milkings 35 °C to 4 °C</i>	<i>Second Milking 10 °C to 4 °C</i>
I	2.5	1.25
II	3	1.5
III	3.5	1.75

17.Type of Refrigerant- Where the refrigeration system used is of direct expansion type, the refrigerants listed in IS 16656 which are permitted under the Ozone Depleting Substances (Regulation and Control) Rules, 2000 shall be used.

18.Prevention of Freezing of Milk- When the tank is filled between 10 percent and 100 percent of its rated volume and is used in ambient temperature between 5 °C and the specified performance temperature (PT) ice shall not form in the milk under the milk level either during cooling or during storage.

19.INSTRUMENTATION AND CONTROL SYSTEM

19.1 Refrigeration Control Panel The refrigeration unit shall be provided with control panel made out of suitable corrosion resistant non toxic material suitable for mounting near or on the unit. The panel shall be at least IP 23 degree of protection and provided with motor starters, ON/OFF push buttons and necessary MCBs, control wiring, line voltage controller to guard the compressor against the supply voltage fluctuations. In case more than one compressor is provided in the refrigeration system, the control panel shall be provided with a sequence controller and timer to start one compressor at a time to avoid power supply surge. The panel shall also have facility to operate refrigeration unit on auto/manual mode. In the auto mode, as soon as the milk temperature reaches to pre-set value, the compressor should be switched off to avoid freezing of milk.

19.2 Milk Tank Control Panel The milk tank shall be provided with a wall mounted or tank mounted control panel (see Fig. 1) with timer to control the intermittent operation of the agitators and a digital temperature indicator to indicate the milk temperature to one decimal place with least count of 0.1 °C on continuous basis. It shall include suitable switch gears or Printed Circuit Board (PCB) etc as required for switching and protection. The agitator shall have interlocking arrangement with top cover opening limit switch. The limit switch shall put off the agitator as soon as the top cover opens up. Panel shall have provision for presetting temperature of BMC tank (not below the milk temperature 4 °C) for starting/stopping refrigeration compressors. Suitable battery backup is to be provided so that temperature can be indicated when there is no electric supply.

19.3 Dip-stick- Each tank shall be provided with a dip-stick and two dip-stick holders. For closed type tanks, only one dip stick holder may be provided with one dip stick. The reference position of the tank should be given by the height difference in millimeter read on the dipstick at both dipstick holders. The length of the dip-stick shall be such that readings may be taken at 10 percent to 100 percent of rated nominal tank capacity. The surface finish of the graduated face shall be such that an accurate indication of level is given when used with water. With non-automatic or dipstick measuring system, each division on the dipstick shall represent a volume not greater than 0.5 percent of the rated volume. Also, consequently, the permissible error between measured and actual volume should be within + 0.5 percent of the measured volume.

20. Compilation of General technical Requirements for BMC Tanks and unit-

<i>Technical Details of Bulk milk cooler of 5KL</i>		
Sr.		
No.	Description	5KL (Three Phase)
A.	BULK MILK COOLER TANK	
1	Capacity – Rated	5000L
2	Capacity – Gross	5500L

3 & 4	Make and model	
5	Material used for construction	AISI 304 (EN 1.4301)
6	Shape/Orientation	Horizontal-Cylindrical closed type
7	Overall dimensions	(LxØxH: 2950x1772x2285)
8	Weight	1000 kg
9	Thickness of Inner Shell	2 mm
	Thickness of Outer Shell	1.6 mm
10	No. and RPM of agitators	21-30 RPM
11	CIP facility	Manual with help of Balance tank & SS piping provided by tenderer
12	Type of Insulation	By injection in situ, of high density (min 40 kg /m3) , CFC Free Polyurethane Foam without any imperfection and hygroscopicity
13	Thickness of insulation	50 mm
14	Efficiency of Insulation	0,028 W/m. K -The rise of the milk temperature, initially at 4°C, does not exceed 0.7°C in 12 hours, in an ambient temperature of 38°C when rated volume is allowed to standstill as per requirement of ISO 5708 (2All)
15	Facility to measure milk volume	Dipstick with value table
B	REFRIGERATION UNIT	
1	Make of Compressor	Emerson
2	Model of compressor	ZB 48 KQE(Scroll)
3	Size of compressor (H.P)	2nos. each unit 7HP
4	No. Of Compressor	TWO for each BMC
5	Cooling capacity of Compressor (Kcal/hr-Min)	2 x 11006.08=22012.16 Kcal/hr @ 0C evap & 55C condensing temperature.
6	Make of Condenser	Emerson
7	Model of Condenser	Copper Construction – Fin & Tube Type
8	Size of Condenser (L x H x W) mm	(1588x914x66) x 2 for each BMC
9	Number of Condenser	2 for each BMC
10	Capacity of Condenser (KiloWatt)	2 x 19.8 = 39.6
11	Number of fans.	2 x 2
12	Receiver size & capacity	8.1 litre
13	Thermostatic Expansion Valve	Danfoss, 2 x Tx2, Orifice no.6 x 2
14	Over all dimension of the unit (L x H x W) mm	2 x (1491x966x660)
15	Weight-Kg	2 X 180kgs
16	Type of refrigerant	Freon – 22 (R-22)
C	DESIGN PARAMETERS	
1	Ambient temp. considered for design	38 °C
2	Maximum cooling time for	
	All Milking (first & second milking) as per specifications of	3 hrs from 35 °C - 4 °C

	ISO5708	
	Second Milking	1.5 hrs from 10 °C - 4 °C
3	Temperature range considered for	
	All Milking	35 °C - 4 °C
	Second Milking	10 °C - 4 °C
D	ELECTRICALS	
1	Connected load in Watts & Amperes for	Scroll Unit
	Compressors	(5810 W/9.5 A)x2
	Condenser Fans	(2 x160)2=640watt
	BMC Agitator(s)	70 watt / three phase for 5KL BMC
	BMC Milk Pump	3HP, three phase
2	Maximum surge current drawn by the each compressor	14 A / Phase
E	Balance Tank	200L Capacity
F	Milk Pump	Make : ABB/FRISTOM/WILO/IDMC/ZEUTECH
		Capacity : 3hp
		Electric Supply : THREE PHASE
G	SS Piping & Fittings along with accessories & Tool box	As per standard scope of supply with SS pipeline size 38 mm
H	Tanker Unloading Hose Pipe (Food Grade)	10 Mtr/ Size 38mm
I	Voltage Stabilizer	Make : Asaba
		Capacity : 25KVA
		Supply : 3 Phase
		Voltage Range : 350 V to 500 V ,3 Phase
J	Electricals, Cables & Earthing	As per standard scope of supply
M	DG Set	Make : Mahindra/Eicher/kirlosker
		Capacity : 25 KVA,
		Electric Supply : 3 Phase
		Type : Air Cooled

SCHEDULE – III

Technical Bid

(Details of tenderer to be submitted along with the offer)

Form – A

I/We hereby furnish following particulars about our units:

1. Name of the Unit : M/s
2. Address of the Unit : 1. Office
Factory
2. Name of Proprietor/Partner: 1.
2.
3. Name with designation of Other person authorized to Sign the documents on Behalf of the unit, if any (Authority letter should be Produced)
4. Telephone Nos. Office and Mobile :
5. Particulars of the Registration (attach photocopy)
Certificate Issued by the competent authority
(Registration No. & Date) GST No. Dated.....
6. GST No. Dated.....
(Attach photocopy)
7. PAN Number
Permanent Account Number
- Income Tax) (Attach photocopy)
8. Whether the unit or sister concerned unit or any : Yes/No
Unit of their Proprietorship or Partnership, if any has been
blacklisted/debarred or penalized by any Central or
State Government/Organization at any time.
9. If the reply is 'Yes' when & why :
Give reasons in details
:
10. Please attach copy of last 2 years' :
Audited Income Tax Return
11. EMD detail (_____) Amount ---
Date _____ Bank _____

Signature & Seal of the Tenderer

Form – B
SCHEDULE – IV
Technical Bid

(Details of tenderer to be submitted along with the offer)
(To be filled in by the tenderer)

I/we hereby furnish following particulars about our unit

- 1. Manufacturing facility :**

- 2. Type of specification of the Plant :**

- 3. If the unit earlier did any business
In the past 3 years, attach PO :**

- 4. List of current clients :
(Preference to State Dairy
Coop., Government Dairy
& other Dairy Companies)**

- 5. Are you supplying/have supplied same
material :**
- 6. to some other State Cooperative Dairies? If
yes, to whom & when? Attach PO and
Commissioning report.**

- 7. Supplier shall mention to schedule he abides i.e. :
Schedule II, schedule III and Schedule IV.**

I/We undertake that the information furnished in these tender documents is correct to the best of my/our knowledge and belief. Certified copy of the above documents is enclosed.

Signature & Seal of the Tenderer

Form – C
SCHEDULE – V
PRICE BID

(To be uploaded online only)

Name of Work: “Supply of bulk milk cooling tanks 5KL (complete unit) - 5nos”

1. “Supply of bulk milk cooling tanks 5KL (complete unit) - 5nos”

Dispatched point(destinations)	“Supply of bulk milk cooling tanks 5KL (complete unit) each of 5nos”	Rate per bulk milk cooling tank inclusive all taxes and FOR basis (Rs in figures)	Rate per bulk milk cooling tank inclusive all taxes and FOR basis (Rs in words)
Bundelkhand Sahakari Dugdh Sangh Sagar(Main dairy plant, sagar) (Installation at site of dugdh sangh procurement area)	Supply of bulk milk cooling tanks 5KL (complete unit) 5nos		

Signature & Seal of the Tenderer

