

SUPPLY, INSTALLATION & COMMISSIONING OF
BULK MILK COOLING SYSTEM
CAPACITY 500L, 1000L, 2000L & 5000 LTR ON TURN KEY BASIS

THE H. P. STATE CO-OPERATIVE MILK PRODUCERS' FEDERATION LIMITED, TOTU, SHIMLA-171011 plans to purchase Bulk Milk Cooling System, capacity 500 Ltr = 04 nos., 1000 Ltr = 03 no., 2000 Ltr = 07 nos. & 5000 LTR = 08 nos. on turn key basis under Shimla, Mandi Kangra and Nahan Units. Unit wise detail given below:-

Sr No.	Name of Units	Nos of BMCs/ Capacity
1	MPP Duttanagar, Distt. Shimla	2000 Liters = 01 nos 5000 Liters = 06nos
2	MPP Mandi Unit	5000 liters = 02 nos
3.	MPP Kangra Unit	500 liters = 04 nos 1000 Liters = 02 nos 2000 Liters = 04 nos
4.	MPP Nahan Unit, Distt. Sirmour	1000 liters = 01 nos 2000 Liters = 02 nos

INSTRUCTIONS FOR BIDDERS:-

The bidders are instructed to read the complete bid document carefully. Earnest Money Deposit as mentioned in the tender forms shall have to be deposited through online mode before the last date and time of submission of tender and proof thereof should be uploaded in Technical Bid of the tender document.

Note:- MSME certificate not allowed.

Terms & conditions:-

01. Only registered members of the NCDFI eMarket can participate. They must have deposited an EMD participation amount of ₹8,00,000 into their escrow account before participating.
02. Once the tender is finalized:
 - **Successful bidder:** NCDFI will retain an amount equal to 2.5% of the trade value from the deposited amount and hold it as security until the contract is completed.
 - **Unsuccessful bidders:** Their EMD will be released/refunded, and no interest will be paid on the amount held.

Note: If the required security amount (2.5% of trade value) is **more than ₹8,00,000**, the successful bidder must deposit the additional balance into the escrow account. NCDFI will issue the **Bid Evaluation Result (BER)** only after the additional amount is deposited

03. **PerformanceSecurity:** Successful bidder shall be required to furnish a performance security of **5 %** Value of the executed order in the form of an accounts payees, Demand Draft or duly pledged Fixed Deposit Receipts or Bank Guarantee from a commercial bank within one week. Performance security of the successful bidder will be retained as Security till the completion of supply.
04. Conditional tenders / tender not accompanied by the requisite earnest money shall not be considered / entertained.
05. The Material will be unloaded after checking the online unloading of bills of Material in GST Portal.
06. Any rejection of material on the basis of quality done by Milkfed through GST Portal should be accepted by supplier through their GST Portal immediately.
07. All bills should be supported by e-way bills/HP VAT Portal declaration.
08. Final payment of the material of the tax amount charged in the invoice/Bills will be made after checking the status of GST return of the party. If the supplier fails to pay or file the return within the time limit, double amount of tax will be recovered from next bills.
09. **The price schedule for the supply of plant and machinery, accessories, installation and commissioning indicating the item-wise description along with the unit price and quantity should be supplied with the offer.**
10. The tender received without earnest money and cost of tender document shall summarily be rejected.
11. Negligence of tenderer in preparing the tender confers no right to with draw after submission and opening.
12. The tenderer is expected to study and understand all instructions, forms specifications, terms and conditions in the tender document. Failure to furnish all the information sought in the tender document or submission of a tender not substantially responsive to the tender documents in every respect shall be at the risk of tender and may result in rejection of tender.
13. **WARRANTY/GUARANTEE:** The supplier warrants that the Goods and equipment supplied, installed and commissioned under the contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and material unless provided otherwise in the contract. The supplier further warrants that the goods supplied under this contract shall have no defect arising from design, materials or workmanship except in so far as the design or material is required by the purchaser's specifications or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions obtaining in the country of final destinations. The supplier also guarantees that the goods supplied shall perform satisfactorily as per designated/rated/installed capacity as provided for in the contract. The warranty/guarantee shall remain valid for **24 months after** the Goods have been delivered at site, installed and the system successfully tested, commissioned and accepted by the purchaser. The automation systems, instruments and controls will be guaranteed against system malfunction for a period of one year from the date of commissioning. **Any complaint during this warranty/guarantee shall be attended within 24 hours by the bidder.**
14. Service engineer should be available in Himachal Pradesh for immediate repair and maintenance.

- 15. Stock of spare parts. (The list should be provided by the bidder.) along with price as on date.**
16. Non-compliance with even a minor technical requirement should be specifically stated by the bidder.
17. All the tenders, along with enclosures, drawings, literatures should be in English. The list of suppliers may be enclosed with the offer.
18. No tenderer will be permitted to withdraw their tender in whole or any one or more items of this tender before final decision of the tenders by the competent authorities concerned.
19. All items will have to be supplied and installed strictly as per the specifications outlined in the tender document.
- 20. The prices quoted in BOQ/Financial bid shall be firm and F O R Destination site basis after accessing the requirement at site. Total amount quoted should be inclusive of GST and charges for all the services called for in the tender for setting up of the BMC and the purchase will be made only from the depots/dumps of suppliers located in H.P.**
- 21. The eligible bidders may be those who have a cumulative sales turnover of Rs.100crore in 3 financial years 2024-25, 2023-24, 2022-23. The statement of sales turnover of BMCs from Chartered Accountant with sign, seal and registration number should be scanned and uploaded.**
- 22. The bidders should have in in-house BMC/Milk Storage Tank/ Road Milk Tanker manufacturing facility (with proof of registration or license of manufacturing) \.**
- 23. The bidder should have already supplied at least 500 BMCs (not the spares parts or parts) from 500L-5000L or higher capacities to cooperative dairies / Federations/ private dairies in India. The list of the same should be attached along with PO copies.**
- 24. The Bidder must not have been debarred / blacklisted / put on hold by the State Government or any cooperative Dairy Federation Ltd. or blacklisted by any other procuring entity.**
- 25. Bidder should be a reputed ISO 9001 company & should attach a copy of the certificate in the tender.**
26. Duly executed power of attorney should be submitted in original along with the technical bid authorizing the bidders' representative to sign/participate in the tender proceedings including techno-commercial discussions, whenever required.
27. Schedule for execution: The equipment's/ machinery will have to be delivered at site, within 3-5 weeks from the date of confirmation of award of contract and installation, commissioning to be completed within Ninety days from the date of award of contract. Non-compliance of this will attract penalty as may be decided by the Managing Director, H.P. Milkfed.
28. 30% advance payment, 60% payment of the cost of the material/equipment supplied on its safe receipt and inspection at site and 10% within six months after successful installation and commissioning of the equipment.
29. The E.M.D. of successful bidder shall be retained and returned to him only after successful execution of order. In case successful bidder fails to supply the material with in the stipulated

period his EMD and Performance Security shall be forfeited and the material will be purchased at his risk and cost.

30. Any attempt of negotiation direct or indirect on the part of a tenderer with the authority to whom he has submitted the tender or the authority who is competent finally to accept it after he has submitted his tender or any endeavor to secure any interest for an actual or prospective tenderer or to influence by any means the acceptance of a particular tender will render the tender liable to exclusion from consideration.
31. The contractor shall not sub let the whole of the works. Except where otherwise provided by the contract, the Contractor shall not sub let any part of the works without prior written consent of the HP Milkfed. The contractor shall make his own arrangements for the engagements of all labour, local or otherwise, and save insofar as the contract otherwise provides, for the transport, housing, feeding and payment thereof.
32. Security and safety of the supplied material till the complete BMC is handed over to H.P. Milkfed, shall be of the supplier.
33. The party applying for the offer must have the TAN/ PAN No./GSTNo. issued by the Income Tax Department and copy of the same must be Uploaded.
34. The Managing Director, HP Milk Federation reserves the right to reject any tender or any items in the tender or all the tenders without assigning any reasons thereof or negotiate the rates with any/ all the tenderers or to apportion the supplies to more than one supplier.
35. **FORCE MAJEURE CLAUSE:** The tenderer shall not be liable for forfeiture of its performance security/EMD liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the contract is the result of an event of Force majeure. For the purpose of this clause, "Force Majeure" means an event beyond the control of the tenderer and not involving the tenderers fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. If a Force Majeure situation arises, the tenderer shall promptly notify the Purchaser in writing of such conditions and cause thereof. Unless otherwise directed by the Purchaser, in writing the Tenderer shall continue to perform its obligations under the contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
36. **Arbitration:** In case of any dispute of controversy arising out of the tender. The same shall be referred for arbitration to the Managing Director, H.P. Milk federation or his nominee, whose decision shall be final and binding on the both the parties. The arbitration proceedings shall be held at Shimla only under the arbitration and conciliation Act-1996 and the rules framed thereafter.
37. Any dispute arising out of this tender shall be settled by the competent courts within the jurisdiction of Shimla town.
38. **Transaction Charges (TC):** NCDFI will levy TC from the successful bidder @0.4% + GST. Unsuccessful bidders need not pay any charges.
39. **TDS:** NCDFI will deduct TDS u/s 194 (O) from the seller's EMD on projected trade value at the time of issuance of the Bid Evaluation Result as statutory compliance.

Annexure "A"

To whomsoever it May Concern

Pursuant to recent amendment in income tax laws on account of introduction of new Sections, this is to declare that (Name of the Vendor) have filed Income Tax returns, as per time limit prescribed under sub-section(1) of Section 139 of Income Tax Act, 1961. Other requisite details required are as under:

Name of the Vendor	
PAN	
TAN No.	
ITR-Previous Year 2022-2023	Acknowledgement No. Date
ITR-Previous Year 2023-2024	Acknowledgement No. Date
ITR-Previous Year 2024-2025	Acknowledgement No. Date
Turnover	

For, Name of the Vendor

Authorized Signatory

1. TECHNICAL SPECIFICATIONS OF BULK MILK COOLER (5, 2, 1 & 0.5 KL)

Bulk Milk Cooler:

2.0 Bulk Milk Cooler Tank:		
S. No	Particulars	Technical Specifications
2.1	Standard applicable and cooling time required at 38 Deg. C ambient Conditions	ISO 5708 Type 2AII (latest version) for 2 milk collections : a. Cooling 50% of the first milk collection of its rated capacity in 3 hrs from 35 Deg C to 4 DegC b. Cooling of 100 % of milk volume after 50% of milk is added from second milk collection (average temp 10 Deg C to 4 Deg C) in 1 hr 30 minutes
2.2	Rated Capacity – Litres	1000L/2000L/3000L/5000L for 2 milk collection
2.3	Gross Capacity - Litres	+10% of Rated Capacity- Litres (must be 10% more than rated capacity)
2.4	Material of Construction	AISI 304 (refer 2.8 & 2.9 below)
2.5	Type	<ul style="list-style-type: none"> • Open type for BMCU 0.5kl, 1 KL and 2 KL capacity • Closed type for BMCU 5 KL and above capacities.
2.6	Tank evaporator	<ul style="list-style-type: none"> • The tank evaporator plate should have adequate surface area ensuring that the milk is cooled in the local ambient conditions of 48 Deg. C and in the time periods as specified above. • Laser welded with Operating pressure of 30 bars and crash test pressure of 60 bars. In case of a rectangular/circular type bulk milk cooler, the evaporator shall be fixed at the bottom plate of the inner tank. • For 2000, 3000 & 5000 litre tanks the total evaporative area shall be divided and separated into two sections. Each section shall have separate suction & discharge ports connecting to each compressor.
2.7	Tank orientation	<ul style="list-style-type: none"> • The preferred shape of the tank in open type BMCU, shall be circular/horizontal rectangular with an openable & lockable top cover up to 2 KL capacity. • For 5KL BMCU tank shall be completely closed type in cylindrical/elliptical orientation with circular/elliptical dish ends and a manhole of size 450 mm minimum on top with lockable cover. • The shape of the BMC tank shall conform to the international sanitary design.
2.8	Evaporator plate	<ul style="list-style-type: none"> • For 0.5, 1 & 2kL BMCUs- 2 mm Bottom and 0.8 mm Top

	thicknesses	<ul style="list-style-type: none"> For 5 kL BMCUs - 2 mm Bottom and 0.8mm Top
2.9	Thickness of Inner and Outer shell of tank	<p>Thickness of Inner and Outer Shell of Tank</p> <ul style="list-style-type: none"> Open Type (0.5, 1 and 2kL) both inner & outer : 1.5 mm Close Type (5kL) inner 2.0 mm; outer : 1.5 mm
2.10	Agitators	1 OR 2 / Standard/ ISO 5708 Type 2 AII (latest version) compliance ensuring even distribution of the milk fat when milk is agitated.
2.11	Ball Feet	AISI 304 adjustable ball feet tamper proof and lockable with 50mm height adjustment.(Preferred 4nos.for BMC upto 2kL and 6nos. for capacities 5kL and above).
2.12	Tank Fittings & Accessories	<p>OPEN TYPE BMC (up to 2 KL)</p> <ul style="list-style-type: none"> Milk inlet opening with SS 304 lockable cover. Open type tank with gravity feeding system shall be provided with one AISI 304 funnel with SS fine wire mesh.(for 500L BMC only) All SS fittings shall be of SMS standard. Top cover lifting handle, outlet valve and blank union. Locking arrangement to be provided for top cover & Outlet valve <p>CLOSED TYPE BMC (above 2 kL)</p> <ul style="list-style-type: none"> "No- foam" type inlet Outlet valve with locking arrangement and blank union. All SS fittings shall be of SMS standard. Air vent in SS construction with vermin-proof design Top Manhole with locking arrangement. SS Ladder to be provided for approaching top manhole.
2.13	Type of Insulation	Injected, CFC Free PUF 40 kg / Cu. m.
2.14	Thickness of insulation	40kg/Cu.m density, 50mm (min.) in the walls & 90mm below the evaporator to allow 1 Deg. C temperature rise at given ambient conditions in 4 hours after milk is brought to 4 Deg. C. and when the BMC is not operating
2.15	Facility to measure milk volume	1 no. Dip Stick of AISI 304 3mm thick on wall of tank. Calibration accuracy-0.5%. Laminated & Framed calibration chart. Hook to be provided on both the sides of the open type tank.
2.16	Product contact surface	2 B Finish
2.17	Weld surface finish	min. 150 Grit, all joints minimum 25mm radius curvature
2.18	Tank cleaning Brushes	<ul style="list-style-type: none"> 1 tank cleaning brush and one 1500 mm long pipe cleaning brush. 4 No. SS pipe hooks to be provided for up to 2kl BMC 6 No. SS pipe hooks for 5kl BMC
2.19	CIP Facility	<ul style="list-style-type: none"> Manual CIP Cleaning by brush for open/close type tanks For open tank all piping circuit including hose and tank will be cleaned by circulation of cleaning solution from balance tank & back to balance tank.

		<ul style="list-style-type: none"> For Close type tank CIP spray balls & SS Piping from balance tank through milk pump to BMC and back to balance tank and other necessary accessories required.
2.20	Top cover opening limit switch	<ul style="list-style-type: none"> Required for open type 0.5, 1 & 2 kL BMC
2.21	Milk Tank Controls Panel	<ul style="list-style-type: none"> Required
.1	Wall or Tank Mounted	<ul style="list-style-type: none"> To be specified by bidder
.2	MOC of Panel & thickness	<ul style="list-style-type: none"> AISI 304 / 1.5mm
.3	Temperature Display	<ul style="list-style-type: none"> LCD- 0 to 100 Deg. C with one decimal accuracy
.4	Cooling & agitation controls	<ul style="list-style-type: none"> Required – controls for management of cooling control and agitation, provision for cut-off/ restart, intermittent operation of agitator, auto & manual facility
.5	Battery back-up	<ul style="list-style-type: none"> Required
.6	RS 232 port for Temperature sensor	<ul style="list-style-type: none"> RS232 connectivity or equivalent compatible facility for temperature data transfer shall be provided.
2.22	Refrigeration Controls Panel	<ul style="list-style-type: none"> Required
.1	Wall mounted	<ul style="list-style-type: none"> Wall mounted
.2	MOC of Panel & Thickness	<ul style="list-style-type: none"> AISI 304 / 1.5mm
.3	Rating of Contactors	Standard to meet functional requirements of the Refrigeration Control Panel
.4	UV/OV trip facility	Required
.5	Neutral Protection unit	Required
.6	Timer On-Delay	Required
.7	Auto/manual Mode (Selector Switch)	Required
2.23	Servo Voltage Stabilizer	Required for stabilizing the power supply to BMC from grid or DG set
.1	Voltage range	<ul style="list-style-type: none"> 130 to 300 V for single phase and 300 to 500 for 3 phase BMC
.2	Rating	<ul style="list-style-type: none"> 7.5KVA – 1Phase for 0.5kl BMC 10kVA-1 Phase for 1kl BMC, 15kVA-1 or 3 Phase for 2kl BMC,

		<ul style="list-style-type: none"> • 25kVA-3 Phase for 5kl BMC
.3	MOC, thickness & type of structure	<ul style="list-style-type: none"> • MS Powder coated, 1.6 mm. & pipe structure
.4	Accessories for 1 phase stabilizer	63A MCCB for incoming, 63A phase selector, change-over and bypass switch, LED lamps, Servo controlled correction transformer, Digital V,I,F indicator for input & output, 63A terminal blocks, OV/UV trip with delay time, single phase preventer, static type energy meter with 10-60A capacity. Brass metal glands, MCB's (DP 63A - 2 nos., DP 32A - 1 no, DP 16A-1 no), Metallic pump socket, Servo Motor.
.5	Accessories for 3 phase stabilizer	40A MCCB for incoming, 40A phase selector, change-over and bypass switch, LED lamps, Servo controlled correction transformer, Digital V,I,F indicator for input & output, 63A terminal blocks, OV/UV trip with delay time, single phase preventer, static type energy meter with 10-60A capacity. Brass metal glands, MCB's (TPN 40A-2 nos., TPN 32A-1 no, TPN 16A-1 no), Metallic pump socket, Servo Motor.
.6	Operating features	Cable entry from top, response time - 5 milliseconds, should withstand 150% load on surge duty, capacity of terminals should be 150% of rated current, Dimmer with CRGO core, separate Auto/manual facility, plug in type control card for each phase, corrections speed - 105v/s, Efficiency - 99.5%
2.25	Domestic Power Distribution Board	Required
.1	Operating features	It would get single phase power from grid supply directly as well as stabilized power from main control panel and feed power for lighting, electric geyser/solar water heating system, testing equipment, computer and printer.
.2	Accessories for 03/0.5/1/2/3/5kl BMC domestic power distribution board	MS Powder coated 1.6mm enclosure, 32 DP Change over switch, 32 A DP MCB as incoming, 3 nos. 10 A MCB SP for lighting, 3 nos. 20 A MCB SP for geyser/Solar water heater, AMCU etc.
2.26	Earthing	<ul style="list-style-type: none"> • As per IS: 3043 - 1987 (reaffirmed 2001) - "Code of practice for earthing". Pipe type earthing with funnel at top - 4 nos. to be provided with distance between each pit as per local statutory requirement. Suitable GI Strip (minimum 25x3 mm) to be used for connecting earth pit with nearest equipment earthing point. From this point earthing to other points can be looped by suitable GI Strip or PVC insulated copper conductor cable of green color (size minimum 1x 4 Sq. mm). • The scope of work includes excavation for the earth pit, construction of suitable chamber, filling with necessary materials (e.g. charcoal & salt) and complete with cover. • Supplier will test and demonstrate the resistance as per local EB requirement and furnish record as required.

3.0 Refrigeration Unit		
Sl. No.	Description	Specification Requirement
3.1	Standard adopted for conditions of 38 Deg. C ambient conditions	ARI Standard 520-2004 applicable for refrigeration units operating at higher ambient temperature conditions. To facilitate for milk collection of BMCs operating as per ISO 5708 Type 2 AII standard.
3.2	Design Parameters	0 Deg. C evaporation and applicable discharge temperature at minimum 55 Deg. C condensing temperature
3.3	Type	Direct Expansion
3.4	Type of Refrigerant	Freon R22/R407 C or CFC free refrigerant
3.5	Cooling Capacity of each Compressor	Adequate capacity to ensure milk cooling time periods specified and ambient conditions of 48 Deg. C mentioned above. Compressor selected should be compatible for multiple refrigerants including future refrigerant R 407 C
3.6	Number of Compressor	Up to 1kL BMC - One and for 2kL to 5kL – Two
3.7	Type of Compressor	Hermetically sealed Reciprocating/Scroll energy efficient
3.8	Type of Condenser	Air Cooled. The condensing temperature should not be less than 50 Deg C.
3.9	Condenser surface area	Design and provide substantially adequate condensing area to meet functional requirements of the refrigeration unit in very hot conditions specified above.
3.10	Receiver volume	<ul style="list-style-type: none"> • 4 Ltrs. minimum in each CU for 0.5KL 1 KL and 2 KL BMCUs • 6 Ltrs. minimum in each CU for 5 KL and above capacities.
3.11	Condenser Fan	With an internal thermal protection device, Enclosure shall be of metal (plastic body is not permitted)
3.12	Pump down system	Required
3.13	Protective Grill	To provide a removable wire mesh screen in front of condenser fins
3.14	Expansion Valve	Thermostatic expansion valve with MOP (minimum operating pressure)
3.15	Drier, solenoid valve, Sight Glass, Fan and	Required for safe and efficient operation of the unit

	receiver	
3.16	Accessories	Isolation valves at suction & discharge sides of the compressors, All pipes, valves, fittings & controls shall comply with the latest relevant National or International code applicable, Copper piping between BMC and condensing unit shall be supported/ routed by cable tray and cable tray supports. The condensing unit should be placed on a suitable stand
4.0	Milk Pump Feeding System for accessories	
S. No	Description	Specification Requirement
4.1	Balance Tank with SS strainer for BMC capacity 1KL and above	The tank and strainer to be fabricated out of 1.6 mm SS304 sheet General arrangement Drawings shall be approved.
4.2	Balance Tank Capacity	<ul style="list-style-type: none"> • Minimum 220 L (for 1KL and above)
4.3	Tank accessories	<ul style="list-style-type: none"> • Outlet with 38 mm butterfly valve with the expandable union and adjustable ball feet (Min. 50mm vertical), • SS removable cover with handles, • SS strainer made from 1.6 mm thick SS plate with perforated plate having 2 mm dia. holes (removable type), • Outlet to end in cup type for easy draining of milk and CIP solution.
4.4	SS 304 Milk Pump	Centrifugal in SS construction
4.5	Flow Rate	<ul style="list-style-type: none"> • 5000 LPH for 0.5, 1kL & 2kL BMC and • 10000 LPH for 5kL BMC
4.6	Head in mwc	<ul style="list-style-type: none"> • 10 m
4.7	Pump inlet/outlet	<ul style="list-style-type: none"> • 38/38mm with SMS unions for 0.5kL, 1kL & 2kL, • 38/51MM with SMS Union for 5kL
4.8	Pump Accessories	<ul style="list-style-type: none"> • Adjustable ball feet (min. 50mm), • One spare mechanical seal to be provided. • Motor having 'E'/'F class insulation and having IP 55 protection. • Pump shall have SS shroud. • DOL starter for operation
4.9	Food grade tanker loading/unloading hose pipe	<ul style="list-style-type: none"> • 10 meters length and Size 38 mm • with SS cap, chain and union
4.10	Inline Strainer	<ul style="list-style-type: none"> • SS 304 Funnel with Jali shall be provided for BMC cap: 0.5kl. • SS 304 inline strainer/disc filter with both side union of 38mm shall be supplied for cap: 1kl and above.

5.0 Water Handling System for BMC		
S. No	Description	Specification Requirement
5.1	Water Pump	Mono block for filling the OH tank.
5.2	Capacity	0.5 HP, 10 mwc
5.3	Waterline schematic indicating valves/fittings etc	The OH tank to supply water to BMC for cleaning and washing.
5.4	HDPE water tank 1000L	The tank shall confirm to ISI :12701/96 rotational molded polyethylene (HDPE) heavy duty, hygienic construction, closed type with manhole for cleaning & maintenance
5.5	System Interconnecting Piping	Piping for cold water should be of CPVC ISI marked. Piping is required between cold water tank outlet and other BMC area points.
6.0 DG Set		
S. No	Description	Specification Requirement
6.1	General operating and design conditions	<p>The DG set shall be of capacity:</p> <ul style="list-style-type: none"> • 7.5 kVA single phase, air or water cooled for 0.5 kL BMC.* • 10 kVA single phase, air or water cooled for 1 kL BMC.* • 15 kVA single/three phase, air or water cooled for 2 kL BMC.* • 25 kVA three phase air or Water cooled for 5 kL BMC <p>The DG set should be heavy duty design , industrial type, rated for continuous operation for the refrigeration system, milk tank agitator & milk dispatch pump, hot water geyser (approx. 2,0 kW), AMCU, Lightings, Ceiling fan. The diesel engine and alternator should be mounted on specially designed combination baseplate and MS structure of extremely rigid fabrication. The base frame should be suitable for mounting the set on AVM pads over the foundation.</p>

6.2	Confirmation to regulatory norms for environment	<ul style="list-style-type: none"> • DG set should carry a valid approval certificate issued as per latest CPCB-4 norms. • Also compliant with the latest CPCB norms applicable as per government guidelines. • The exhaust pipe with exhaust muffler with insertion loss of minimum 25 dB (A) is connected to the exhaust manifold preferably with flexible bellows. • In case the DG Set is located within the BMC building, the exhaust pipe with insulation & cladding of adequate length be provided extending the original pipe over the roof of the building to avoid pollution in and around the location.
6.3	Diesel Engine	<ul style="list-style-type: none"> • The diesel engine should be suitable for Power Generation application type air or water cooled and capable of developing required BHP when running at 1500 rpm under NTP conditions. • The engine should be built to IS 10000/ISO 3046/BS 5514/649 and rated for continuous running of 24 hours with an overload capacity of 10 % for a period not exceeding 1 hour in any 12 hours running. Diesel engine up to 20 kW should have valid BIS license and certificate clearly mentioning use for 'General purpose application as per IS 10001 norms. • Engine ratings should be for operation at full load condition and should be suitable to take 100% block load. • Self-starting arrangement with 12V suitable rated heavy-duty Lead Acid accumulator type battery with Solid-state battery charging arrangement and cables. • Standard set of tools. First fill of Lubricating oil, First fill of coolant, Lubricating oil pressure & temp. gauge, • Standard set of tools. First fill of Lubricating oil, First fill of coolant, Lubricating oil pressure & temp. gauge, • Control panel for engine with engine safety temperature, V-belt failure, low oil pressure, low water level in radiator auxiliary failure, air cleaner choke indicator. • Steel Diesel Storage barrel of 200 lit capacity with manual pump
6.4	Engine Instrument Panel (Mechanical and/or electronic gauges)	Consists of Ignition key, Starting push button, Lubricating oil pressure gauge, Temperature gauge for cooling water, Temperature gauge for lubricating oil, RPM meter (Analog type), Battery charging ammeter

6.5	Alternator	<p>The engine should be closely / flexibly coupled to suitable self-excited, self regulated (through an AVR) alternator developing required kVA at 0.8 power factor, 1 phase/3 phase, 50 cycle/sec, 230 volts AC power supply under NTP conditions when running at 1500 RPM. The alternator should be brushless type, screen protected and fitted with end shield and ball roller bearings. The alternator shall have 'H' class of insulation. It shall conform to IS 13364 (Part 1) 1992 upto 20 kVA, IS 13364 (part II) 1992 or IS 4722 of 1992 above 20 kVA.</p>
6.6	Control Panel	<p>The diesel-generating set to have suitable control panel duly pre-wired with the following instruments: One ammeter with selector switch, One energy meter with selector switch, Hour meter, One suitable capacity MCCB with overload and short circuit protection to disconnect power supply in case load of generating set increases beyond permitted limits. The rupturing capacity of the MCCB should not be less than 25 kA. One set of indicating lamps and control fuses</p>

7.0 Installation, commissioning, trial runs and putting the BMCU in operation on milk		
S No	Particulars	Works required to be carried out
7.1	Installation of BMCU and supporting accessories.	<ul style="list-style-type: none"> • The installation work should be carried in the best workman-like manner in conformity to the relevant codes of practices of BIS standards applicable for mechanical & electrical installation. • Installation of all equipment & interconnecting piping, including minor civil works such as earthing pit & chamber, providing stainless steel pipe supports, SS base plates, clamps, valves, unions etc. required to secure the equipment & piping to walls and floors is to be provided. • Supply, laying, connecting, terminating all necessary electrical and control cables through the cable trays, GI pipes/conduits, cable gland sockets at ends, isolators, junction boxes etc are included in the scope of the work. • Cable trays and supporting steel members such as Galvanized angles /channel / flats shall be used and fixed/installed at appropriate places to ensure safe installation. • The laying of cables on the floor or under the floor is not permitted except for milk pump.
7.2	Interconnecting piping for the entire plant	<ul style="list-style-type: none"> • SS 304 piping 38 mm dia., 1.6 mm thick • Provide and install extended pipe for connecting milk hose for milk tanker loading – and unloading. • For BMC cap: 0.5kl, milk shall be poured directly in BMC Tank and therefore only milk unloading piping shall be considered.
7.3	Cables & Electrical	<ul style="list-style-type: none"> • Cable between D G Set and the main panel shall be steel armoured. For all electrical cables, suitable water-tight cable glands and lugs should be used at the ends. Specification for PVC insulated cables (for voltage up to 1100V): Part 1 with copper conductor (revised). • Flexible electrical connections shall be made only to items normally movable in service. Such flexible shall be PVC insulated copper conductor cable not less than 24/0.20 mm in size (see IS 694 (Part1-1964*)) and earth continuity conductors of PVC insulated copper conductor shall be provided.
7.4	Tool box with required tools	<ul style="list-style-type: none"> • A standard tool box of GI sheet with necessary tools for normal maintenance. It should include Electric Tester, Screw Driver Set, Allen Key 3mm & 6mm, Screw Spanner 6", Fix spanner Set 6-27, Gasket for SS Unions/valves- 3 sets and extra mechanical seal for pump.
7.5	Operation manuals	<ul style="list-style-type: none"> • 2 sets i.e. one in Hindi and one in English
7.6	P&I Drawing for the complete system offered	Drawing to be provided

7.7	Commissioning	Supplier shall arrange commissioning & performance trial runs of the bulk milk cooling system ensuring that BMC meets all performance parameters. The supplier shall supply all the consumables except diesel for D G Set required during commissioning of the plant. Diesel for commissioning of D G Set shall be provided by purchaser. In case of unavailability of Milk, Supplier has to take trial on Water.
7.8	Training	Supplier shall arrange for training of the operating team of DCS for efficient operation and maintenance of the complete system for 3 days.
7.9	Warranty	All equipment (including bought out items) supplied & installed by the contractor shall have a comprehensive warranty of 24 Month from date of commissioning or from date of supply whichever is earlier.
S No	Particulars	Works required to be carried out
7.11	Inspection	<ul style="list-style-type: none"> Client reserves right to inspect all the components of the bulk milk cooling system during fabrication/ manufacturing stage, finished stage before dispatch of the equipment. The milk cooling tank shall be checked with dye penetration test for welding defect, surface roughness check, water tightness test /hydraulic test.
7.12	Fire Extinguisher	<ul style="list-style-type: none"> Supply and install one no,A B C Stored Pressure type fire extinguisher of capacity 1 kg with each:0.5, 1kL BMC - 1No,2kL BMC - 2 Nos5 kL BMC- 3 Nos.
8..1	Hot water Generation unit- Electric Geyser (cap. - 50 Itrs), 1 phase, 2 kW	<ul style="list-style-type: none"> It should be supplied with a standard M S Box having 25 A SP MCB & 25 A metallic socket and plug. 3/4 inch CU/SS/CPVC Water piping to geyser from incoming control valve and from geyser to outlet control valve are included in supplier's scope.

Approved Make of Items

Sr. No	Item	Approved Make
1	Bulk Milk Cooling Tank	Serap/De Level/IDMC/ISF/Bimal Aluminium/ Chadha Sales or any other reputed make
2	Condensing Unit with Compressor	Emerson (Copeland)/Danfoss/Tecumseh & any other reputed make
3	Milk Pump	Alfa Laval/SPX/Fristam/IDMC
4	Manual Valves	Alfa Laval/Inoxpa/IDMC
5	Stabilizer	Asaba / Gelco / Krykard / Servomax& Other reputed bandas
6	DG Set	Kirloskar / Mahindra/Cummins/Eicher
7	Cables	Finolex/RR/KEI/Polycab
8	SS Pipes	Subhlaxmi /Ratnamani / Apex/ Rajratna

APPENDIX-“C”

Format for technical details:

S.NO	DESCRIPTION	TECHNICAL DETAILS
A.	Bulk Milk Cooler tank	
1.	Capacity (rated and gross)	
2.	Make and model.	
3.	Material used for construction (SS 304/316)	
4.	Shape & Orientation:	
5.	Overall dimensions and weight.	
6.	Thickness of inner is 1.6 mm and outer SS shells is 1.6mm	
7.	Number of agitator(s) , RPM.	
8.	CIP facility: Manual or automatic with the details, Spray	
9.	Type, thickness and efficiency of insulation.	
10.	Facility to measure milk volume (dip stick etc.)	
B.	Refrigeration unit	
1.	Make, model and size of compressor(s) at operating conditions 0 ⁰ C evaporating & 55 ⁰ C Condensing temperature.	
2.	Make, model and size of condenser(s).	
3.	Capacity of compressor(s) (Kcal/hr) at evaporating & condensing temperatures.	
4.	Capacity of condenser & no. of fans.	
5.	Receiver size & capacity	
6.	Thermostatic expansion valve, make, size, capacity	
7.	Overall dimensions and weight of the unit.	
8.	Type of refrigerant.	
C.	Design Parameters	
1.	Ambient temperature considered for design	
2.	Maximum cooling time considered for ALL & SECOND milking.	
3.	Temperature range considered for ALL & SECOND milking.	
D.	DG set	
	As per specifications and loading proposed (specify)	
1.	Make and Model of the alternator.	
2.	KVA, Volts, Amps. & pF rating of the alternator	
3.	Model of the engine with no of cylinders.	
4.	BHP rating of the engine.	
5.	Type of engine cooling- Air / Water – coolant cooled, efficiency of the engine considered for selection	
6.	Derating factors considered in the design/selection	
7.	Maximum current that set can withstand.	

S.NO	DESCRIPTION	TECHNICAL DETAILS
8.	Fuel Consumption On Genset at Load – lit/ Hr. At – 25% Load At– 50% Load At – 75% Load At –100%Load	
9.	Conformity to Noise & Emission Standards.	Attach certificate
10.	Controls & safeties for Engine & Alternator	Give details
11.	Voltage stabiliser and single-phase preventor	
E.	Electricals	
1.	Connected load in Watts & Amperes for : Compressor(s) Condenser fan(s) Agitator(s). Milk pump Water heater.	
2.	Maximum / surge current drawn by the compressor(s) (during starting).	
F.	Miscellaneous	
1.	Enclose the following: a) Performance curves of the milk cooling tank i.e. time (hrs) Vs temperature (Deg.C) curves. b) The leaflet / catalogue of the alternator and engine for the DG set. c) Performance chart of the DG set showing the fuel consumption (litres/hr) at various loading conditions and at maximum output (KW), variation of the maximum output (KW) with respect to ambient temperature assumed.	
2.	The following performance curves of the compressor(s): a) Evaporating temperature Vs Cooling capacity (kcal/hr) at various condensing temperatures. b) Compressor capacity (kcal/hr) Vs Power consumption (Watts).	
3.	Specify the assumption(s), if any, made in design / selection of any item including the tank, DG set etc.	(Along with the description of the respective item)

Schedule of items

Schedule of Items for Bulk Milk Cooler (To be in conformity with Specifications & scope of supply)		
Sr. No.	Item Description	Quantity
A	Bulk Cooling Tank with Refrigeration Control Panel	
	Bulk Milk Cooler tank complete with cover, Refrigeration unit and standard accessories .	
	Tank and pipe cleaning brushes	
	Operation and Maintenance Manual	
	Tool Box	
	Spares	
B	Electricals	
	Electrical and control Panels, Servo Voltage stabilizer, Power & Control cabling, Earthing, C I Covers etc	
	DG Set with alternator and engine, main & control panels	
	Exhaust piping , Acoustic cover as per Statutory requirement	
	One barrel for Diesel and hand pump	
	Battery with battery box	
C	Miscellaneous Items	
	SS Pipe and Fittings, Inlet Funnel with SS Strainer & Milk Reception Tray/ balance tank (applicable for gravity feed system)	
	Interconnecting SS Pipes and Fittings, Food Grade Tanker Loading Hose Size 38mm complete with end connections	
D	SS Pipe and Fittings & Tank (Pumped feed system)	
	Tanker Loading Pump Cap. 5000 LPH at 10 MWC SS Centrifugal Monoblock sanitary Design pump with single mechanical seal as per Specifications.	
E	HDPE Tank of cap. 1000 Liters as per IS standards	
F	Geyser 50 lts.	
G	SS Hot Water Piping	
H	Structural materials etc for tank mounting	

Note: The contractor is responsible for supply and execution of all the equipment/material, instruments, controls, safeties included in the BMC packages. It would be the responsibility of the supplier to ensure that any item not appearing in the above specs but felt essential for safe & efficient operation of any component of the system is included without extra cost in the contract to make the BMC package complete.