

MAHIDHARPUR DESHI COW MILK A2 PROCESSING CLUSTER, ANGUL

Sr. NO	Description	Capacity	Qty	Preferred Make
A	MILK RECEPTION SECTION :-			
1	Can Scrubber (S.S.) & Roller Conveyor (M.S)- 5 MTRS	5 Meters	1 No Each	Reputed
2	Dump Tank (With Cover)	500 Liters	1 No	Reputed
3	Weighing Scale	600 kg	1 No	Avery or Equivalent
4	Weigh Bowl (S.S.)	500 Liters	1 No	Reputed
5	Milk Chiller (35-4 Deg. C)	1000 LPH	2 Nos	Alfa Laval or Equivalent
6	Milk Pump	1 HP	3 Nos	Alfa Laval / GEA / IDMC / Swastik / Reputed
7	Inline Filter	38 MM	1 No	Filter Concept / Swastik / EQU/ Reputed
8	a) Raw Milk Storage Tank (Double Compartment) (2500 x 2Nos) b) Bulk Milk Cooler	5000 Liters 1000 Liters x 2	1 Set	IDMC / SERAP / ICEMAKE / Reputed (For BMC)
B	MILK PROCESSING SECTION :-			
1	Skid Mounted Multi-purpose Milk Pasteurizer Plant Cap. 1,000 LPH, for Milk, Curd & Paneer process. Pasteurization Unit (4/ 30-45/ 50-70/ 72-80/ 90-90 /42/ 4 deg. C). With 20 sec & 6 min Holding for Milk & Curd application.	1000 LPH	1 Set	Channel Plate Alfa Laval/ Reputed
2	Milk Homogenizer (Imported Satellite Valve & Digital Pressure Gauge	1000 LPH	1 No	Micron / Goma / IDMC / Reputed
3	Offline Cream (Offline) / Cream Separator	500 LPH	1 No	Reputed
C	STORAGE & PACKING SECTION :-			
1	S.S. Horizontal Milk Storage Tank for Pasteurized Milk Cap. 5,000 L PUF insulated, Double Compartment (2,500L + 2,500L) (S.S. Outer)	5000 Liters	1 No	Reputed
2	Milk Transfer Pump	2 HP	3 Nos	Alfa Laval / GEA / IDMC/ Swastik/ Reputed
3	Supply of Single Head Milk Pouch Packing Machine Cap. 2500 pouch/hr. Qty: 200 ml to 1000 ml , Accuracy : +/-3 ml Packing Style : Centre Sealed Pillow Pouch Output : up to 2500 Pouches Per hour Machine operation by PLC & HMI Machine equipped with Photo Scanner Assembly and for Date coding inkjet printer to be supplied for both the head.	2500 PPH	2 No	NICHROM/ MICROCARE / Reputed
4	SS Overhead Tank	500 Liters	1 No	

D	UTILITIES SECTION :-			
1	Refrigeration System (IBT System) Cap 15 TR Plant Double Circuit Freon Bases Water Cooled With Cooling Tower and Pump Compressor Emersion or Danfoss	15 TR	1 Set	Blue Star / ICEMAKE / Reputed
2	Steam Boiler- 300 KG/HR Wood Fired (NON IBR)	300 KG/HR	1 Set	Reputed
3	COLD ROOM: - Prefabricated Size: 4.5X4.5X3MTR with 80 mm PUF Panel & Complete with all accessories Fitted. 1 No. Main Hinge Door 1 No. Hatch Door 2 Set. Air Cooled Unit (1 running + 1 standby) 2 Nos. Condensing Unit 1 No. Electrical Control Panel.	4.5(L)x4.5(B)x3(H) M	1 Set	Reputed
4	MCC Panel CRCA	CRCA	1 No	
5	Air Compressor with accessories 5 HP, 3 phase Air: 4 CFM, with Air Receiver Tank	5 HP	1 No	Atlas Copco / Kirloskar / ELGI / Reputed
6	CIP Tank, Rectangular insulated and Electrical Heater, Two Compartments, Cap. 200 Ltr. Trolley mounted, with Pump, S.S. Electrical Control Panel.	300 Ltrs	1 No	Pump- Alfa Laval / GEA /IDMC/ Swastik/ Reputed
E	DAHI / LASSI SECTION :-			
1	Inoculation Tank for Curd in stirrer/ Lassi (Jacketed) 1000 Liters 500 x 2 Nos)	500 Liters	2 Nos	Reputed
2	Buffer Tank (Insulated with Agitator)	500 Liters	1 No	Reputed
3	Transfer Pump: 1 HP	1 HP	2 Nos	Alfa Laval / Swastik / IDMC/ Reputed
4	a) Dahi & Lassi Incubation Room b) Frost Freezer with digital Indicator	2x2x3 M 2x2x3 M	1 No Each	ICEMAKE / REPUTED
5	a) Curd/ Lassi pouch packing machine b) Two Stage Plate Heat Exchanger	2500 PPH 500 LPH	1 No 1 No	NICHROM / MICROCARE / REPUTED ALFA LAVAL/GOMA/ / REPUTED
F	KHOA/ SHRIKAND/PANEER SECTION :-			
1	Khoa making machine, (Paneer Section with Accessories) Vacuum packing machine, Press Machine & Paneer Moulds.	As per technical specification	1 Set	As per technical Specification

G	GHEE SECTION :-			
1	Ghee Kettle (Jacketed) with all Accessories for Ghee	300 Kgs	1 No.	

H	MISC. ITEMS			
1	M.S. Pipes & Fittings, Structure, Supports (Chilled & Hot Water Piping)		1 No	Tata / Jindal/ Reputed
2	S.S. Pipes & Fittings with supports		1 No	Pipes- Tata / Jindal/ Reputed
3	Cables, Cable Tray and Conduits		1 No	As per Technical Specification
4	Insulation & Supports Material		1 No	As per Technical Specification
I	MILK COLLECTION SECTION / ADDITIONAL ITEMS			
1	Road Milk Tanker	2000 Liters	1 No	As per Technical Specification
2	A) Water RO Plant (15K LPD) for milk processing B) ETP with accessories (15K LPD) for water treatment	15 KLPD	1 Set Each	Reputed
3	Milk Testing Lab Equipment's		1 Set	As per Technical Specification
4	Milk Collection Testing Equipment's		1 Set	As per Technical Specification
5	Milk Pouch Plastic Crates		400 Nos	Reputed
6	Aluminum Can 40Ltr & Aluminum Can 20Ltr		50 Nos Each	Reputed
7	Can Trolley & Crate Trolley		1 No Each	

J. Supply, Installation & Commissioning of Ice cream plant Cap 200 Liters Per day

Sr. No.	DESCRIPTION	UNIT	QUANTITY	REMARKS
1	Supply & Fabrication of S.S. Batch Pasteurizer cap 200 Liters as per our technical Specification enclosed herewith.	Nos	1	Reputed
2	Supply & Fabrication of S.S. Aging Vat cap. 200 Liters. with Copper Tubing & Condensing Unit as per our technical specification enclosed herewith.	Nos	2	Reputed
3	Supply of Ice Cream Mix Cooler PHE Cap 100 LPH Double Section, Plate Make: Alfa Laval	Nos	1	Reputed
4	Supply of High Pressure Homogenizer Cap. 100 LPH Make: Micron or Reputed	Nos	1	Reputed
5	Supply & Fabrication of S.S. Flavor Tank Cap. 100 Liters.	Nos	2	Reputed
6	Continuous Ice Cream Freezer Cap. 200 LPH Make: Reputed	Nos	1	Reputed
7	S.S. Pump 1 HP	Nos	3	Reputed
8	Suitable FRP Cooling Tower Cap. 15 TR	Nos	1	Reputed
9	Working Table: L x W x H : 5ft. x 3 ft. x 3 ft.	Nos	2	Reputed
10	Deep Freezer Cap. 500 Ltr.	Nos	2	Reputed
11	S.S. and MS Pipe & Fittings Size 25/38 mm and insulation	Nos	1	Reputed
12	Electrical M.C.C. Panel with Cables Suitable for above	Nos	1	Reputed
13	Installation & Commissioning	Nos	1	Reputed

TECHINCAL SPECIFICATIONS

A. RAW MILK RECEPTION DOCK / RMRD SECTION

1	MILK CAN SCRUBBER: Make: S.S. Qty: 1 NO The can scrubber will be suitable for scrubbing standard milk cans of 40 Liters. Capacity. The scrubber will have a S. S. trough. The driving mechanism will have 1HP, 1440-RPM electric motor suitable for 3-phase operation. The motor will be coupled to reduction gearbox assembly with driving chain etc. the scrubbers will have 2 nos. jumbo rotating brush and 1 no. Used brush. M.S. ROLLER CONVEYOR: 5 MTR Make : Reputed Qty: 1 NO M. S. gravity type roller conveyor will be fabricated out of M.S. channel and roller made of 51 mm (2 Inch NB) pipe. The steel channel and roller will be provided with brass bush bearings. The frame will be supported on S. S. legs with S. S. ball feet capable of vertical adjustment of 50 mm.
2	DUMP TANK: Cap. 500 Liters. Make : Reputed Qty: 1 NO The rectangular S. S. dump tank will be fabricated from S. S. sheets of 2 mm thickness conforming of AISI 304 quality. The tank will be welded construction, welding done by Argon arc welding process. All the welds will be polished and finished to dairy standards. All the corners will be well radiuses. The tank will have three ways slope towards outlet for free and complete drainage of liquid. The tank will have following fittings. 4 Nos. S.S. legs fitted with S. S. ball feet capable of vertical adjustment of 50 mm. 1 No. S.S. outlet of sizes 51mm ending on outside in a 2 way valve. 2Nos. Bi-sectional Cover in S.S. 304 1.6mm Thick.
3	PLATFORM TYPE WEIGHING SCALE, Make: Avery or Equivalent Qty: 1 NO Cap. 600 Kg. of Reputed make and suitable for suspending S. S. weigh bowl Cap. 500 Liters. S.S. Top Cover, S.S. Pipe stand M.S. beam painted with off white P. U. Paint.
4	S. S. WEIGH BOWL: Make : Reputed Qty: 1 NO Cap. 500 Liters suitable for electronic weighing scale made from 2 mm thick 304 grade S. S. sheet complete with mechanical outlet with gasket, S. S. Strainer etc.
5	MILK CHILLER / PHE Qty: 2 NOS Capacity: 1,000 LPH Temp. Duty: 35°C to 4°C Make: Alfa Laval, channel plate M6-MFMCI Single section plate heat exchanger will be used for chilling the milk from 35°C to 4°C by means of chilled water at 2°C. The frame and pressure plate of PHE shall be fabricated out of M. S. plates cladding with S. S. sheets. The supporting structure of PHE will be multi-bolt tightening type design to be operated manually with S. S. ball feet arrangement. The heat exchanger plates will be pressed from S. S. sheets and of AISI 304 quality and sanitary design. The sealing gasket will be of food grade Nitrile rubber capable of withstanding high temperature during in place cleaning. The PHE will be provided with the following: 4 Nos. S. S. Nozzles one each for chilled water inlet and outlet, milk inlet and outlet of size 51 mm ending on outside in SMS unions. 4 Nos. of thermo-wells for RTD Temp. Sensors. 1 No. 'C' Spanner and 1 No. Spanner for tightening device.
6	RAW MILK TRANSFER PUMP: Make: Alfa Laval / GEA / IDMC / Swastik Qty: 3 NOS Cap. 5,000 LPH Against 10 MWC (1 HP) The S. S. centrifugal pump will be directly coupled to above motor 2900RPM TEFC NGEF/ Hindustan Motor suitable for the operation of 3 Phase, 400/440 volts, 50 Hz. A. C. supply. All the components coming in direct contact with milk will be fabricated out of S. S. AISI 304 quality. The parts will be finished to dairy standards. The motor portion of the pump will be S. S. shrouded. The shroud will have air circulation holes and cabal entry. The pump will be fitted over three legs and S. S. ball feet having vertical adjustment of 50 mm. The pump will have 51 mm x 51 mm suction and discharge nozzles fitted with union.
7	INLINE MILK STRAINER (Disc type) 38 mm. Make : Filter Concept / Swastik / EQU Qty: 1 NO Inline milk strainer will be fabricated from S. S. AISI 304 quality.

8	a) RAW MILK STORAGE TANK (DOUBLE COMPARTMENT) 2.5KL X 2 = 5KL Qty: 1 NO The S. S. horizontal milk storage tank will be suitable for storing pasteurized / chilled milk. The tank will be welded construction and specifically designed to suit site conditions. The inner shell from 2 mm thick SS sheet of AISI 304 quality & conical dish ends will be fabricated from 2.0 mm thick S.S. sheets of AISI -304 quality The bottom will be sloped towards outlet for free and complete drainage of liquid. All the welds will be ground smooth and will be subject to D. P. test. The entire S. S. inner Surface will be polished to sanitary finish. The entire inner corner will be well radices. The inner S.S. shell will be tested for water fill up test. The outer shell and conical dish ends will be fabricated from 1.6 mm thick S. S. sheet of 304. The entire M. S. surface will be painted in two coats of anticorrosive primer. There will be no metal to metal contact between inner and outer shell except at fittings. The inner shell will be properly stiffened with Stiffening rings. The inner S. S. shell will be thermally insulated with 100 mm PUF insulation having density 40kg/m³ The tank will be supplied with following fittings / accessories:- • Two No. Outlet of 51 mm ending on outside in a 2 way Plug valve with union. • Two No. No foam inlet of 38 mm size. • Two No. Sight glass assembly. • Two No. Light glass assembly. • Two No. Air vent dust and vermin proof. • Two No. Oval shape man way sizes 520 mm x 380 mm on side provided with manhole cover tightening arrangement with Nitrile sealing gasket. • Two No. S. S. vertical fully suspended type agitators fitted with suitable HP in Single Phase reduction gear motor with mounting. Make: Bonfiglioli • Two No. S. S. lifting hooks on top. • Chemical Etching level marks at an interval of 500 L. • Two No. S. S. thermos well near the manhole for mounting the dial thermometer • Two No. small platform of S. S. on the front. • Four Nos. S. S. Conical legs with S. S. ball feet for vertical adjustment of 50 mm. • One No. S. S. Side ladders.
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b) BULK MILK COOLER CAP 1 KL

Qty: 2 NOS.

- **BMC (Capacity- 1000 Liters).**
- **Make: IDMC / SERAP / ICEMAKE/ REPUTED**

FUNCTION

- The Bulk Cooling Units will be used to cool raw milk at the milk collection Centre from the ambient temperature to 4 deg C. Within specified time as laid down by us ISO 5708 Class 2A-II Standards. Two Milking Design System has been configured such that the volume of each milking is as under
- Milking in the morning – 50%
- Milking in the Evening - 50%
- **Design Parameters**
- The ambient temperature to be considered for design shall be 38 Deg. C and safe operating temperature shall be 43 Deg. C
- **Maximum cooling time**

First Milking : 03 hr. from 35 Deg. C to 4 Deg. C.

Second Milking : 1.5 Hr. from 10 Deg. C to 4 Deg. C

a) Milk Cooling Tank

Open design with spring assisted hinged lid to be provided for easy access for cleaning and visual inspection. The tank will be a Cylindrical Shape with a condensing unit underneath a double stainless steel shell of AISI 304 in special ground finish 150 grit. The bottom of the tank is designed with a dimple evaporator. It is to be made from AISI 304 Stainless Steel using laser welding technology. The thickness of the inner shell be 2 mm and the outer shell shall be 1.5 mm.

Insulation

The tank is insulated with CFC Free injected polyurethane foam min 40 kg/m³ without any imperfection or Hygroscopicity with a thickness of 50mm.

The efficiency of the insulation:

Milk at 4 Deg. C. shall not exceed 1 deg. C in 4 hours when the rated volume can stand as per ISO 5708 Class 2A-II at 50 Deg. Ambient. The tank is complete with the following accessories:

Agitator – Extra low-speed agitator with stainless steel shaft SS sleeved up to the drive. A geared motor will be provided for optimum sealing between the agitator and tank.

Outlet – 1 No. Tank outlet fitted with 1 No. Butterfly valve.

a) Refrigeration system

Mounted on a skid comprising of the following:

Hermetically sealed compressor complete with drive motor.

Condenser - Air Cooled, screen protected compact condenser unit comprising finned condenser coils in several rows. Condenser fans of reputed make are fitted for the duty. One set of evaporating coils was welded to the inside tank and pressed into a channeling plate of adequate size.

Refrigerant & Oil- the unit is supplied complete with the first charge of the environment- friendly refrigerant and lubrication oil. One Set – Refrigeration system controls field mounted comprising the solenoid valve, L.P/H.P. cutout and sensor for digital temperature indicators.

b) Control Panel

Refrigeration control panel with milk tank control panel shall be fabricated of 1.2 mm thick mild steel sheet in dust and vermin proof design will have temperature Display & control, switch gears etc. The control panel is given in mounted execution and is pre-wired to terminal connections.

DATA SHEET BMC 1000 LTR

Capacity	1000 Liters
Milking tank	Two - Milking tank design
MOC	Stainless steel AISI304
Shape & Orientation	Semi-Cylindrical/Open Type
The thickness of inner and outer shells (mm)	2.0 mm / 1.5 mm
Cleaning-in-place (CIP)	Manual
Thickness of insulation	50 mm in walls & 90mm above evaporator
Make of Compressor	Emerson Copland
Model of Compressor	CR36 x 2 Nos
Compressor	As per required
Condenser	Air-cooled
Power Supply	Single/ Three Phase 210/410 Volts, 50 Hz
Agitator power	120 watts

B. MILK PROCESSING SECTION:

1. SS SKID MOUNTED MULTIPURPOSE MILK PASTEURIZER CAP. 1000 LPH: QTY. 1 SET
MODEL M-6 MAKE: ALFA LAVAL

1.0) MODULE HTST MILK PASTEURIZATION PLANT		UNIT QTY: 1 UNIT
Function	Shall be used for curd milk pasteurization & subsequently Chilling	
Finish	SS surfaces Shall be polished to 150 grit	
Type	Plate Heat exchanger	
Design	Module skid mounted	
Capacity	1,000 LPH	
Milk Temperature Program-1 for milk	4 – 40 – 65 – 72.4 – 80 – 67.6 – 52.6 – 45 – 4 °C	
Milk Temperature Program-2 for Curd	4 – 40 – 65 – 72.4 – 90 – 67.6 – 52.6 – 45 °C	
Milk Temperature Program-3 for Paneer	4 – 40 – 65 – 72.4 – 90 °C	
Heat Regeneration Main heating	90 %	
Milk temperature control	PID	
Flow Measuring	Pressure gauge	
Flow control	Manual flow control valve	
Auto Flow diversion	Hot pasteurized milk	
Sanitation and CIP	Auto	

SCOPE OF SUPPLY

1.1 BALANCE TANK		QTY:1 NO
Function	Shall maintain Constant milk supply to milk Pasteurizer	
Design	Single wall with top splash proof two half cover	
Capacity	100 L	
Sheet material	AISI-304 2 mm thickness	
Cover	Splash proof half cover	
Milk inlet	38 mm SMS	
Milk Outlet	38 mm SMS	
Milk recirculation	38 mm SMS	
CIP inlet	25 mm Nozzle with rotary spray	
Float switch	mechanical float switch	
Test pressure	6 kg/cm ² (g)	
Support	4 legs ,ball feet with vertical adjustment	
Make	Reputed	

1.2 MECHANICAL FLOW CONTROL VALVE		QTY.: 1 NO
Function	Will maintain required flow	
Size	38 mm	
Material of Construction	AISI-304	

1.3) PASTEURIZER MILK FEED PUMP		QTY. 1 NO.
Function	Shall be used to feed the milk to HTST milk Pasteurizer	
Type	Centrifugal	
Design	Sanitary	
Flow	2,000 LPH	
Construction	Horizontal mono-block & coupling Shaft	
Connection	SMS STD	
Material of construction	AISI-304	
Secondary Parts	Nitrile food grade quality	
Seal Type	Single Mechanical shaft seal dia 22 mm	
Motor Make	SIMENCE /ABB	
Drive Details	2.25 kw / 3 hp, 2800 Rpm, 3 ph. 415 volts, 50 Hz, IP-55,	
Make	Reputed	

1.4) BUCKET FILTER		QTY: 1 NO
Function	Shall be used for continuous filtering the milk	
Finish	Finished to 150 grits. All weld joints ground smooth	
Type	Bucket type with ss filter mesh	
Shell thickness/ Moc	2 mm / AISI 304	
Capacity	35 L	
Milk inlet/ Outlet	38 mm SMS	
Filter	SS mesh with 50 micron	
Support	3 Legs , Ball feet & vertical adjustment of 50 mm	
Make	Reputed	

1.5) HTST MILK PASTEURIZER PLATE PACK:		QTY: 1 NO
Function	Shall be used for pasteurization of milk and curd milk subsequently cooling it	
PHE Plate Type	M-6 , Make: ALFA LAVAL	
Design	Plate heat exchanger	
Capacity	1,000 LPH	
Milk Temperature Program-1 for Milk	4 – 40 – 65 – 72.4 – 80 – 67.6 – 52.6 – 45 – 4 °C	
Milk Temperature Program-2 for Curd	4 – 40 – 65 – 72.4 – 90 – 67.6 – 52.6 – 45 °C	
Milk Temperature Program-3 for Paneer	4 – 40 – 65 – 72.4 – 90 °C	
Milk inlet temperature Program	4 °C	
Milk take off temp. separator	40 – 45 °C	
Milk take off temp. homogenizer	60 – 65 °C	

Milk pasteurization temperature for milk	80 °C
Milk pasteurization temperature for curd	90 °C
Milk outlet temperature for Curd	45 °C
Milk outlet temperature for Paneer	90 °C
Section	Regeneration I, II, Preheating, Main Heating & Cooling
Pressure Drop Chilled Water	1.0 Kg/cm ² /10 MWC
Pressure Drop Hot Water	1.0 Kg/cm ² /10 MWC
Product service side	38 mm
Gaskets material	Nitrile food grade quality
Gaskets type	Clip on
Plate Material	AISI-316
Each Plate Thickness	0.5 mm
Test Pressure	6 kg/cm ² (g)
Frame & pressure plate	Mild steel clad with AISI-316

Interconnecting box	Mild steel clad with AISI-316
Tightening bolt	Manual tightening bolt AISI-316
Support stand	Self-supporting AISI-316
Type Of Test	Hydraulic test & Water circulation
Inlets/outlets	Product & Service side
Thermo well	Pockets for thermometer
Ball feet	Adjustable ball feet

1.6) HOLDING TUBE

QTY: 1 NO

Function	Holding milk at curd pasteurization temperature.
Type	Spiral type with cover mounted on skid
Holding Tube size	38 mm
Holding time	20 seconds for pouch milk 6 minutes for Curd
Make	Reputed

1.7) BUTTERFLY VALVE

QTY:1 LOT

Function	Butter fly valve with handle shall be used during process/ CIP Water rinse / drain
Type	Butter fly valve 2 way
Size	38 mm SMS connection
Material of construction	AISI-304
Make	INOXPA

1.8) AUTO FLOW DIVERSION VALVE

QTY: 1 NO

Function	Whenever hot milk temperature goes below present value a solenoid valve supplying air to FDV actuates and the flow of milk is diverted back in to the float balance tank
Type	NT/NL with pneumatic Actuator, C TOP 24V DC 1 Solenoid INOXPA Valve with supporting Road
Size	38 mm x 3 way SMS connection
Material of construction	AISI-304
Compressed air	2.5 Kg/cm ²
Make	INOXPA

1.9) SS PRODUCT INTERCONNECTING PIPES & FITTINGS

QTY: 1 LOT

Function: Interconnection of constant level tank, pipe filter, milk feed pump, Pasteurizer Plate pack, filter bucket , Holding tube , Auto milk flow diversion valve finished pasteurized product outlet re- circulation system back to constant balance tank. Piping Shall be worked out based on compact layout. By pass line for cream separator and homogenizer shall not be in our scope	
Design	Sanitary
Material of Construction	AISI-304
Size	38 mm

1.10) HOT WATER INTERCONNECTING PIPE & FITTINGS

QTY: 1 LOT

Function: Entire heating device shall be interconnect to the heating of PHE to Steam heater tubular heat exchanger , hot water circulation pump and Expansion vessel, make up water inlet, manual air vent operation, steam control valve, chilled water inlet on/off valve complete with pressure gauge, the Piping Shall be worked out based on compact layout	
Finish	SS surfaces polish by 150 grit / MS line Shall be painted
Design	Sanitary
Material of Construction	AISI-SS 304 / MS
Size	38 mm

1.11) SKID		QTY: 1 NO
The above equipment Shall be mounted on the skid; the skid Shall be which Shall be fabricated out of SS Square tube of AISI-304 quality. The skid Shall be supported on SS pipe legs SS and fitted with SS ball feet for vertical adjustment.		
Design	Sanitary	
Material of Construction	AISI-304	

1.12) INSTRUMENT AND AUTO PID CONTROL PANEL		QTY: 1 NO
Function	To control and monitoring of heating of milk	
Finish	SS surfaces Shall be polished to 150 grit	
Design	Dust and vermin proof lockable (fully auto)	
Mounting	Skid mounted	
MOC	AISI-304	
Sheet	2 mm thick	
• PID (2 Nos.) based Automatic controls shall be provided to ensure that the pasteurization temperature of milk is maintained and final out let temperature also. If the required temperature is not reached in both cases the flow of product should be automatically diverted to the constant balance tank with an audible electric horn. Reputed make		
• Pasteurizer Milk feed pump		
• Hot Water circulation Pump		
• Electro pneumatic converter:		
• ON/OFF switch and indicator lamp for control supply MAKE: Reputed		
• ON/OFF switch for incoming three phase supply		
• Audio and visual alarm		
• Auto manual switch for FDV Operations		
• Alarm acknowledge switch for hotter		
• Set of pneumatics fitting, air tubing, air filter regulator, pressure gauge, for flow diversion valve		
• The panel Shall completely wired & connection Shall be out at bottom Inside		

2. MILK HOMOGENIZER, CAPACITY: 1,000 LPH

QTY.: 1 NO.

Make: Micron / Goma / IDMC

Flow rate:	1,000 LPH
Product Milk Pressure:	Maximum 200 Bar
Homogenizing Head:	Two stage, manually operated
Homogenizing Valve & Valve Seat:	Imported Stellite-material
Suction Discharge Valve & Valve Seat:	Imported Stellite- material (Removable type)
Lubrication:	Splash
Plungers:	Three, specially Alloy Steel
Contact Parts:	SS 316
Mounting:	M.S. Frame with SS Enclosures
Body:	Cast Iron
Drive Arrangement:	Pulley drive
Inlet / Outlet Connection:	25 mm
Installed Power:	10 HP TEFC Electric motor of Crompton/reputed make Rating Power TEFC Electric Motor, 415 V, 3 Ph, 50 c/s
Suction Pressure:	1 to 1.5 Bar
Accessories:	Pressure Gauge Digital Type, 0–600 Bar:1 no.
Spares For Commissioning:	Qty.-1 set

O & M Manual:	1 set
Tool Kit :	1 set
Dampener :	Suction & Discharge

3. CREAM SEPERATOR (OFFLINE CREAM): CAP. 500 LPH

QTY.: 1 NO.

Tank Cap. :	40 Liters Aluminum Sheet
No of S.S. Discs :	40
Motor :	1425 RPM Single Phase Electric Motor 0.25 HP
Separation Temperature:	35 - 40 °C / 95-108 F
Solid Removal Time :	1.5 Hour
Machine Length :	660 mm X Width : 550 mm X Height : 1200 mm
Machine Weight :	Net: 70 Kgs Gross : 145 Kgs Approx.
Bowl Material:	M.S.
Spout Set Material:	CRCA Sheet

C. STORAGE & PACKING SECTION

1. HORIZONTAL MILK STORAGE TANK: 5 KL (Double Compartment)

Qty: 1 NO.

The S. S. cylindrical milk storage tank will be suitable for storing pasteurized / chilled milk at 4 °C the tank will be welded construction and specifically designed to suit site conditions.

The inner shell from 2 mm thick SS sheet of AISI 304 quality & conical dish ends will be fabricated from 2.0 mm thick S.S. sheets of AISI -304 quality.

The bottom will be sloped towards outlet for free and complete drainage of liquid. The tank will be welded Construction. All the welds will be ground smooth and will be subject to D. P. test. The entire S. S inner Surface will be polished to sanitary finish. The entire inner corner will be well radices. The inner S.S. shell will be tested for water fill up test.

The outer shell, and conical dish ends will be fabricated from 2 mm thick S. S. sheet of 304.

All the M. S. surface will be painted in two coats of anticorrosive primer. There will be no metal to metal Contact between inner and outer shell except at fittings. The inner shell will be properly stiffened with Stiffening rings.

The inner S. S. shell will be thermally insulated with 100 mm PUF insulation having density 40kg/m³

The tank will be supplied with following fittings / accessories:-

- Two No. Outlet of 51mm ending on outside in a 2 way Plug valve with union.
- Two No. No foam inlet of 51mm size.
- Two No. Sight glass assembly.
- Two No. Light glass assembly.
- Two No. Air vent dust and vermin proof.
- Two No. Oval shape man way sizes 520 mm x 380 mm on side provided with manhole cover tightening arrangement with Nitrile sealing gasket.
- Two No. S. S. vertical fully suspended type agitators fitted with suitable HP reduction gear motor with mounting. Make: Bonfiglioli
- Two No. S. S. lifting hooks on top.
- Two No. S. S sampling cock.
- Chemical Etching level marks at an interval of 1000 L.
- Two No. S. S. thermos well near the manhole for mounting the dial thermometer
- Two No. small platform of S. S. on the front.
- Four Nos. S. S. Conical legs with S. S. ball feet for vertical adjustment of 50 mm.
- One No. S. S. Side ladders.
- Two No. S. S. spray ball for CIP cleaning.

2. MILK TRANSFER PUMP: Cap 2HP

QTY.: 3 NOS

Make: Alfa Laval / GEA / IDMC / Swastik. The S. S. centrifugal pump will be directly coupled to above motor 2900 RPM TEFC NGEF/ Hindustan Motor suitable for the operation of 3 Phase, 400/440 volts, 50 Hz. A. C. supply. All the components coming in direct contact with milk will be fabricated out of S. S. AISI 304 quality. The parts will be finished to dairy standards. The motor portion of the pump will be S. S. shrouded. The shroud will have air circulation holes and cabal entry. The pump will be fitted over three legs and S. S. ball feet having vertical adjustment of 50 mm. The pump will have 51 mm x 38 mm suction and discharge nozzles fitted with union.

3. DOUBLE HEAD MILK POUCH PACKING MACHINE: CAPACITY 5000 Pouches per Hour,

Make- NICHROM / MICRO CARE OR EQUIVALENT

QTY.: 1 NO. DOUBLE HEAD

3.1) Function Description: Milk is required to be fed to mechanical float operated balance tank by gravity, from balance tank product shall be fed by gravity to both filling heads. The machine will form pouches, fill the product and seals the same. Date coding inkjet printing to be included for both the head.

3.2) Design Description:

Capacity: Average output will be around **5,000 Pouch/HR** with 200 ml, 500 ml, and 1000 ml pouch size.

Machine Operation: All functions of the machine like sealing time, pouch length, sealing temperature will be controlled using PLC and the machine will be mechanical cam operated.

Film Thickness: Machine will be suitable to run on film thickness 45 to 50 microns for 250 ml, 50 to 55 for 500 ml, and 56 to 60 microns for 1,000 ml.

Filling Accuracy: +/- 2ml per 200-1000ml pouch.

Feeding System: Gravity filler.

Product: Free flow liquid like milk.

Type Of Seal: Overlap/impulse seal.

3.3) Services Required: Electric Power: 415volts-3 phase, 50 Hz Ac supply,

Cooling Water: Chilled water at 150 liters per hour at 10°C,
Chilled water of 4°C can also be used since it is available in dairy.

4. S.S. OVER HEAD TANK, CAP. 500 L

QTY.: 1 NO.

The inner shell will be fabricated in Square shape from 2.0 mm thick S. S. sheets of AISI 304 quality & inner bottom 2.0 mm & top inner from 1.6 mm thick S. S. sheets of AISI 304 quality.

The tank will be welded construction. The entire welds joint will be ground smooth and will be subject to D.P. test. All the S. S. surface will be finished and polished up to 180 grits and all M. S. parts will be painted in two coats of anticorrosive primer.

The outer shell will be fabricated from 1.6 mm thick SS sheet of AISI 304 quality.

Insulation: The proper insulation between inner shell and outer shell will be done with 100 mm PUF injection having density: 40 kg/cm²

D. UTILITIES SECTION:

1. REFRIGERATION SYSTEM (IBT System), CAPACITY- 15 TR QTY- 01 SET
Make: Blue Star/ ICEMAKE / Reputed or Equivalent

1.1) Design Considerations.

Milk Chilling Temperatures.

Incoming Milk.	:-	35 Deg C.
Chilled Milk.	:-	4 Deg C.
Heat Load.	:-	31 Kcals / Liters.
Ambient Temp.	:-	38 Deg C.
Chilling Capacity	:-	10,000 Liters/ Day. (2Shifts.) (Compressors Running 16-18Hrs. /Day.)

1.2) Technical Data of Ref. System.

- | | |
|--|--------|
| 1) Copeland scroll sealed compressor
Model:-ZR72-3ph With SR. valves | -2Nos. |
| 2) Air cooled condenser in M.S. enclosure powder-
Coated with electric fans 450m.m.-2Nos | -2Nos. |
| 3) Cooling coils 5/8” soft copper tubes 20Swg.
@120Mts.Mounted on M.S. angles with saddles. | -2Nos. |

- 4) Refrigeration Accessories Drier, Thermos Ex Valve, Sight Glass, Accumulator, etc. -2Set.
- 5) Control Panel in M.S. powder coated enclosure with -1No MCB, Contactor & HPLP switch. ABB
- 6) First Charge of Refrigerant R22.

1.3) Details of Insulated Tank.

5,000 Liters 4.0 mm. M.S. Tank. With necessary stiffeners, 100 m. m. EPS insulation, Outer G.I.20Swg with Epoxy Paint. Mounted on 100 X 50 mm. "C" channel frame. With Eco board sandwich lids. 1.0 HP Agitator with Motor.

2. STEAM BOILER CAP 300KG. /HR (Wood Fired) NON IBR

QTY.: 1 NO

Shell Assemble Shell fitted with integral furnace & tubes & closed with end plates.
Feed Line Feed lines between the pumps & feed check valves.
Grate Bars & ID Fan Grate bars & ID fan.
Multi Cyclone Dust collector (Optional)
Panel Box prewired panel with necessary switchgear.
Feed water Pumps 1Nos. Water softener of inline capacity to meet the water quality of the boiler.

3. COLD ROOM: - PREFABRICATED SIZE: 4.5X4.5X3 MTR

QTY- 1 SET

Prefabricated Size: 4.5(L) x 4.5(B) x 3 Mtr with 80 MM PUF Panel & Complete with all accessories fitted.
1No Main Hinge Door
1No. Hatch Door
2Set Air Cooled Unit (1 Running + 1 Standby)
2Nos Condensing Unit
1No. Electrical Control Panel
To avoid damaging of cold room panel by stacking of creates, provision shall be made with S.S. Piping's.

4. MCC PANEL CRCA

QTY- 1 NO

MS Powder Coated Panel Consisting of all tank's agitator Starter etc.

5. AIR COMPRESSOR WITH ACCESSORIES 5 HP, 3 PHASE,

QTY- 1 NO

Make: Atlas Copco / Kirloskar, ELGI or Equivalent

AIR: 4 CFM, with Air Receiver Tank

Scope of Supply: Air Compressor, Air Inlet Filter, Pressure Gauge, Pressure Switch, Safety Valve, Slide Rail, Motor Pulley, Belt Guard, Manual Drain Valve, Service Valve, Heat Resistant Paint for Air Compressor, Heat Resistant Paint for Air Receiver, 4 No's AVM Pad, 1 no. Moisture Separator.

6. CIP TANK: 200LTR (Two Compartments):-

Qty: 1 NO

6.1) CIP TANK	
Function	For storing / recovery the Lye and Hot water

Design:	Rectangular tank with top cover
Finish:	Finished to 150 grits. All weld joints ground smooth
Construction	Double walled, insulated, welded, sanitary design.
Capacity	200 Liters.
Inner Body	Shell 2 mm /AISI 316
Outer Body	Shell 1.6 mm /AISI 304
Insulation:	Inner SS shell insulated with 100 mm Mineral Glass Wool
Electrical Heaters:	Suitable KW: 2 No.
Dosing Inlet	1 No. concentrate inlets at the top of tank
CIP inlet	2 No. No-foam return inlets at the top of the tank
Water inlet	1 No. Process water inlets near top of the tank
CIP Outlet	2 No. CIP side outlet at the bottom of the tank 38 mm
Drain Outlet	1 No. CIP drain at the bottom of the tank
Thermos well	300 mm SS inclined pocket for temperature indicator
Lifting Lugs	Lifting lugs shall be provided at top.
Legs	4 Nos. legs SS pipe & ball feet with vertical adjustments.
Make	Reputed

6.2) CIP SUPPLY PUMP: 2 HP		QTY: 1 NO.
Function	Shall be used for preparation of solution and supply solution during CIP cleaning	
Pump Design	Centrifugal Sanitary	
Flow	10,000 LPH	
Pump construction	Horizontal monoblock and coupling Shaft	
Pump mounting	Base frame and shroud.	
Connection	SMS STD	
MOC	AISI-316	
Secondary parts	Viton food grade quality	
Seal type	Single Mechanical shaft seal Die 22 mm	
Motor make	Siemens / ABB	
Drive details	2800 RPM, 3 ph. Std. TEFC, 415 volts, 50Hz, IP-55, "F" IE-3	
Make	Reputed	

6.3) S.S. CONTROL PANEL

QTY.: 1 NO.

S.S. Electrical control panel with Temp. Indicator, On/Off push buttons for CIP Supply pump etc.

E. DAHI/ LASSI SECTION:-

1. VERTICAL CURD INOCULATION TANK, CAPACITY 500 L: (JACKETED)

QTY.: 2 NOS.

The S. S. cylindrical milk tank will be suitable for storing pasteurized curd milk at 40 to 45 °C. The tank will be welded construction and specifically designed to suit sites conditions. Provision should be made for circulation of well water in the jacket area.

The inner shell will be fabricated from 2.0 mm thick S. S. sheets of AISI 304 quality & inner conical bottom dish 2 mm & top conical dish end from 2 mm thick S. S. sheets of AISI 304 quality

The tank will be welded construction. The entire welds joint will be ground smooth and will be subject to D. P. test. All the S. S. surface will be finished and polished up to 180 grits and all M. S. parts will be painted in two coats of anticorrosive primer.

The outer shell will be fabricated from 2 mm thick SS sheet of AISI 304 quality & outer conical bottom dish from 2 mm thick sheet of SS304 quality and outer top conical dish will be fabricated from 2 mm thick SS sheet of AISI 304 Quality.

Insulation: Inner shell & bottom cone shall be insulated with 80mm PUF injection having density of 40kg/m³.

The silo will be supplied with following fittings / accessories:-

- One No. S. S. Inlet cum Outlet of 38 mm ending on outside in a 2 way Plug valve one end union
- One No. S. S. Sample Cock of sanitary design.
- One No. No Foam inlet size 38 mm.
- One No. S. S. CIP inlet with spray ball of 38 mm size (with SMS union).
- One No. S. S. Sight glass / Light glass assembly 101.6 mm dia.
- One No. S. S. Air vent with spray ball dust and vermin proof of 80 mm dia.
- One No. S. S. manhole size 450 mm dia at the top dish provided with manhole cover tightening arrangement with Nitrile rubber gasket.
- One No. S. S. Top agitator with suitable 0.5 HP, 35 RPM, 3 Phase, reduction geared motor with mounting make: Reputed
- Four Nos. S. S. lifting hooks on top.
- Four Nos. SS Conical Legs with adjustable Ball feet.
- One No. S. S. thermos well near the bottom dish joint

2. S.S. BUFFER TANK (Insulated with Agitator) CAPACITY. 500 L

QTY.: 1 NO.

The S. S. cylindrical milk tank will be suitable for storing pasteurized curd milk at 40 to 45 °C. The tank will be welded construction and specifically designed to suit site conditions.

The inner shell will be fabricated from 2.0 mm thick S. S. sheets of AISI 304 quality & inner conical bottom dish 2 mm & top conical dish end from 2 mm thick S. S. sheets of AISI 304 quality.

The tank will be welded construction. The entire welds joint will be ground smooth and will be subject to D. P. test. All the S. S. surface will be finished and polished up to 180 grits and all M. S. parts will be painted in two coats of anticorrosive primer.

The outer shell will be fabricated from 1.6 mm thick SS sheet of AISI 304 quality & outer conical bottom dish from 2 mm thick sheet of SS304 quality and outer top conical dish will be fabricated from 2 mm thick SS sheet of AISI 304 Quality.

Insulation: Inner shell & bottom cone shall be insulated with 80mm PUF injection having density of 40kg/m³.

The silo will be supplied with following fittings / accessories:-

- One No. S. S. Inlet cum Outlet of 38 mm ending on outside in a 2 way Plug valve one end union
- One No. S. S. Sample Cock of sanitary design.
- One No. No Foam inlet size 38 mm.
- One No. S. S. CIP inlet with spray ball of 38 mm size (with SMS union).
- One No. S. S. Sight glass / Light glass assembly 101.6 mm dia.
- One No. S. S. Air vent with spray ball dust and vermin proof of 80 mm dia.
- One No. S. S. manhole size 450 mm dia at the top dish provided with manhole cover tightening arrangement with Nitrile rubber gasket.
- One No. S. S. Top agitator with suitable 0.5 HP, 35 RPM, 3 Phase, reduction geared motor with mounting make: Reputed

- Four Nos. S. S. lifting hooks on top.
- Four Nos. SS Conical Legs with adjustable Ball feet.
- One No. S. S. thermos well near the bottom dish joint.

3. MILK TRANSFER PUMP: Capacity: 1HP

QTY.: 2 NOS.

Make: Alfa Laval / DMC. The S.S. centrifugal pump will be directly coupled to above motor 2900 RPM TEFC NGEF/ Hindustan Motor suitable for the operation of 3 Phase, 400/440 volts, 50 Hz. A.C. supply. All the components coming in direct contact with milk will be fabricated out of S. S. AISI 304 quality. The parts will be finished to dairy standards. The motor portion of the pump will be S. S. shrouded. The shroud will have air circulation holes and cabal entry. The pump will be fitted over three legs and S. S. ball feet having vertical adjustment of 50 mm. The pump will have 51 mm x 38 mm suction and discharge nozzles fitted with union.

**4. A) DAHI & LASSI INCUBATION ROOM, Size= 2x2x3MTR
MAKE: ICEMAKE / Reputed or Equivalent**

QTY-1 NO

Dahi & Lassi Incubation Room shall be included with digital indicator for temp etc.
Room Size: 2x2x3 MTR
Room Temp.: - 40 to 42 deg C
Heating Capacity: - 6 KW.
Storage Size: - 2 X 2 X 3 Mts.
Product: - Dahi
PUF Insulation: - 60m.m.
Ambient Temp.: - 37°C.

**b) Frost Freezer with digital Indicator
MAKE: ICEMAKE / Reputed or Equivalent**

QTY-1 NO

Room Size- 2x2x3 Mtr
Room Temp: 0 to -2 dec C
Cooling Capacity- As per required
Product: Dahi
PUF Insulation- 80M.M.
Ambient Temp- 37°C

**5. A) SINGLE HEAD CURD/Lassi POUCH PACKING MACHINE: CAPACITY 2500 Pouches per Hour,
Make- NICHROM / MICRO CARE OR EQUIVALENT**

QTY.: 1 NO. SINGLE HEAD

5.1) Function Description: Curd/Lassi/Butter milk is required to be fed to mechanical float operated balance tank by gravity; from balance, tank product shall be fed by gravity to both filling heads. The machine will form pouches, fill the product and seals the same. Date coding inkjet printing to be included for both the head.

5.2) Design Description:

Capacity: Average output will be around **2,500 Pouch/HR** with 200 ml, 500 ml, and 1000 ml pouch size.

Machine Operation: All functions of the machine like sealing time, pouch length, sealing temperature will be controlled using PLC and the machine will be mechanical cam operated.

Film Thickness: Machine will be suitable to run on film thickness 45 to 50 microns for 250 ml, 50 to 55 for 500 ml, and 56 to 60 microns for 1,000 ml.

Filling Accuracy: +/- 2ml per 200-1000ml pouch.

Feeding System: Gravity filler.

Product: Free flow liquid like milk.

Type Of Seal: Overlap/impulse seal.

5.3) Services Required: Electric Power: 415volts-3 phase, 50 Hz Ac supply,

Cooling Water: Chilled water at 150 liters per hour at 10°C,
Chilled water of 4°C can also be used since it is available in dairy.

5 B). TWO STAGE PLATE HEAT EXCHANGER, CAPACITY 500LPH, QTY: 01 Nos
Make: ALFA LAVAL / GOMA OR EQUIVALENT

Temp. Duty: 4°C to 37°C to 80°C

Double section plate heat exchanger will be used for heating of milk from 4°C to 37°C subsequently to 80°C by means of well water (One Section) and 80°C (Second Section) by means of well water/ hot water / steam. The frame and pressure plate of PHE shall be fabricated out of M. S. plates cladding with S. S. sheets. The supporting structure of PHE will be multi-bolt tightening type design to be operated manually with S. S. ball feet arrangement. The heat exchanger plates will be pressed from S. S. sheets and of AISI 304 quality and sanitary design. The sealing gasket will be of food grade Nitrile rubber capable of withstanding high temperature during in place cleaning.

The PHE will be provided with required number of S.S. Nozzles in every section, outlet size 51MM, thermos-wells for RTD Temp, Sensors, 1No, "C" Spanner and 1 No Spanner for tightening device.

F. KHOA/ PANEER SECTION:

1. SS KHOA PAN CAP 300LTR (TILTING) Qty.: 1 No.

Flat Bottom Khoa pan made from S.S.12 mm thick plate for Bottom & S.S. 304 2mm Thick inner round top to hold the milk of rated volume capacity with outlet at one side bottom dia 38mm & 2 way S.S. Plug valve for draining of milk.

Suitable Designed M.S. Jacket in 6mm thick with Painted & Connection of steam inlet valve /condensate outlet with steam trap and drain connection & Jacket Safety Valve.

A Suitable designed S.S. agitator of 1H.P.Gear motor mounted on 5mm thick S.S. Girder with Teflon Scraper. A Suitable designed. M.S. Channel Frame with suitable Height for Body Frame.

2. PANEER COAGULATION VAT. Cap. 500 Liters. (S.S. Outer) Qty.: 1 No.

Capacity- 500 Liters

Material: Stainless Steel (S.S. 304)

Shape: Rectangular

Dimension: Approx. mate 1000-1200 mm length x 600-800mm width x 800-1000 mm height (May vary depending upon design).

Jacket:

- Material stainless steel (S.S. 304)
- Type: Half pipe coil or dimple jacket.
- Heating / Cooling medium: Steam and water
- Design Pressure: As required

Connection:

- Inlet and outlet connection
- Steam inlet and condensate outlet connection
- Overflow connection

3. VACUUM PACKING MACHINE

QTY-1 NO

The machine will be entirely made out from food grade high quality stainless steel S. S. 304, cast aluminum and anodized aluminum & will be engineered to provide excellent vacuum, sealing and outer finish comparable to international standards. The top (lid) cover of the chamber will be made out from aluminum. The chamber unit will consist 1 No's seal bars and will be anodized to prevent oxidation. The machine will have a flat top and dome type chamber, so that the operator can handle the products easily.

4. PNEUMATIC PRESS, TWO HEAD (for Paneer)

Qty.: 1 No.

Paneer Press will be fabricated from S.S.304 material (S.S. Frame made from 60 X 40 mm S.S. Sq. Pipe) with S.S. Platform of 2 mm thick with draining arrangement. The Paneer press will have 2 pressing stations with pneumatic cylinder. The station shall have tabletop on which the filled Paneer moulds are to be placed just below the pressing plate. The pressing plate will be of circular shape and made from SS 304, 3.0 mm thick. Each cylinder shall have independent air supply line & digital pressure control system. The complete press will be self-standing type with tray at the bottom to collect the whey drain from the cheese moulds. S.S. control panel is provided with air regulating valve & push button for operation.

5. S.S. PANEER MOULDS Size: 300 x 300 x 150 mm

Qty.: 10 Nos.

The Paneer moulds are made of SS 304 sheet 2 mm Thick. The moulds have perforations on the surface for whey drain purpose.

G. GHEE SECTION:

1. GHEE KETTLE (Jacketed) with all accessories for Ghee: Cap. 300 Kg (Tilting Type) Qty.: 1 Set

The inner shell with cylindrical body of S. S.304, 6 mm thick, hemispherical bottom will be fabricated from S. S.304, 6 mm thick, intermediate shell with hemispherical bottom will be fabricated from S.S. plate of 6 mm thickness. Outer shell with hemispherical bottom will be fabricated from 2.5 mm thick S.S.304 sheet.

Insulation:

By glass wool (density: 80 kg/m³) between the outer shell and intermediate shell and the insulation will withstand the steam temperature.

Accessories Fitted:

- 1.0 Sweeping type agitator with geared motor of suitable HP:- 1 No.
- 2.0 S. S. Girder of 5 mm thick for mounting the geared motor: -1 No.
- 3.0 S. S. Semicircular removable cover of 1.6 mm thick: -1 No.
- 4.0 Steam inlet of 25 NB with valve: -1 No.
- 5.0 Condensate outlet with float type steam trap and bypass arrangement: -1 No.
- 6.0 Jacket safety valve, Bottom & Side outlet of 38 mm with S.S. plug valve: -1 No.
- 7.0 S. S. Pipe legs of 76 mm with adjustable S. S. ball feet: - 4 Nos.

H. MISC. ITEMS

1. **M.S. Pipes & Fittings, Structure, Supports (Chilled & Hot Water Piping):** Qty- 1 Set
Make: Tata / Jindal
2. **S.S. Pipes & Fittings with supports** Qty- 1 Set
Make: Tata / Jindal
3. **Cables, Cable Tray and Conduits** Qty- 1 Set
4. **Insulation & Supports Material** Qty- 1 Set

1	INSTRUMENTATION CONTROLS & AUTOMATION	
1.1	TEMPRATURE/ PRESSURE TRANSMITTER	E&H/SIEMENS/ANDERSON-NEGELE
1.2	RTD SENSOR	RADIX/ALTOP/GIC
1.3	PID CONTROLLER	SAMSON/FORBES MARSHALL/ YOKOGAWA/ HONEYWELL
1.4	LEVEL SWITCH	E&H/SIEMENS/ANDERSON-NEGELE/PUNE TECTROL(FOR FLOAT TYPE)
1.5	PRESSURE SWITCH	E&H/SIEMENS/ANDERSON-NEGELE/DANFOSS
1.6	TEMP. SWITCH/THERMOSTATE	SWITZER/DANFOSS/E&H
1.7	PRESSURE/TEMP. GUAGE	WIKA/GIC
1.8	LEVEL TRANSMITTER	E&H/SIEMENS/ANDERSON-NEGELE
1.9	TEMPRATURE/PRESSURE/LEVEL INDICATOR	E&H/SIEMENS/ADERSON - NEGELE/SELEC
1.10	CONTROL VALVES	DEMBLA/SAMSON/PNEUCON/EQU.
1.11	UPS	LUMINOUS/SU-KAM/MICROTEK/CONSUL NEOWATT/ HITACHI
1.12	PERSONAL COMPUTAR (PC)	DELL/ACER/LENOVO/HP
1.13	ENERGY MONITER/LOAD MANAGER	ABB/SIEMENS/SCHNEIDER/L&T
2	ELECTRICALS	
2.1	MCCB	SCHNEIDER/SIEMENS
2.2	MCBS	SIEMENS/SCHNEIDER
2.3	AIR CIRCUIT BREAKER	SIEMENS/SCHNEIDER
2.4	PUSH BOTTON	SCHNEIDER/ABB/GE/EQUIVALENT
2.5	CONTACTOR	SIEMENS/SCHNEIDER/GE
2.6	TIMERS	SIEMENS/SCHNEIDER/GE
2.7	SWITCH FUSE UNIT	SIEMENS/SCHNEIDER/GE
2.8	STARTER OVERLOAD RELAY	SIEMENS/SCHNEIDER/GE
2.9	ENEGERY METER (DIGITAL)	SIEMENS/CONZERV/L&T/EQUIVALENT
2.10	DIGITAL AMMETER & VOLTMETER	CONZERV/ABB/MECO/AE/EQUIVALENT
2.11	POWER FACTOR METER	CONZERV/ABB/MECO/AE/EQUIVALENT
2.12	HRC FUSE	SIEMENS/L&T/C&S/GE/SCHNEIDER
2.13	ISOLATING SWITCH	SCHNEIDER/ABB/L&T/EQUIVALENT

2.14	SOFT ELETCRIC STARTER	DANFOSS/L&T/ROCKBELL/SCHNEIDER/ABB
2.15	PLUG & SOCKET	SCHNEIDER/HANSEL/LEGRAND
2.16	APFC RELAY	SCHEINDER/SIEMENS/L&T
2.17	POWER CAPACITORS	SCHEINDER/SIEMENS/EPCOS/L&T
2.18	CURRENT TRANSFORMER	AE/BHARTI/MECO/INDCOIL
2.19	LED LAMP FOR INDICATION	SCHENIDER/TEKNIC/EQUIVALENT
2.20	PVC CONDUIT AND ACCESSORIES	ASTRAL/POLYCAB/POLYPLAST
2.21	POWER CABLES (LT)	RR/PLOYCAB/FINOLEX/HAVELLS

2.22	SIGNAL AND INSTRUMENT CABLE (ETHERNET CABLE)	RR/PLOYCAB/FINOLEX/HAVELLS
2.23	CABLE TRAY	INDIANA/ELCON/QUICK METAL/PILCO
2.24	LUGS /GLAND FOR CABLE	COMMET/DOWELS/BRACKO
2.25	TERMINAL BLOCK	ELMEX/WAGO/CONNECT WELL
2.26	SARVO VOLTAGE STABILIZER	CONSUL NEOWATT/SUVIK/HI-REL/V-GUARD/EMERSON
2.27	HT VCB	ABB/SIEMENS
2.28	SELECTOR SWITCH (ROTORY)	SIEMENS/L&T/SCHNEIDER/SALZER
2.29	MECHANICAL INTERLOCK	ABB/SIEMENS/L&T
2.30	ELECTRIC MOTOR	CROMPTON/ABB/BHARAT BIJLI/SIEMENS
2.31	DG SET	KOEL/SUDHIR/MAHINDRA POWEROL
3	PIPING & FITTINGS	
3.1	SS PIPES (ROUND AND SQUARE)	RENSA/RAJRATNA/BHANDARI
3.2	SS FITTINGS AND MANUAL VALVES	ALFA LAVAL/IDMC/GEA
3.4	MS & GI PIPES	TATA/JINDAL
3.5	MS & GI FITTINGS	TATA/JINDAL
3.6	MS MANUAL VALVES	KARTAR/SANT/AUDCO

ADDITIONAL ITEMS FOR MILK COLLECTION

1. ROAD MILK TANKER CAP. : 2,000 Liter: Double compartments: 1000 L + 1000 L

QTY: 1 NO.

S.S. Barrel Cap. 2,000 Liters will be mounted on **Mahindra Bolero Pick Up (Model: Maxx HD 2.0LLX CBC)** for using as a Road Milk Tanker for transportation of pasteurized/ chilled milk from one place to another over a long distance.

The inner shell in S. S. AISI 304 2 mm thick. Inner dish ends in S. S. AISI 304 2 mm thick duly pressed & elliptical in shape. Adequate number of stiffening rings made from M. S. Channel will be given on inner shell along with asbestos cloth. Outer shell & Dish ends will be fabricated from S.S.304 Sheet of 2.0 mm thick

The inner S. S. shell will be thermally insulated with 100 mm PUF Insulation having density 40 kg/m³.

The complete inner shell will be mounted on S.S. Cradle & S.S. Runner of 2 mm thick & adequate slope will be given towards the outlet pipe for free drainage of milk Also provision will be made for fixing barrel on the chassis with the help of U bolt.

All inner surface & welding joint will be finish & polish up to 150 grits. And all M. S. surfaces will be painted with 2 coats of anticorrosive epoxy primer & Paint.

RMT will be supplied with following Accessories fitted:-

- 1) S.S.304 outlet pipe size 38 mm with 2 way S. S. 304 butterfly valve. One end flange & outer end Blank Nut.
- 2) S.S. 304 manhole with insulated cover & gasket, air & vacuum release valve, S.S. dust cover with S. S. platform bed.
- 3) Rear S.S. ladder made from 25 mm dia. S. S. pipe.
- 4) S.S. Top cat walkway with S.S. Dimpled plate.
- 5) S.S. side skirting on both the sides of the barrel.

- 6) S.S. Rear platform along with Dimpled plate & M. S. bumper.
- 7) S.S. valve box with cover to accommodate outlet valve.
- 8) S. S. mudguard for Rear wheels.

TESTS: D. P. test of all the welding joints and water fill –up test will be taken at your end.

2. A) Water RO Plant (15KLPD) for milk Processing: Capacity- 15KLPD, Make-Reputed, Qty- 1 NO

- RAW WATER PUMP
- PRESSURE SAND FILTER
- ACTIVATED CARBON FILTER
- MICRON FILTRATION
- ANTISCALENT DOSING SYSTEM.
- HIGH PRESSURE PUMP
- REVERSE OSMOSIS SYSTEM
- PRESSURE VESSEL
- ELECTRICAL PANEL
- INSTRUMENTATION
- PRESSURE GAUGES
- ROTAMETERS
- UV
- PIPING
- SKID + PIPING + CABLING + HARDWARE
- DISTRIBUTION SYSTEM

B) ETP with Accessories (15KLPD) for Water Treatment: Capacity- 15KLPD, Make-Reputed, Qty- 1 No

A. CIVIL WORK - CUSTOMER SCOPE

- COLLECTION / EQUALISATION TANK
- ELECTRO-MECHANICAL UNITS AND FOUNDATION: RCC

SCOPE OF SUPPLY

B. MECHANICAL UNITS

- EFFLUENT FEED PUMP
- MBBR TANK
- SETTLING TANK
- SUPERNANT TANK
- MBBR MEDIA
- BIO SLUDGE RECYCLING PUMP
- AIR BLOWER
- FILTER FEED PUMP
- DIFFUSER AND AIR PURGING GRID
- TUBE SETTLER MEDIA
- PRESSURE SAND FILTER
- ACTIVATED CARBON FILTER
- PIPING & FITTINGS
- CONTROL PANEL

3. Milk Testing Lab Equipment's

QTY- 1 SET

- Sample plastic bottle with Cap 125ML Capacity- Qty- 600 Nos
- Beaker- Min Capacity 10ML- Qty- 5Nos
- Beaker- Min Capacity 50ML- Qty- 10Nos
- Beaker- Min Capacity 500 ML- Qty- 5 Nos
- Burette with stand Minimum Capacity 50ML- Qty- 5Nos
- Measuring Cylinders- Minimum Capacity 50ML- Qty- 5Nos
- Measuring Cylinders- Minimum Capacity 1000ML- Qty- 5Nos
- Flasks Flat Bottom – Minimum Capacity 100 ML-Qty- 5Nos
- Flasks Flat Bottom – Minimum Capacity 200 ML-Qty- 5Nos
- **Flasks Conical- Minimum Capacity 100 ML- Qty- 5Nos**
- Funnels Plain – 60dec. Angle- Qty- 5Nos
- Pipette graduated “A” class- 10ML- Qty- 20Nos
- Bacteriological Pipette – 0.1 to 1ML- Qty- 5Nos
- Test Tubes- 15x125ML without Rim- Qty- 500 Nos
- Test Tube stands- 12 hole round- Qty- 5Nos
- Test Tube Rubber stopper- Qty- 25Nos
- Hot Air Oven S.S. complete digital- 35x35x35 cms with 2 shelves- Qty- 1No
- Forced Air Circulation Fan Recommended for above sizes
- Digital Preset Temperature controller cum indicator in lieu of Thermostat/Thermometer- Qty-1No
- Rectangular Water Bath Digital with concentric rings S.S – Minimum size 30x40x10cms- Qty- 1No
- Digital preset Temperature controller cum indicator- Qty- 01No
- PH Meter Tables Model Digital- Qty- 05 Nos
- Digital Lactometers- Qty- 10Nos
- Amyl Alcohol(ISO) – 05Liter
- Methylene Blue tablets – Qty- 50 Tablets
- Phenolphthalein Indicator Solution 125 ML- 10Nos
- Sodium Hydroxide N/10- 500 ML- Qty- 10 Bottles
- Sulphur Acid – Qty- 30 Liters

4. Milk Collection Testing Equipment's

- Electronic Milk Analyzer with backup solar power system, printer, digital recorder for Fat & SNF%- Qty- 3 Nos
- Butyric meters ISI mark permanent marking is Milk – 500 Nos
- Electric Centrifuge 12 tests – 25Nos
- Lock stopper Benny metal- Qty – 1250 Nos
- Key – Qty- 30 Nos
- Butyric meter shaking stand – 12 holes- Qty- 25 Nos
- Sample Bottle stand- 12 holes – Qty- 25Nos
- Pipette 10.75ML- 200 Nos
- Pipette Stand Vertical- 25 Nos
- Lactometer Double Tested Zeal type- Qty- 50 Nos
- Thermometer – 10 to 110decC Yellow background- Qty- 50Nos
- Tilt Measures with Glass bottle- 01CC- Qty- 150Nos
- Tilt Measures with Glass bottle- 10CC- Qty- 150 Nos
- Brushes for Butyric meter, Pipette & Sample Bottles – Qty- 300 Nos

5. Milk Pouch Plastic Crates	QTY- 400 NOS
6. Aluminum Can 40Ltr & Can 20 Ltr	QTY- 50 Nos Each
7. Can Trolley & Crate Trolley	QTY- 01 No Each

**Ice cream plant Cap 200 Liters Per day
TECHNICAL SPECIFICATIONS**

1. BATCH PASTEURIZER CAPACITY 200 L: MAKE - REPUTED

The inner shell will be cylindrical in shape in S. S. 304 grade of 2 mm thick with sloped bottom dish ends in of S.S. 304 grade of 2 mm thick.

The inner dimple jacket with flat bottom will be fabricated from 2 mm thick S. S. 304 sheet. Outer shell with flat bottom will be fabricated from S.S.304 2 mm Thick.

The proper Insulation between jacket and outer shell by Glass wool material.

All the inner shell welding joints will be ground smooth and polished up to Dairy finish.

The tank will be supplied with following fittings/accessories.

1. One No. S. S. outlet of 38 mm ending on outside in a 2 way valve with union.
2. One no. No foam inlet of 38 mm size.
3. One No. S.S. vertical agitator blade fitted and suitable HP reduction gear motor having speed of Suitable rpm with mounting.
4. One No. Jacket water inlet of 25 mm.
5. One No. Jacket drain of 25 mm.
6. One No. Jacket over flow of 25 mm.
7. One. No. S. S. girder of 5 mm thick for mounting the agitator.
8. Two Nos. Bi- section half openable cover in S. S. 304 of 1.6 mm thick.
9. One No. S. S. Thermowell for thermometer.
10. Four Nos. S. S. Pipe legs with adjustable ball feet.

Tests: All the S. S. joints will be ground smooth and subject to D.P. Tests and polished and finished up to 50 Grits. Jacket will be tested with water fill up test at our end.

2. AGING VAT CAPACITY 200 L MAKE – Reputed

The inner shell will be cylindrical in shape in S. S. 304 grade of 2 mm thick with sloped bottom dish ends in of S.S. 304 grade of 2 mm thick.

Copper cooling Coils of 5/8" size of suitable length will be provided outside of inner shell with fully soldered to maintain the chilled milk temp at 2°C with suitable condensing unit.

The inner jacket will be fabricated from 2 mm thick S. S. 304 sheet.
Outer shell with flat bottom will be fabricated from S.S.304 of 2.0 mm Thick.

Insulation: Inner shell & Outer will be insulated with 80 mm PUF injection having density of 40 kg/m³. All the inner shell welding joints will be ground smooth and polished up to Dairy finish.

The tank will be supplied with following Fittings/Accessories:-

1. One No. S. S. outlet of 38 mm ending on outside in a 2 way plug valve with union.
2. One No. S.S. Top vertical agitator shaft blade fitted with suitable HP reduction geared motor with mounting.
3. One No. Jacket chilled water inlet of 25 mm.
4. One. No. Jacket chilled water outlet of 25 mm.
5. One. No. Suitable Length of Copper coil with condensing unit to be provided by us.
6. One No Foam inlet size 38 mm
7. One. No. S. S. girder of 5 mm thick for mounting the agitator.
8. Two Nos. Bi- section half openable cover in S. S. 304 of 1.6 mm thick.
9. One No. S. S. Thermowell for Dial thermometer
10. Four Nos. S. S. Conical legs with adjustable ball feet

3. ICE CREAM MIX COOLER PHE: CAP 100 LPH DOUBLE SECTION, PLATE MAKE: ALFA LAVAL MODEL: M-3

The double section plate heat exchanger will be used for cooling ice cream mix. The frame and pressure plate of PHE shall be fabricated out of M. S. plates cladding with S. S. sheets.

The supporting structure of PHE will be multi-bolt tightening type design to be operated manually with S. S. ball feet arrangement.

The heat exchanger plates will be pressed from S. S. sheets and of AISI 316 quality and sanitary design. The clip on gasket will be of food grade Nitrile rubber capable of withstanding high temperature during in place cleaning operation.

The PHE will be provided with the following:

S. S. Nozzles one each for service inlet and outlet, product inlet and outlet of size 38 mm ending on outside in unions.

2 Nos. thermo-wells with mercury in glass thermometers ranging from 0 deg. C to 120

deg. C. 1 No. 'C' Spanner.

1 No. Spanner for tightening device.

4. HOMOGENISER CAP.100 LPH MAKE: Reputed

CAPACITY: 300 LPH, PRESSURE: 175 BAR

STAGES: Two stage homogenization assembly
Homogenizer will be of sanitary design. Suitable for CIP up to 90° C.

The Homogenizer will be of rugged design suitably mounted on Solid Mild Steel frame covered with SS cabinet enclosures made of Importer AISI 304 American Buffed Sheets.

Crankcase is made out of solid periodical Grey cast iron suitable to withstand the load.

Homogenizer Chamber is made out of single piece forged AISI 316 Block and tested with Ultrasound and grounded to get the required tolerance.

Suction and Discharge valves will be of ball type made of special material to withstand the abrasion and turbulence created because of high velocity of the product.

The High pressures Homogenizer will be of Double -Stage design suitable for max operating Pressure of 175 Bar.

Pressure adjustment system will be manual with the help of adjustment screw.

The Homogenizer will be coupled through Belt, Pulley & Gear Box with a suitable HP/RPM TEFC Electric motor for operation on 3 Phase.

Homogenizer will have three plunger (Pumping Pistons) design. Plungers will be made out of Special SS, Hard Chrome Plated & grinded.

Imported Diaphragm type pressure gauge shall be mounted on Chamber.

The Homogenizer will be supplied with SS304 adjustable ball feet.

5. **CONTINUOUS ICE CREAM FREEZER CAP 200 LPH MAKE : REPUTED**

Description	Status/form/size
Product	Ice Cream Mix
Total Solids	38 to 42%
Incoming Temperature	(+)4 deg C
Machine output efficiency	≥95%
Pump Type	Gear Pumps-CIP able
Over-run	Forced injection
Condenser cooling water temperature	8 to 12 deg C
Condenser cooling water flow rate	300LPHto1000LPH(Varies depending up on the temperature)
Capacity (Ice Cream)	200LPH with standard recipe
Overrun	20-100%
Ice cream outlet temperature	-4.0°C to -4.5°C
Refrigerant	R-404A

A compact freezer with frame work in stainless steel design, self-contained refrigeration unit with direct expansion is offered with the following features : -

Manual over run control with air mass flow regulator Manual mix
flow control with frequency meter
Mix and discharge gear pumps in CIP design Manual
cylinder pressure control
All set parameters are controlled by electrically matching to present values
Independent pump drives
Manual viscosity control by hot gas injection
Horizontal freezing cylinder
Electronically controlled pump speed by VFD Open-type
scraper with stainless scraping blades Belt and belt pulley
drive for dasher
R404A direct expansion system

8. Suitable FRP Cooling Tower Cap 15TR, Capacity 15TR, Qty- 01 Nos

To be designed by the bidder in conformity with BIS and IS standard specifications.