

Tender Documents for

**UP GRADATION/RENOVATION OF EXISTING MILK
POWDER PLANT FROM 8.5 MTPD TO 15 MTPD AT
BANMORE-MORENA**

**Gwalior Sahakari Dugdh Sangh Maryadit, Gola ka
Mandir, Gwalior-474005**

SECTION – I

INVITATION FOR BID

The Gwalior Sahakari Dugdha Sangh Maryadit., invites sealed bids from reputed eligible bidders for the following:

| Invitation For Bid (IFB) | | | |
|--------------------------|--|-----------------|---|
| Bid Reference | | Name of Project | Up gradation/renovation of Existing milk powder plant |
| Description | Up gradation/renovation of Existing milk powder plant at Banmore- Morena | | |
| EMD | | Rs.5 lakh | |
| Duration (months) | 4 | | |
| Tender fee | | Rs.2000/- | |

Eligibility Criteria

- 1.1 The bidder's annual financial turnover in the same name and style during each of the last three years shall not be less than **Rs. 5 Crores**. The bidder shall submit the attested copy of ITC certificate as proof of turnover.
- 1.2 The bidder shall have completed at least three powder plant projects of **10 MTPD or above capacity** in last 5 years and shall have at least one plant reference of the same capacity.
- 1.3 The plant executed by bidder in past shall have produced the milk powder as per international standard.

Purchase of Bidding Document

- 2.1 The bid document may be purchased online from www.mptenders.gov.in

Submission of Bid

- 3.1 The bidder who purchase online the bidding document, are eligible for submission of bids in their name only.

Bid Security

- 4.1 All the bid must be accompanied by bid security (Earnest Money Deposit – EMD) in the form specified in the bidding document. The bids not accompanied with EMD shall be summarily rejected. The bid security shall be denominated in Indian Rupees of value as specified and shall be submitted online. The Bid security may be forfeited if A bidder or

supplier withdraw its bid during the period of bid validity specified by the bidder/ supplier on the bid form or In case of successful bidder/ supplier, if the bidder/ supplier fails to sign the contract.

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5.1 **GSDSM** at its sole discretion and without assigning any reason thereof, reserves the right to accept and / or reject the whole or part of any or all the bids received.

Validity

The offer should be valid for **60 days** from the date of tender opening.

Chief Executive Officer

(GSDSM)

Section 2

Technical Specifications

Sub - Section 2.1

Introduction

1.0. BACKGROUND

The **GSDSM** has milk procurement system and is presently producing and marketing Liquid milk and other value added milk products. Milk procurement volumes are widely varying throughout the year as per seasonal changes. During flush season the Dairy has surplus milk and is converted into milk powder. In order to take care of the seasonal fluctuations in milk procurement, the dairy is proposing for Modification/Renovation/Replacement (MRR job) for the existing milk powder plant at Banmore with current production capacity 10 TPD average to increase it up to 12-15 TPD.

At present **GSDSM** have existing milk powder plant at Banmore with average milk powder production 10TPD. It is required by purchaser that bidder shall modify/renovate or replace existing powder plant in such a way that it should be capable to product 15 MTPD Skim Milk powder with most economic operation cost.

2.0. DETAIL OF EXISTING MILK POWDER PLANT:

PHYSICAL TARGET

| S. No. | Particulars | Present Status (28/02/18) | End Of Project Status |
|--------|--|--|--|
| 1.0 | Purchase & installation of Machinery & Equipments. | Plant design Capacity:10 TPD <input type="checkbox"/> Plant installed & Commissioned on 1986-87 by L&T with NIRO design. <input type="checkbox"/> Present output of the plant: 8-8.5 TPD. <input type="checkbox"/> Plant operation manually from Local Control Panel. | <ul style="list-style-type: none">• Powder plant may give output i.e. 12-15 MT per day |

EXISTING EVAPORATION PLANT:

Three effects falling film evaporator, with shell and tube type preheater, high heater, Barometric leg condenser.

Mass Balance of existing evaporating plant:

| | |
|---------------------------------------|---------------|
| Feed To Evaporator | : 5,100 kg/hr |
| Inlet TS of Skim Milk | : 8.0% |
| Concentrate Outlet TS from Evaporator | : 45 % |
| Concentrate Quantity | : 907 kg/hr. |
| Water Evaporation rate | : 4193 kg/hr |
| Cooling water Inlet temp | : 32 deg C |
| Cooling water Outlet temp | : 40 deg C |

EXISTING SPRAY DRYING PLANT DETAILS:

Spray Dryer

Dryer is single stage with 2 cyclone connected in parallel. Air is removed from dryer top, side wall. Powder outlet from dryer base is conveyed by cold air to bagging cyclone. Powder collected from outlet of cyclone and packed in 25 kg bags manually. Powder stack loss is higher than designed.

Mass Balance of existing drying plant:

| | |
|-----------------------------------|-------------|
| Feed To Dryer | : 907 kg/hr |
| Inlet TS of dryer | : 45 % |
| Powder moisture output from dryer | : 4 % |
| Powder output Quantity | : 425 kg/hr |
| Water Evaporation rate | : 482 kg/hr |

Note:

Bidders are requested to visit the existing plant for any further details. No further communication from purchaser shall be done of any kind hereafter.

3.0. PROPOSED REQUIREMENT:

The proposed Milk Powder Plant shall be of 15 MTPD capacities on 20 hours continuous operation and shall be designed to SMP (agglomerated). The Powder Plant shall be designed to concentrate the milk and dry Skimmed Milk Powder. The plant offered shall be of high efficiency and based on latest technology while operating on the main product i.e. SMP, facilitating the following:

Optimum utilities consumption and thereby lower operating cost in evaporation & drying plants.
TVR based falling film evaporation plant with thermo vapour recompressor.
Minimum stack losses.
Optimum Power consumption.
Dryer shall be Three Stage Dryer
Powder quality shall comply with Indian and international standards to a large extent.

Mass Balance of Proposed Evaporating plant:

| | |
|---------------------------------------|----------------|
| Feed To Evaporator | : 9,100 kg/hr. |
| Inlet TS of Skim Milk | : 8.0% |
| Concentrate Outlet TS from Evaporator | : 45 % |
| Concentrate Quantity | : 1,618 kg/hr. |
| Water Evaporation rate | : 7,482 kg/hr. |
| Steam pressure | : 9 bar g |
| Cooling water Inlet temp | : 32 deg C |
| Cooling water Outlet temp | : 40 deg C |

Mass Balance of Proposed drying plant:

| | |
|-----------------------------------|----------------|
| Feed To Dryer | : 1,618 kg/hr. |
| Inlet TS of dryer | : 45 % |
| Powder moisture output from dryer | : 3.5 % |
| Powder output Quantity | : 754 kg/hr. |
| Water Evaporation rate | : 863 kg/hr. |
| Steam pressure | : 17.5 bar g |

Scope of Work Includes Following:

1. Powder Plant renovation & up gradation

- Modification of Existing Evaporating plant
- Modification of Spray Drying Plant
- Modification, Erection, Installation & Commissioning of Existing Evaporating and Drying Plant

4.0. WORKING CONDITIONS:

Site work of every nature has to be planned and executed with the knowledge of site conditions. The design and layout of the new facilities, selection of equipment and services, methodology of project execution, testing and commissioning should all be carefully planned with this point in mind.

5.0. PROJECT TIME SCALE:

The Plant should be completed in 4 **months** time and Product trials to be commenced at the end of this period including civil & internal electrification work

6.0. SITE ADDRESS:

The plant shall be installed at **Banmore Industrial Area- Dist. Morena**

SUB SECTION 2.2
Design Basis

I. BASIS OF DESIGN

The proposed milk powder plant shall be designed to manufacture agglomerated skim milk powder at **15 MTPD** capacity at 20 hours continuous operation.

The End Product (Powder) shall meet the following specification

| Parameter | Skim Milk Powder |
|--------------------------------------|------------------------------------|
| Fat | < 1 % |
| SNF | > 96 % |
| Moisture by mass | < 3.5 % |
| Sugar | Nil |
| Bulk Density @ 100 Taps with machine | 0.4-0.5 |
| Scorched Particles | Disc A |
| Wettability @ 45 Deg C | After 72 hours of storage < 30 sec |
| Insolubility Index | 0.2 ml |
| Dispersibility | min 85% |

2.0. EVAPORATION PLANT

2.1. TVR based falling film evaporation plant – 4 effects

General Design Parameters of Evaporation Plant shall be as follows:

| S. No. | Particulars | Unit | Data |
|--------|-------------------------------|-------|-----------|
| 1.0 | Product | | Skim milk |
| 2.0 | Feed rate | kg/hr | 9,100 |
| 3.0 | Initial solids | % | 8.0 |
| 4.0 | Concentrate solids | % | 45.0 |
| 5.0 | Concentrate output | kg/hr | 1,618 |
| 6.0 | Water Evaporation | kg/hr | 7,482 |
| 7.0 | Feed temperature | Deg C | 6 |
| 8.0 | Product temp. at Precondenser | Deg C | 40 |
| 9.0 | Product temp. at DSI | Deg C | 90-110 |
| 10.0 | Cooling water temp. in/ out | Deg C | 32/ 40 |

3.0 SPRAY DRYING PLANT

THREE STAGE DRYING PLANT

The General Design Parameters of Spray Dryer (Three stage - Drying chamber, Integrated Static Fluid Bed, Vibro fluidizer) shall be as follows

| S. No. | Particulars | Unit | Data |
|--------|-----------------------------------|-------|------------------|
| 1 | Product | | Skim milk powder |
| 2 | Feed rate | Kg/hr | 1,618 |
| 3 | Initial solids | % | 45.0 |
| 4 | Final moisture content of powder | % | 3.5 |
| 5 | Powder output | Kg/hr | 754 |
| 6 | Water Evaporation | Kg/hr | 863 |
| 7 | Feed temperature | Deg C | 48 |
| 8 | Main Drying Inlet air temperature | Deg C | 190 |
| 9 | Air Heating | | Steam Air heater |
| 12 | Integrated fluid bed & VF | | As per design |

SUB SECTION 2.3

Scope of Supply

A. TECHNICAL SPECIFICATION & SCOPE OF SUPPLY FOR MODIFICATION OF EVAPORATING PLANT (From Three effects evaporator to four effects evaporator)

1. Feed pump

Type : Centrifugal Pump, direct driven
Quantity : 01 No.
Drive : TEFC Motor.
MOC : Wetted Parts in AISI 304.
Shaft seal : Single Mechanical seal
Accessories : Common Base Frame., Quick opening end cover for easy cleaning and inspection

2. Precondenser

Type : Shell and Tube Type
Quantity : 01 No
MOC of shell : AISI 304
MOC of tubes and tube plates : AISI 304

3. Preheater

Type : Shell and Tube Type
Quantity : 01 No
MOC of shell : AISI 304
MOC of tubes and tube plates : AISI 304

The preheaters will utilize the vapors from the Evaporating plant and will be suitable for heating the milk.

4. Direct Contact Regenerative heater

Capacity : Suitable
Quantity : 01 Set
MOC : AISI 304
Type : Single stage

5. Milk Pasteurizer- Direct Steam Tangential Swirl Heaters

It shall be used to heat the milk to the required pasteurization temperature by tangential injection of steam in an on-line piping system.

Capacity : Suitable, Pasteurization temp. 90 deg. C
Quantity : 01 No
MOC : SS 304
Type : Direct steam injection

6. Steam culinary filter for DSI

MOC of filter housing : SS 304
Quantity : 01 No
MOC of filter element : Sintered SS 316
Micron rating : 3 micron

7. Holder Temperature treatment

It shall be used to hold the milk for a required holding time and executed as holding tube of required length. Selection of required holding time based on type of powder to be produced and as per the design requirement shall be done with flow plate and swing bends.

Quantity : 01 Set
MOC : AISI 304

8. DSI/ Flash Vessel Transfer Pumps

Type : Centrifugal Pump, direct driven
Quantity : 02 No.
Drive : TEFC Motor.
MOC : Wetted Parts in AISI 304.
Shaft seal : Double Mechanical seal
Accessories : Common Base Frame., Quick opening end cover for easy cleaning and inspection.

9. Calandria (Falling Film Type)

MOC of shell : AISI 304
Quantity : 01 No.
MOC of tubes and tube plates: AISI 304
Stiffeners : MS

The Calandrias are of the vertical shell and tube type, specially designed for falling film evaporation, supported by a stainless steel skirt. The Calandrias are equipped with:

- Specially designed liquid distribution system at the top
- Removable top cover, fixed with swing bolts
- Light & Sight glass on shell to observe condensate flow and hand hole on skirt
- The jacket of manhole at bottom

10. Insulation and SS 304 Cladding for Cal 01 and TVR

Quantity : 01 No.

11. Vapor Separator

MOC : SS 304
Quantity : 01 No.

Vapour separators connected with the calandria shall be in an all welded construction. The separator is vertical cyclone type self-supporting and is equipped with sight and light glasses

12. Cal 01 Transfer Pumps

Type : Centrifugal Pump, direct driven
Quantity : 02 Nos.
Drive : TEFC Motor.
MOC : Wetted Parts in AISI 304.
Shaft seal : Double Mechanical seal
Accessories: Common Base Frame., Quick opening end cover for easy cleaning and inspection.

13. Thermo Vapor recompressor

Thermo Vapor compressor (TVR) shall be provided to compress and refeed a part of vapors generated in the 1ST effect back to the first effect chest. Incoming steam shall be used for compressing the vapors.

MOC of Head : AISI 304
Quantity : 01 No.
Mixing passage/diffuser: AISI 304
Motive nozzles : AISI 304
Steam chest : AISI 304
Flanges : CS

14. Surface Condenser

Type : Shell and tube
Quantity : 01 No.
MOC : AISI 304

15. Condensate Bottle

Quantity : 01 No.
MOC : AISI 304

16. Vacuum pump

A water ring type vacuum pump is provided for maintaining desired Vacuum level in the evaporator system.

Type : Water Ring, Single Stage
Quantity : 01 No
Drive : TEFC Motor, direct coupled (flexible coupling)
MOC : Casing with SS lining, impeller and shaft of the pump shall be of SS and side plate shall be of SS.
Shaft Seal : Gland Packing
Accessories : Common base frame, discharge silencer, non return valve, vacuum gauge, inlet water pressure Gauge

17. Modification/ New Vapor Ducts

MOC : SS 304.
Quantity : 01 lot
Gaskets : Food Grade Rubber.

18. Modification/ New Product /Condensate/Non condensable pipes, valves and fittings

Quantity : 01 lot

a) SS pipes

Material : AISI 304

b) SS Fittings: As per SMS standards

Material : AISI 304

c) Pipe clamps: Shall be quick opening type

d) Pipe Supports:

Type: Square sections, supported from walls, ceilings & floors

Material: SS box section in production area. In other areas, MS galvanized /painted box section

f) Manual Valves

Type : Two way/three way manually operated plug valves

Material : AISI 304

19. Steam Piping (from header to equipments)

Quantity : 01 lot

Steam piping from the Header to TVR and DSI shall be provided with the necessary size.

IBR Piping

MS heavy duty, scheduled 40 pipes, with insulation and Al cladding. All fittings will be of CI steel body with SS working parts. All valves will be of piston type.

Non IBR Steam Piping

MS heavy duty (C class) with insulation and Al cladding.

All valves & fittings will be CI/SGI body with SS working parts. All valves will be of Piston type.

Mineral wool/ Glass wool will be used as insulating material.

Aluminum sheet will be used as pipe insulation cladding.

20. Compressed Air and Vacuum Piping (from header to equipments)

Quantity : 01 lot
Sizes : As Required
Material : GI / MS 'C' Class
Valves : CS valves

21. Instrumentation and control Panel

Quantity : 01 Set

An Instrument panel shall be of SS 304

The Panel shall be pre wired and shall consist of contractor, fuses, relays, push button, indication lamps incoming voltage measuring voltmeter, Ammeter for total current drawn

It shall consist of:

Mimic diagram of the Evaporator

Auto Feed Controller with VFD and magflowmeter

Steam Pressure Control Loop for Calandria TVR

- Pressure Transducer
- PID Controller
- Steam Control valves with I/P Convertor
- AFR, tubing & fitting

Temperature Control Loop for DSI

- Temperature Transducer
- Temperature Controller
- Steam Control valves with I/P Convertor
- AFR, tubing & fitting

Local Instrumentation and Indicators

Dial type Thermometer indicating temperature of

- Cooling water Inlet / Outlet temperature,
- First Effect calandria Chest,
- All vapor separators (0 to 110°C).

Dial type Pressure Gauge

For TVR (0 to 9 bar g): 1 No.

For DSI (0 to 5 bar g): 1 No.

Dial type vacuum gauge

- For vapor separator

22.0. Electrical

MOC: CS with powder coated

Functional requirements: To receive, control and distribute electrical power at 415+₋10% V. 50 Hz, 3 phase AC in sheet steel housing.

Design requirement and scope of supply:

Housing details: The switch board will be fabricated out of 14/18 SWG sheet steel and will consist of free standing front open-able panel arranged to form a continuous line-up of uniform height. Cold rolled sheets will be doors and front covers. Front doors will be hinged type and bus bars and cable alleys covers will be bolted type.

The complete panel would be sub-divided into different sections and each section will have its own control circuit with fuse and indication.

Switch board will be extensible at both the ends by addition of vertical sections. Ends of the bus bars will be suitably drilled for this purpose. The switch board will be totally enclosed, dust weather and vermin proof. Gasket of durable material will be provided for doors and other openings. Suitable hooks will be provided for lifting the boards. These hooks when removed will not leave any opening in the board. All hardware will be corrosion resistant. All joints and connections will be made by galvanized zinc passivated or cadmium plated high tensile strength steel bolts, nuts and washers secured against loosening. The switch-board will be in cubical design (each feeder components are housed in individual cubical).

Painting: Powder coated

Name plates: Aluminum anodized plates fixed with screws at each outgoings/incoming

Busbar sizing connections and supports:

The bus bars will be made from high conductivity electrolytic Copper. The bus bars and supports will be capable of withstanding the rated and short circuit current. Minimum size of main power bus bars will be 200 amperes rating. Maximum current density permissible for Copper bus bars will be 0.8 amps/sq. mm. An earthing busbar of minimum 150 sq. mm section Copper will be provided outside panel at bottom throughout the length of the panel.

The bus bars will be provided with neat shrinkable insulating sleeve. Supports for bus bars will be made of suitable size hylem sheets/epoxy compound blocks and these would be adequate in number so as to avoid any snag in the bus bars. Minimum clearance between phase to phase will be 25 mm and that between phase to neutral/earth will be 20 mm.

Power connections

To provide power inter-connections within the panel board. For each outgoing motor feeder, suitable size terminal blocks (min. 3 ways) will be provided inside its cubical and wiring up to these from contactors will be done by panel supplier.

For incoming and outgoing feeders of the MCC Aluminum conductor cable will be used and hence the panel will be designed.

To prevent accidental contracts, all interconnecting cables/bus bars and all terminals also will be shrouded.

Standard color-code of red, yellow and blue for phases and black for neutral will be followed for all bus-bars/conductors.

Auxiliary wiring and terminals

Wiring for all controls, protection, metering, signaling etc. inside the switch-board will be done with 850 volts grey color PBVL insulated copper conductors.

All control wiring will be provided with necessary cable glands/lugs at both ends.

Conductors will be terminated using compression type lugs. Each termination will be identified at both type ends by PVC ferrules.

Control wiring for motor feeders would be such that the "green" light of feeder is "ON" only when control as well as power circuit of feeder is "ON".

Switch Gears

- Air circuit breakers (ACBS) – above 800 Amps
- Molded case circuit breakers (MCCB) - above 32 Amps, MPCB (upto 32A)
- Contactors
- Protective devices
- Timers

- Push buttons (PBs)
- Indication lamps
- Current transformer (CTs)
- Measuring instrument

Special requirement

All motor feeders above 8.5 HP would have star delta starters and below 10 HP would have DOL starters.

Connections to various pumps are through local de-contactors, provided near the pumps.

All motor feeders would be provided with MPCBs/ MCCBs.

All the power contactors of Star-Delta starters would be selected as per type-2 co-ordination.

For incoming feeder of rating higher than 800 amps, ACB would be provided.

If the outgoing feeder rating is higher than 32 amps. MCCB with minimum breaking capacity 25 KA would be provided.

Whenever remote control is provided for motor feeder only red push button for "OFF" would be provided on the MCC.

Motor starter would be suitable for AC 3 duty.

Maximum length of a shipping section of the panel would be 4000 mm.

Remote push button stations will be provided as per requirement.

Rubber mats in-front of MCC is to be provided.

Power Capacitor Banks: The power capacitor banks will be used to improve the power factor of an electrical system with automatic power factor corrector and MCCB incomer.

LT Power cables: Power cables for use on 415 V systems would be of 1100 v grade, copper conductor, PVC insulated PVC sheathed.

Cable tray: 1 Lot

Cable trays include GI cable trays of suitable sizes for laying power and control cables.

SS Shrouds for motors

Quantity: 1 Set

23. Cooling Tower

Cooling tower shall be in FRP construction, having fixed spray nozzles; water distribution system and Poly Propylene fill pack for heat transfer. The cooling tower is fitted with a statically balanced axial flow fan having adjustable type non-corrosion FRP blades. The cooling tower has air inlet louvers and supporting hardware / MS structures are galvanized for long life and to withstand wind load.

Capacity : Suitable

Quantity : 01 No.

Type Induced draught cooling tower made in FRP casing with water distribution system, fan & electric motor.

24. Cooling Water Pump

Capacity : Suitable

Quantity : 2 Nos. (1 W+1 S)

Type : Centrifugal type in CI construction with Bronze impeller.

25. Cooling water Piping

Material : MS/ GI 'B' Class

Quantity : 01 lot

Valves : CI butterfly / ball valves

B. TECHNICAL SPECIFICATION & SCOPE OF SUPPLY FOR MODIFICATION OF SPRAY DRYING PLANT (From Single stage dryer to three stage dryer)

1. Feed Pump

MOC : SS 304

Quantity: 1 No.

It shall be used for pumping concentrate from the concentrate tank (feed tank) to the high pressure pump through feed filter.

2. High Pressure Pump cum Homogenizer

Quantity : 1 No.

Product : Milk Concentrate

Pressure : 400 bar

Application : To pressurize the feed for atomization purpose.

Liquid End

- Sanitary design for cleaning in place (CIP) with:
- Three-piece valve housing in duplex stainless steel
- Pump valves in Stellite, ball type, spring-loaded, reversible seats in Stellite
- Plungers in solid ceramic material
- Plunger seals, square braided packings, max temperature 105 degrees C
- Plunger cooling/lubrication, closed, rear outlet, piping between plungers/cylinders in stainless steel.
- O-rings in EPDM - max. temperature 105 degrees C
- Inlet/outlet connections, flanged-on straight pipe for welding
- Pressure gauge for homogenizing pressure/total pressure indication
- Adapter block carrying over-pressure relief valve and pressure gauge.
- Over-pressure relief valve set at 480 bar
- Safety guard round the valve housing
- Plexiglass plunger well cover

3. Pressure nozzles with orifice and swirl body

Quantity : 03 Set

Make : Imported, Spraying system USA

4. High Pressure pn. Valve

Quantity : 03 Nos.

MOC : SS 304

5. Flexible hose pipe with adapter, union/flanges

Quantity : 03 Nos

6. High Pressure header with high pressure pipes, High Pressure union, High Pressure flange etc.

Quantity : 01 Set

7. Nozzle Cooling Fan with motor

Quantity : 01 No.

MOC : MS

Operating temp : 20 deg C

8. Air Disperser

Quantity : 01 No.
MOC : AISI 304

Placed in the center of the chamber ceiling. The Special designed construction gives a uniform distribution of the air in the chamber and secures a well-defined air velocity profile around the atomizer at a moderate pressure loss. The air enters the chamber via a Vertical inlet duct .Air flow direction is maintained vertically down co-current to feed by means of special Wire Mesh. The air distributor hot air contact parts are made of stainless steel.

9. AHU & Filter for Pressurized Air Room

9.1 Air filters on air inlet

Quantity : 01 Set
MOC : SS 304

With all standard fittings, to be placed after second stage of filter.

The air filtration shall be in three stage.
1 Pre filtration 2. Filtration (Fine) 3. HEPA Filtration.

9.2 Air Blower with motor

Quantity : 01 No.
MOC : MS

To maintain a slight over-pressure in the filter/fan room. Coated with anti-corrosion paint. Incl. of protection screen, made of stainless steel, and electric motor. The speed of the unit will be controlled by frequency converter.

9.3 Air ducting

Quantity : 01 Lot
MOC : SS 304

For connecting the fan with air filter common room inclusive of necessary flexible connections and damper

10. Main Supply Fan with motor

Quantity : 01 No.
MOC : MS
Operating temp : 20 deg C

Of the centrifugal type with fan and motor assembled on a common base frame and consisting of:

Housing with inspection opening and drain

- Impeller, statically and dynamically balanced
- Shaft with heavy duty ball/roller bearings, grease lubricated
- Totally enclosed, fan cooled motor
- V-belt drive with safety guard
- Base frame with vibration dampers
- Flexible connections for air inlet and outlet

The fan, including housing, impeller and base frame are made of painted carbon steel with an anticorrosion paint.

11. Air Heating System (For Dryer chamber)

Quantity : 01 No.

For indirect heating of the supply air. The air heater is designed with special attention to high thermal efficiency and a low pressure drop

The air heater consists of:

- Steam heating coil made of SS with Al fins
- SS housing
- Necessary connections complete with flanges

12. Integrated Bed Chamber

Quantity: 01 Set

it shall be made of SS 304& it shall consist of single compartments for drying. It shall have specially designed perforated sheet so as to direct the hot air with powder flow. Also it will have

Inspection doors : 01 No,

Manhole : 01 No.

Hot Air inlet : 01 No.

13. Hot air system for IBD

13.1. IBD Heating fan with motor

Quantity : 01 No.

MOC : MS

Of the centrifugal type with fan and motor assembled on a common base frame and consisting of:
Housing with inspection opening and drain

- Impeller, statically and dynamically balanced
- Shaft with heavy duty ball/roller bearings, grease lubricated
- Totally enclosed, fan cooled motor
- V-belt drive with safety guard
- Base frame with vibration dampers
- Flexible connections for air inlet and outlet

The fan, including housing, impeller and base frame are made of painted carbon steel with an anticorrosion paint.

13.2 Air Heating System (Steam Radiator)

Quantity : 01 No.

For indirect heating of the supply air. The air heater is designed with special attention to high thermal efficiency and a low pressure drop

The air heater consists of:

- Steam heating coil made of SS with Al fins
- SS housing
- Necessary connections complete with flanges

14. External fluid bed system (vibrating type for continuous drying & cooling of the powder)

Quantity: 01 Set

The fluid bed consists of Air distribution bottom part with cleaning doors, Drain funnels, Inlet air duct connections, Perforated plate welded to a supporting frame, Inclined powder inlet with a perforated plate at the bottom, Upper part housing with cleaning and inspection openings, Air outlet-Powder outlet-

Flexible connections for inlet and outlets, Light source for internal illumination, Vibro motors, base frame with spiral springs, etc.

15. Hot air system for FBD

15.1 FBD Heating fan with motor

Quantity: 01 No.

MOC : MS

Of the centrifugal type with fan and motor assembled on a common base frame and consisting of:
Housing with inspection opening and drain

- Impeller, statically and dynamically balanced
- Shaft with heavy duty ball/roller bearings, grease lubricated
- Totally enclosed, fan cooled motor
- V-belt drive with safety guard
- Base frame with vibration dampers
- Flexible connections for air inlet and outlet

The fan, including housing, impeller and base frame are made of painted carbon steel with an anticorrosion paint.

15.2 Air heating system (Steam Radiator)

Quantity : 01 No.

For indirect heating of the supply air. The air heater is designed with special attention to high thermal efficiency and a low pressure drop

The air heater consists of:

- Steam heating coil made of SS with Al fins
- SS housing
- Necessary connections complete with flanges

16. Cool air supply system for external fluid bed

16.1 FBD Cooling fan with motor

Quantity : 01 No.

MOC : MS

Of the centrifugal type with fan and motor assembled on a common base frame and consisting of:
Housing with inspection opening and drain

- Impeller, statically and dynamically balanced
- Shaft with heavy duty ball/roller bearings, grease lubricated
- Totally enclosed, fan cooled motor
- V-belt drive with safety guard
- Base frame with vibration dampers
- Flexible connections for air inlet and outlet

The fan, including housing, impeller and base frame are made of painted carbon steel with an anticorrosion paint.

16.2 Dehumidifier battery

Quantity : 01 No.

For indirect cooling of the supply air from 35 deg C to 11 deg C and heating from 11 Deg C to 20 deg C. The dehumidifier is designed with special attention to high cooling efficiency and a low-pressure drop.

The dehumidifier consists of:

- Cooling coil made of SS tube with Aluminum fins
- Heating coil made of SS tube with Aluminum fins
- SS housing with drip collection & drain
- Necessary connections complete with flanges

17. Cyclone separator

Quantity : 01 No.
MOC : SS 304

Designed for highly efficient separation of the powder from the drying air. The separation of the powder from the air occurs during a spiral movement inside the cyclone and the powder leaves the cyclone at the bottom. The cyclone consists of Tangential inlet, Cone, Center tube, Cyclone top with detachable cover for easy inspection and cleaning.

18. Exhaust Fan with motor

Quantity : 01 No.
MOC : MS

For the exhaust air. The fan will be of the centrifugal type. The supply will consist of housing with inspection opening and drain. Statically & dynamically balanced robust impeller of self cleaning type. Shaft with heavy duty ball/roller bearings, grease lubricated, TEFC Moto, V-Belt drive with safety guard. Base frame etc

19. Blow Through Valve

Quantity: 2 Nos.
MOC : SS 304

For continuous discharge of powder. The valve is of sanitary design:

The valves comprises of:

- Housing
- Rotor
- Solid stainless shaft
- TEFC drive motor with gearbox

20. Fines Recycle System

For transporting the fine fraction of the powder to the wet atomization zone in the drying chamber by pneumatic transport system. The system consists of:

20.1 Fines distributor

Quantity : 01 No.
MOC : SS 304

The distributor introduces the fines around the atomizer assembly. Air-cooling of fines tubes prevents overheating of the powder when passing through the hot air zone.-cooling jacket for the tubes-cooling air supply (part of neck cooling system)-fines injection tubes

20.2 High pressure blower

Quantity : 2 Nos.

For supplying high-pressure air for transporting the fines to fines distributor or External fluid bed. TEFC motor, Pre & fine filter for air.

20.3 Diverter Valves

Quantity : 01 No.
MOC : AISI 304

It shall be used for diverting the powder either to the drying chamber or to the discharge end of the vibro fluidizer. This valve is operated with pneumatic actuator. Housing of the valve is of SS casting and internals of SS. Complete with necessary solenoid valve, actuating cylinder and pneumatic and electrical connection.

20.4 Fines Return Pipe

Quantity : 01 Set

Includes a set of pipes to introduce the fines being blown from the blow through rotary valves provided at the bottom of the cyclone separators, to the following points. It consists of three number deviator Joint to divert the fines, to the wet zone in the nozzle spray area in the chamber, to the first drying section of the external fluid bed dryer, to cooler section of the external fluid bed dryer section.

21. Powder Sifter

Quantity : 01 No.
MOC : AISI 304

Type : Vibrating It shall be used for screening the powder and separating out the lumps from final product. This is a vibrating screen with powder contact parts made of AISI 304 and other parts of painted MS complete with top cover and flexible connections inclusive of motor.

22. Fire Safety and Wet cleaning system

22.1 Fire Water Pump

Centrifugal type with open impeller and sanitary design complete with motor and base frame.

Quantity : 01 No.
Capacity : Suitable
MOC : CS
Capacity : 40 m³/hr, head: 35 mtr

22.2 Wet cleaning Pump

Centrifugal type with open impeller and sanitary design complete with motor and base frame.

Quantity : 01 No.
Capacity : Suitable
MOC : CS
Capacity : 60 m³/hr, head:65 mtr

22.3 Cleaning Turbine

Quantity : 01 No.
MOC : SS 304
Type : Rotary

The cleaning turbine shall be used for cleaning of drying chamber. It shall be provided with hose & manual winch.

22.4 CIP Nozzle (Non retractable)

Quantity : 01 Lot
MOC : SS 304

22.5 Fire Nozzle (Non retractable) with 2 way control ON/OFF valves

Quantity : 01 Lot
MOC : SS 304

22.6 Pig Tank

Quantity : 01 No.
Capacity : 1,000 L
MOC : SS 304

It shall be used for collection of CIP solution & returning it to CIP Tanks/ drain.

22.7 CIP return Pump

Quantity : 01 No.

Centrifugal type with open impeller and sanitary design complete with motor and base frame.

Capacity : Suitable

MOC : CS

22.8 CIP trays, pipes and fittings etc. for dryer chamber, FBD etc.

Quantity : 01 Lot

23. Air/ Powder ducting

Quantity : 01 Lot

MOC : SS 304

For connecting the fan with air filter common room inclusive of necessary flexible connections and damper

24. Insulation & SS 304 Cladding for dryer chamber

Quantity : 01 Lot

25. Instrumentation & Control Panel

Quantity : 01 Lot

Type : self supported , rear door with top cable entry

MOC: SS 304

Design: Dust and vermin proof, operating panel with MIMIC diagram, indicating lamps, electrical remote push button stations, internal wiring and switches as per electrical safety regulations.

Auto feed Control with Air Outlet Temp

- RTD

Main Steam Radiator Controller

- RTD
- Control Valve Pneumatic
- Air Filter regulator
- PID controller

IBD Steam Radiator Controller

- RTD
- Control Valve Pneumatic
- Air Filter regulator
- PID controller

FBD Steam Radiator Controller

- RTD
- Control Valve Pneumatic
- Air Filter regulator
- PID controller

Auto fire extinguisher system

- RTD
- PID controller
- Actuated 3 Way Valve with Actuator

Gauges

- Pressure Gauges 0-5 Bar: 3 No.
- Temp Gauges IBD, FBD Temp 0-150: 3 No.
- Temp Gauges Fine re-cycle line Temp 0-100: 1 No.
- Temp Gauges FBD Exhaust Temp 0-100: 1 No.
- Temp Gauges Nozzle Cooling Temp 0-100:1 No.

26.0. Electrical

MOC: CS with powder coated

Functional requirements: To receive, control and distribute electrical power at 415+₋10% V. 50 Hz, 3 phase AC in sheet steel housing.

Design requirement and scope of supply:

Housing details: The switch board will be fabricated out of 14/18 SWG sheet steel and will consist of free standing front open-able panel arranged to form a continuous line-up of uniform height. Cold rolled sheets will be doors and front covers. Front doors will be hinged type and bus bars and cable alleys covers will be bolted type.

The complete panel would be sub-divided into different sections and each section will have its own control circuit with fuse and indication.

Switch board will be extensible at both the ends by addition of vertical sections. Ends of the bus bars will be suitably drilled for this purpose. The switch board will be totally enclosed, dust weather and vermin proof. Gasket of durable material will be provided for doors and other openings. Suitable hooks will be provided for lifting the boards. These hooks when removed will not leave any opening in the board. All hardware will be corrosion resistant. All joints and connections will be made by galvanized zinc passivated or cadmium plated high tensile strength steel bolts, nuts and washers secured against loosening. The switch-board will be in cubical design (each feeder components are housed in individual cubical).

Painting: Powder coated

Name plates: Aluminum anodized plates fixed with screws at each outgoings/incoming

Busbar sizing connections and supports:

The bus bars will be made from high conductivity electrolytic Copper. The bus bars and supports will be capable of withstanding the rated and short circuit current. Minimum size of main power bus bars will be 200 amperes rating. Maximum current density permissible for Copper bus bars will be 0.8 amps/sq. mm. An earthing busbar of minimum 150 sq. mm section Copper will be provided outside panel at bottom throughout the length of the panel.

The bus bars will be provided with neat shrinkable insulating sleeve. Supports for bus bars will be made of suitable size hylem sheets/epoxy compound blocks and these would be adequate in number so as to avoid any snag in the bus bars. Minimum clearance between phase to phase will be 25 mm and that between phase to neutral/earth will be 20 mm.

Power connections

To provide power inter-connections within the panel board. For each outgoing motor feeder, suitable size terminal blocks (min. 3 ways) will be provided inside its cubical and wiring up to these from contactors will be done by panel supplier.

For incoming and outgoing feeders of the MCC Aluminum conductor cable will be used and hence the panel will be designed.

To prevent accidental contracts, all interconnecting cables/bus bars and all terminals also will be shrouded.

Standard color-code of red, yellow and blue for phases and black for neutral will be followed for all bus-bars/conductors.

Auxiliary wiring and terminals

Wiring for all controls, protection, metering, signaling etc. inside the switch-board will be done with 850 volts grey color PBVL insulated copper conductors.

All control wiring will be provided with necessary cable glands/lugs at both ends.

Conductors will be terminated using compression type lugs. Each termination will be identified at both type ends by PVC ferrules.

Control wiring for motor feeders would be such that the "green" light of feeder is "ON" only when control as well as power circuit of feeder is "ON".

Switch Gears

- Air circuit breakers (ACBS) – above 800 Amps
- Molded case circuit breakers (MCCB) - above 32 Amps, MPCB (upto 32A)
- Contactors
- Protective devices
- Timers
- Push buttons (PBs)
- Indication lamps
- Current transformer (CTs)
- Measuring instrument

Special requirement

All motor feeders above 8.5 HP would have star delta starters and below 10 HP would have DOL starters.

Connections to various pumps are through local de-contactors, provided near the pumps.

All motor feeders would be provided with MPCBs/ MCCBs.

All the power contactors of Star-Delta starters would be selected as per type-2 co-ordination.

For incoming feeder of rating higher than 800 amps, ACB would be provided.

If the outgoing feeder rating is higher than 32 amps. MCCB with minimum breaking capacity 25 KA would be provided.

Whenever remote control is provided for motor feeder only red push button for "OFF" would be provided on the MCC.

Motor starter would be suitable for AC 3 duty.

Maximum length of a shipping section of the panel would be 4000 mm.

Remote push button stations will be provided as per requirement.

Rubber mats in-front of MCC is to be provided.

Power Capacitor Banks: The power capacitor banks will be used to improve the power factor of an electrical system with automatic power factor corrector and MCCB incomer.

LT Power cables: Power cables for use on 415 V systems would be of 1100 v grade, copper conductor, PVC insulated PVC sheathed.

Cable tray: 1 Lot

Cable trays include GI cable trays of suitable sizes for laying power and control cables.

SS Shrouds for motors

Quantity: 1 Set

| A. MODIFICATION OF EVAPORATING PLANT (From Three effects evaporator to four effects evaporator) | | | | |
|--|---|--|-----------------|-------------------|
| S. No | Equipment | Capacity | Quantity | Unit |
| 1 | Feed pump | | 1 | No. |
| 2 | Precondenser | | 1 | No. |
| 3 | Preheater | | 1 | No. |
| 4 | Direct Contact Regenerative heater | Suitable | 1 | Set |
| 5 | Milk Pasteurizer- Direct Steam Tangential Swirl Heaters | Suitable, Pasteurization temp. 90 deg. C | 1 | No. |
| 6 | Steam culinary filter for DSI | | 1 | No. |
| 7 | Holder Temperature treatment | | 1 | Set |
| 8 | DSI/ Flash Vessel Transfer Pumps | | 2 | No. |
| 9 | Calandria (Falling Film Type) | | 1 | No. |
| 10 | Insulation and SS 304 Cladding for Cal 01 and TVR | | 1 | No. |
| 11 | Vapor Separator | | 1 | No. |
| 12 | Cal 01 Transfer Pumps | | 2 | No. |
| 13 | Thermo Vapor recompressor | | 1 | No. |
| 14 | Surface Condenser | | 1 | No. |
| 15 | Condensate Bottle | | 1 | No. |
| 16 | Vacuum pump | | 1 | No. |
| 17 | Modification/ New Vapor Ducts | | 1 | Lot |
| 18 | Modification/ New Product /Condensate/Non condensable pipes, valves and fittings | | 1 | Lot |
| 19 | Steam Piping (from header to equipments) | | 1 | Lot |
| 20 | Compressed Air and Vacuum Piping (from header to equipments) | | 1 | Lot |
| 21 | Instrumentation and control Panel | | 1 | Set |
| 22 | Electricals | | 1 | Set |
| 23 | Cooling Tower | Suitable | 2 | Nos. (1 W+1 S) |
| 24 | Cooling Water Pump | Suitable | 2 | Nos. (1 W+1 S) |
| 25 | Cooling water Piping | | 1 | Lot |
| B. MODIFICATION OF SPRAY DRYING PLANT (From Single stage dryer to three stage dryer) | | | | |
| S. No | Equipment | Capacity | Quantity | Unit |
| 1 | Feed Pump | | 1 | No. |
| 2 | High Pressure Pump cum Homogenizer | | 1 | No. |
| 3 | Pressure nozzles with orifice and swirl body | | 3 | Set |
| 4 | High Pressure pn. Valve | | 3 | Nos |
| 5 | Flexible hose pipe with adapter, union/flanges | | 3 | Nos |
| 6 | High Pressure header with high pressure pipes, High Pressure union, High Pressure flange etc. | | 1 | Set |

| | | | | |
|------|--|--|---|------|
| 7 | Nozzle Cooling Fan with motor | | 1 | No. |
| 8 | Air Disperser | | 1 | No. |
| 9 | AHU & Filter for Pressurized Air Room | | | |
| 9.1 | Air filters on air inlet | | 1 | Set |
| 9.2 | Air Blower with motor | | 1 | No. |
| 9.3 | Air ducting | | 1 | Lot |
| 10 | Main Supply Fan with motor | | 1 | No. |
| 11 | Air Heating System (For Dryer chamber) | | 1 | No. |
| 12 | Integrated Bed Chamber | | 1 | Set |
| 13 | Hot air system for IBD | | | |
| 13.1 | IBD Heating fan with motor | | 1 | No. |
| 13.2 | Air Heating System (Steam Radiator) | | 1 | No. |
| 14 | External fluid bed system (vibrating type for continuous drying & cooling of the powder) | | 1 | Set |
| 15 | Hot air system for FBD | | | |
| 15.1 | FBD Heating fan with motor | | 1 | No. |
| 15.2 | Air heating system (Steam Radiator) | | 1 | No. |
| 16 | Cool air supply system for external fluid bed | | | |
| 16.1 | FBD Cooling fan with motor | | 1 | No. |
| 16.2 | Dehumidifier battery | | 1 | No. |
| 17 | Cyclone separator | | 1 | No. |
| 18 | Exhaust Fan with motor | | 1 | No. |
| 19 | Blow Through Valve | | 2 | Nos. |
| 20 | Fines Recycle System | | | |
| 20.1 | Fines distributor | | 1 | No. |
| 20.2 | High pressure blower | | 2 | No. |
| 20.3 | Diverter Valves | | 1 | No. |
| 20.4 | Fines Return Pipe | | 1 | Set |
| 21 | Powder Sifter | | 1 | No. |
| 22 | Fire Safety and Wet cleaning system | | | |
| 22.1 | Fire Water Pump | | 1 | No. |
| 22.2 | Wet cleaning Pump | | 1 | No. |
| 22.3 | Cleaning Turbine | | 1 | No. |
| 22.4 | CIP Nozzle (Non retractable) | | 1 | Lot |
| 22.5 | Fire Nozzle (Non retractable) with 2 way control ON/OFF valves | | 1 | Lot |
| 22.6 | Pig Tank | | 1 | No. |
| 22.7 | CIP return Pump | | 1 | No. |
| 22.8 | CIP trays, pipes and fittings etc. for dryer chamber, FBD etc | | 1 | Lot |
| 23 | Air/ Powder ducting | | 1 | Lot |
| 24 | Insulation & SS 304 Cladding for dryer chamber | | 1 | Lot |
| 25 | Instrumentation & Control Panel | | 1 | Lot |
| 26 | Electrical | | | |

Sub -Section 2.4

Make of Major Bought Out Items

MAKES OF MAJOR EQUIPMENTS / BOUGHT OUT ITEMS

| S.NO. | EQUIPMENT | MAKE |
|--------------|-------------------------------------|--|
| 1 | Centrifugal pumps | Fristam |
| 2 | TVR | Bidders make |
| 3 | Steam culinary filter | Ultrafilter/Standard |
| 4 | Vacuum Pumps | PPI/Joyam/ IVC |
| 5 | Gear motor | Pyjol/ Remi/Standard |
| 6 | High Pressure Pump cum Homogenizer | FBF Itallia |
| 7 | Nozzles | Delvan/Spraying system |
| 8 | Centrifugal Fans | Marathon/ ENGICON |
| 9 | Motors | ABB / Crompton |
| 10 | Steam Radiator/ Dehumidifier | Bidders make |
| 11 | Sifter | Bidders make |
| 12 | Diverter valve | Bidders make |
| 13 | Air filter | Puromatics/ Reputed |
| 14 | Rotary Valve/ BTV | Bidders make |
| 15 | Roots Blower | Everest Transmission/ Kay international |
| 16 | Vibratory motor | Sinex |
| 17 | Vibratory motor for sifter | Sinex |
| 18 | SS 304 sheet | Jindal |
| 19 | SS manual valves fittings | Kpsar/ MRK/SRI/SIS |
| 20 | SS tubes and pipe | Apex/Quality |
| 21 | MS/GI pipes | Jindal/Tata/kalyani/MSL |
| 22 | Valves for Utility | Sant/Leader |
| 23 | Process Transmitters | Wika/Emerson/E&H / Rosemount / Yokagawa/ Tata /Honeywell |
| 24 | Control valves | Samson/ Teknik |
| 25 | VFD | Danfoss/ Siemens / Allen Bradley/ ABB |
| 26 | RTD | Radix/ Baumer |
| 27 | Temperature / Pressure Transmitters | Yokagawa/ Honeywell/Wika Tata |
| 28 | Process gauges/ Temperature gauges | General Instruments |
| 29 | Indicators | Selec/ Radix |
| 30 | Draft gauge | Waree |

| | | |
|-----|------------------------|-----------------------------|
| 31 | IP converter | ABB/Control Air |
| 32 | Level switch | P & F |
| 33 | Cooling Tower | Mihir / Paltech |
| 34 | Water pumps | Grundfoss / Kirloskar / KSB |
| 35 | Power Cable | Polycab/ Havells |
| 36 | Control Cables | Polycab/ Havells |
| 37. | Boilers accessories | Bidders to specify |
| 38. | Sewage treatment plant | URIEL/ Uttam Envirotech |

Sub -Section 2.5

Battery limits

| S. No. | |
|--------|---|
| 1 | <p>Civil structure</p> <p>All civil design, foundations, construction, RCC beams required for the plant supports shall be included in the scope of supplier</p> |
| 2 | <p>MS structure of any kind shall be provided by the supplier</p> |
| 3 | <p>Skim milk/Whole milk</p> <p>Skim milk/Whole milk with required SNF, Fat, required concentration & temperature as specified would be made available at the inlet of milk balance tank of the evaporation plant by Purchaser at a temperature of 6°C.</p> |
| 4 | <p>Product</p> <p>The milk powder shall be left by Supplier at sifter Further packing shall be done by purchaser in 25 kg bags manually.</p> |
| 5 | <p>Steam</p> <p>Dry saturated steam with header would be made available by the Purchaser at one point inside the plant building at following pressures:</p> <p>a) 17.5 bar (g) a) 9 bar (g) b) 3.5 bar (g)</p> <p>Further distribution shall be done by Supplier.</p> |
| 6 | <p>Chilled water @ 2 Deg C</p> <p>shall made available at header inside the building by the purchaser, further distribution shall be done by supplier</p> |
| 7 | <p>Soft water</p> <p>Made available at header in side the building by the purchaser, further distribution shall be done by supplier.</p> |
| 8 | <p>Condensate</p> <p>Will be collected by Purchaser from condensate transfer pump. Condensate Recovery Tank and Condensate pump from storage tank to boiler shall be in purchaser's scope</p> |
| 9 | <p>Electricity supply shall be provided by Purchaser at the inlet of MCC Panel.</p> <p>Further distribution shall be done by Supplier.</p> <p>All electrical approval from the respective government authorities shall be in purchaser scope of supply.</p> |
| 10 | <p>Compressed air</p> <p>Purchaser shall make available oil & moisture free air suitable for pneumatic instruments, at 6kg at header inside plant.</p> |
| 11 | <p>IBR Inspection from engineer shall be done by the purchaser</p> |
| 12 | <p>Any equipment or services not specifically mentioned in the scope shall be in purchaser's scope.</p> |

Sub -Section 2.6

Deviations from Technical Requirement

1. DEVIATION FROM TECHNICAL REQUIREMENT

- 8.1 This tender document provides guidelines for the processes and equipment to be used in tender package and the "basis of design" and the "standards and specifications", define the qualitative parameters against which equipment will be required to perform.
- 8.2 It is incumbent on bidder to provide a fully detailed list of equipment and services, which they intend to provide a fully execute the contract inline with the tender document.
- 8.3 At various points in the tender the purchaser has stated that alternative processes or alternative equipment will be considered. The bidder as part of the bid document shall provide the fully detailed list of such alternatives, together with a consider rationale for employing such alternatives.
- 8.4 Items, which deviate from the tender proposal, shall be as per design specification of the bidder and shall be treated as a deviation from the text of this tender document. Deviated item should fulfill the minimum performance parameters as specified in the tender.
- 8.5 This tender does not allow bidders to make exclusions from any part of tender packages for which they bid, and an incomplete list of equipment or an incomplete schedule of services to be provided would be considered as a non-responsive bid.

| Table 3 Technical Deviation Statement Form | | | |
|---|-------------------------|------------------|--------------------------------|
| Sr No | Clause Reference | Deviation | Remarks (Justification) |
| | | | |
| | | | |
| | | | |

Above are the particulars of deviations from the requirements of the tender specifications. The technical specifications furnished in the bidding document shall prevail over those of any other document forming a part of our bid, except only to the extent of deviations furnished in this statement.

Date

Signature of Authorised Signatory of Bidder/Supplier

NOTE: Where there is no deviation, the statement should be returned duly signed with an endorsement indicating "**No Deviations**".

Sub - Section 2.7
Drawings, Data & Documents

DRAWINGS to be ENCLOSED by the bidder

Proposed Layout Drawings

Proposed Automation Architecture

DOCUMENTS REQUIRED FROM THE BIDDER

2.7.1 The Bidder must enclose the following Drawings with the Offer:

- Layout showing proposed services/amenities.
- Proposed machinery layout for all the Sections of the powder plant. Machinery layout should also indicate the area and height requirement of the building.
- Product flow diagram including production equipment, service and product piping, controls instruments, automation, etc.
- CIP equipment arrangement and flow diagram.
- Utilities flow diagram including utility equipment, interconnection piping, controls, instruments, automation etc.
- Single line diagram for electrical distribution system.
- Control room configuration and layout to suit the space shown in tender drawing.
- Powder storage and movement arrangements, justifying storage space requirement.
- The bid shall include layout, schematic and hydraulic flow diagrams, and general arrangement drawings for the units and equipment.

2..2The Bidder must enclose the following Charts with the Offer

- Load histograms for:
 - a) Steam
 - b) Electrical Power
 - c) Water (soft & raw)
 - d) Chilled water

Each histogram is to be based on 24-hours basis and is to show clearly the hourly consumption, total daily consumption, peak load and average load.

- Hourly equipment wise Time Schedule based on 24-hour time scale.
- Bar chart for project execution including personnel training programme.

2..3The Bidders must enclose the following information in their Offer:

- Category wise staff requirement for various productions and utility Section of the plant on shift and daily basis.
- Literature covering general and technical information for all equipment covered within the scope of the tender.
- Detailed calculations for selection of process and utility equipment based on utility consumption and process requirements.

2.7.4 PERFORMANCE TESTS

The bidder is required to detail the documentation proposed for performance tests of all major items of equipment and all major processes and services plant. This shall detail the guaranteed vs. actual throughput or output or performance (as relevant) and the tolerance of accuracy. Also the test methods proposed to demonstrate that these guarantees have been met.

2.7.5 FORMATS OF GUARANTEES:

- Guarantees for throughput of various sections of plant.
- Product quality.
- Weight and Measurement tolerance.
- Milk solid loss
- Service consumption.
- Formats for performance tests.
- Procedure for carrying out the tests.
- Method of measurement
- Test duration
- Evaluation methodology

2.7.6 MATERIALS

Bidder is to provide full details of all consumable materials and chemical used in the plant.

IF THE DATA SHEETS ARE NOT GIVEN IN THE BID, THEN THE BID SHALL BE TREATED AS NON RESPONSIVE AND CAN BE REJECTED.

Sub- Section 2.8

Criteria for Technical Evaluation of Bids

1 TECHNICAL EVALUATION OF BIDS

The purchaser will evaluate and compare the technical merits of the bids based on the information supplied by the bidders taking in to account the following factors:

- 1.1.Suitability of the process with regards to ultimate product quality conforming to the standards specified in the tender.
- 1.2.Specifications of individual equipment as well as the system as a whole for material of construction, throughput, operating parameters, level of automation etc.
- 1.3.Energy efficiency of individual equipment shall be calculated for steam & power comparatively and system as a whole.
- 1.4.Product losses during processing and product manufacturing for individual equipment and ultimately in the effluent system.
- 1.5.Consumption of consumable materials.
- 1.6.Space requirement.

Sub- Section 2.9

Process Performance and Consumption Guarantees

1.0 PROCESS PERFORMANCE & CONSUMPTION GUARANTEE

If the plant or any part thereof does not give the agreed process performance and consumption guarantees during the warrantee period due to reasons attributable to the supplier, the supplier shall, subject to clause 2 and 3 below, the action shall be as detailed therein.

1.1. EQUIPMENT PERFORMANCE

- 1.1.1 **The satisfactory performance of the equipment/processing plant will be considered achieved if the plant operates above 98% of the rated capacity declared by supplier in the offer.**
- 1.1.2. If the performance is between 95-98% of the rated capacity, penalty will be calculated at 0.5 % of the rupee value of the contract, per 1% of shortfall.
- 1.1.3. If the performance is below 95%, the contractor will be required to upgrade the plant or replace the plant to comply with the above performance criteria. Otherwise the plant will be deemed unacceptable.

1.2. SERVICES REQUIREMENT

- 1.2.1. If measure demand of services in the plant is less than 102% of the consumption declared by the contractor, the buyer will accept that the service requirements has been achieved.
- 1.2.2. If the requirement of any of the services in the plant is between 102% and 105% of the declared demand, penalty will be charged at 0.5 % of every 1% rise in consumption for each of the services which falls in the category of excessive demand. For the purpose of this calculation, only the main services, steam, power and chilled water will be considered.
- 1.2.3. If the measured demand for services and energy is above 105%, the contractor will be required to up-grade the plant or replace the plant to comply with the declared performance criteria. Otherwise the plant will be deemed un-acceptable

Sub-Section 2.10
Bidders Meetings

1.0 BIDDERS MEETINGS

- 1.1. Details of the proposed pre-bid meeting are contained in instruction to bidder's section- II. This will be general meeting at which all purchasers of the tender document may attend.
- 1.2. Bidders may also request technical discussions with the Dairy / clients project team before the tender closing date. Subjects for discussion at the technical meeting may include:

- Project management
- Technical clarifications
- Scope of supply
- Concept of the design Processes
- Equipment designs
- Equipment suppliers
- Automation
- Plant management
- Quality control
- Existing equipment to be utilized in the job Battery limits
- Acceptable alternatives
- Equipment suppliers

This will be the only opportunity for bidders to discuss the project in detail with Dairy before the commercial bid opening, and all technical matters should be resolved at meetings.

Sub Section 2.11
Bidding Terms Deviation

| Bidding Terms Deviation Statement Form | | | |
|---|-------------------------|------------------|--------------------------------|
| Sr No | Clause Reference | Deviation | Remarks (Justification) |
| | | | |
| | | | |
| | | | |

Date:

Signature of Authorised Signatory of Bidder/Supplier

NOTE:

Above are the particulars of deviations from the requirements of the bidding conditions/ terms taken by the Bidder/Supplier?

Where there is no deviation, the statement should be returned duly signed with an endorsement indicating "No Deviations" above

Section 2.12
BID FORM & PRICE SCHEDULE
PROFORMA

BID FORM & PRICE SCHEDULE

(To be furnished in the letter head of the company)

Date

To ,

Dear Sirs,

Sub:

Ref:

Having examined the Bidding Documents, including the Addendum _____ we, the undersigned, offer to supply and / or supply and deliver Goods and Services including installation and commissioning as detailed in the price schedule, in conformity with the said Bidding Documents including the technical specifications and drawings (except to the extent of deviation statement furnished in our bid) and the Conditions of Contract as mentioned in or referred to therein for the sum of:

or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this bid and the said conditions.

We accept all the conditions of the Bidding Document in this Bid Form and this acceptance shall prevail over any other conditions, if any, given in our Bid.

We undertake, if our bid is accepted, to commence and complete delivery of all the Goods and Services as specified in the Schedule of Requirements of the Bid Document, from the date of receipt of your Purchase Order/Notification of Award.

If our bid is accepted we will obtain the bank guarantee as per the conditions of the Contract for the due performance of the Contract.

We agree to abide by this bid for the period of 60 days from the date fixed for bid opening and it shall remain binding upon us and may be accepted any time before the expiration of that period.

Until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and your Purchase Order / Notification of Award of Contract (NOAC), shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this day..... of 2018.

Duly authorized to sign bid for and on behalf of

Name of witness :

GWALIOR SAHAKARI DUGDHA SANGH MARYADIT
GOLA KA MANDIR: GWALIOR

Technical Bid

(To be submitted along with the Technical Bid)

CHIEF EXECUTIVE OFFICER
GSDS, GWALIOR

Dear Sir,

| | | |
|---|--|--|
| 1 | Name of the Co. /Unit | |
| 2 | Address of the Co/Unit | |
| 3 | Telephone Nos. (With STD Code) | |
| | Fax No. : | |
| | Email ID : | |
| 4 | Name of the CEO/Proprietor/Partner | |
| 5 | Name and designation of the authorized signatory of the Co./Unit | |
| | | |
| 6 | Particulars of Regn. Certificate issued by the competent authority | |
| | (Regn No. & Date) | |
| | | |
| 7 | GST No. | |
| | | |

Seal & Signature
Of Contractor

Gwalior Sahakari Dugdh Sangh Maryadit, Gola ka Mandir, Gwalior-474005 – Up gradation/renovation of Existing milk powder plant from 8.5 MTPD to 15 MTPD and boiler at Banmore-Morena

| | | |
|----|---|--|
| 8 | PAN No. (Permanent Account No.-Income Tax) | |
| 9 | Have your Co. /Unit or its sister concern ever been Black listed/debarred by any organisation or any milk union (Y/N) | |
| 10 | If Yes, when & Why? Give reason in details | |
| 11 | EMD details | |
| | Amount in Rs. | |
| | DD No. | |

12 Details of the works executed during the last 5 years of the same nature:-

| S. No. | Name of work | Cost of the work(Rs In Lacs) | Date of completion | Details of organization awarded the work etc. | | |
|--------|--------------|------------------------------|--------------------|---|--------------------|---------------------------------|
| | | | | Name of the organization | Work order No/date | Whether work completed (Yes/No) |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Seal & Signature
Of Contractor

Gwalior Sahakari Dugdh Sangh Maryadit, Gola ka Mandir, Gwalior-474005 – Up gradation/renovation of Existing milk powder plant from 8.5 MTPD to 15 MTPD and boiler at Banmore-Morena

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |
| | | | | | | |

NOTE:- Tenderer should submit copies of work order/completion certificate/Performance Certificate for work executed in last five (05) years.

Seal & Signature
Of Contractor

Gwalior Sahakari Dugdh Sangh Maryadit, Gola ka Mandir, Gwalior-474005 – Up gradation/renovation of Existing milk powder plant from 8.5 MTPD to 15 MTPD and boiler at Banmore-Morena

| Price Schedule Form | | |
|----------------------------|--|---------------|
| Summary Sheet | | |
| SN | Summary Heads | Amount |
| 1 | 2 | 3 |
| 1 | Basic Price Ex-factory | |
| 2 | Packing and Forwarding | |
| 3 | Transportation | |
| 4 | Insurance | |
| 5 | GST on Supply items | |
| 6 | Total Supply Price delivered at Site (1+2+3+4+5) | |
| 7 | Basic Installation & Commissioning | |
| 8 | GST on Installation and Commissioning | |
| 9 | Total Price for Installation and Commissioning (7+8) | |
| | Grand Total Bid Price (6+9) | |

Notes:

Bid must be submitted strictly as per this pro forma (Summary Sheet and items break-up sheet)

Price Bid to be uploaded in excel format only.

Signature of Authorised Signatory of Bidder/Supplier

Seal & Signature
Of Contractor

Price Break up Format

| SI No. | Item Description | Qty | Unit | Unit Basic Price (1) | Total Basic Price (2) | P & F (3) | Insura nce ((4) | Tra nsp orta tion (5) | GST (6) | Total Price supply with Tax {7= (2+3+4+ 5+6)} | Instalati on & commis soning (8) | GST on Install ation & Comm issioni ng (9) | Total Price of Installatio n (Rs. In lakhs) 10=8+9 | Grand Total Price of supply, erection, Installatio n and commis onig 11=7+10 |
|--------|---------------------|-----|------|-------------------------------|--------------------------------|-----------------|--------------------|-----------------------------------|------------|---|--|--|---|---|
| | | | | | | | | | | | | | | |

Seal & Signature
Of Contractor