

Bid Document/Specifications
for

Supply, Installation, Commissioning of Machinery and Equipment for
Common Incubation Centre on Turnkey basis at TEZPUR
UNIVERSITY, NAPAM, TEZPUR
ASSAM 784028



Name of the Host Institution: TEZPUR UNIVERSITY,
NAPAM, TEZPUR, ASSAM Place: TEZPUR, ASSAM

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NOTICE INVITING TENDER (NIT)

ET-NIT.....3733.....dated.....24-02-2023.....

Notice Inviting Tender for Supply, Installation, Commissioning of Machines and Equipment for Common Incubation Centre on Turnkey basis at TEZPUR UNIVERSITY, NAPAM, TEZPUR, SONITPUR, ASSAM

The Host Institute Tezpur University, Napam, Tezpur, Assam Intends to establish Common Incubation Centre (CIC) for processing of Fruits and vegetables, spices, extrusion line, bakery products and Food testing laboratory. The project is being funded by the Ministry of Food Processing Industries under Prime Minister Formalization of Micro Food Processing Enterprises Scheme (PMFME). After the Incubation Centre is fully commissioned, it will be handed over to third party/ private Operation & Management (O&M) agency for operation of Common Incubation Centre (CIC) for processing of Fruits and vegetable, spices, extrusion line, bakery products and Food testing laboratory.

The processing facilities of CIC will be made available to existing and aspiring micro entrepreneurs, SHGs, Co-operative and Groups etc. to manufacture their products with the use of plant and machinery of the Centre. In addition, these Incubation Centers will be utilized for imparting training, demonstration, and skill upgradation of the beneficiaries of the scheme.

Important Dates and Details of the Tender

S. No.	Particular	Details
1	Published of The Tender Notice	23-02-2023
2	Tender/Quotation fee	5000 (Five Thousand Only)
3	Earnest Money Deposit	400000 (Four Lakh only)
4	Last date and time for submission of Bids	16-03-2023 (2:00pm)
5	Date and Time of opening of Bids	17-03-2023 (2:00pm)
6	Place of Opening of Bids	Tezpur University

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TECHNICAL SPECIFICATION

List of Equipment's with specification for common incubation centre

1. PROCESSING LINE FOR FRUITS AND VEGETABLES BASED PRODUCTS

TECHNICAL SPECIFICATIONS

(i) Fruits and Vegetables based products			
SR No.	Equipment's	Capacity	Qty
1	Bubble Washer	250 Kg/hr	1
	Product Fruits Washer Type Of Washing Water Turbulence By Blower Air Feed Capacity 250 Kgs / Hr Material Of Construction SS 304 Grade Suitable motor will be provided Blower / Power Consumption Suitable Spray Nozzles Suitable Perforated Strainer Provided In The Bottom Power Supply 3 Phase / 415 V / 50 Hz		
2	Curing facility	250kg	1
	<p>Curing When roots and tubers are to be stored for long periods, curing is necessary to extend the shelf life. It is an effective operation to reduce the water loss during <u>storage</u> from hardy root and tuber vegetables such as potato, sweet potato, yam and other tropical vegetables where cuticle are poorly developed. They are relatively susceptible to mechanical wounding during <u>harvesting</u> and handling. These problems can be minimized by the process of 'curing' at intermediate to high temperature and high relative humidity (RH). During curing it develops periderm over cut, broken or skinned surfaces and helps in wound restoration. 'Curing is accomplished by holding the produce at high temperature and RH for several days, while <u>harvesting</u> wounds heals and new protective layers of cell forms around wound'.</p> <p>Advantages It helps in wound healing of harvest and handling injuries through skin hardening Reduce water losses Prevent infection from pathogen</p> <p>How curing happens? Curing is normally undertaken in the field, but in some case curing structure are employed. Produce can be cured in the field by piling them in a partially shaded area. Cut grass or straw can serve as insulating material, while, covering the pile with canvas, burlap, or woven grass matting. This covering will provide sufficient heat to reach high temperatures and high relative humidity. The</p>		

stack can be left in this state for up to four days.
 Curing in potato starts with deposition of suberin in parenchymatous cell just below the damaged area of the tuber.
 Suberin (a waxy waterproof substance found in the cell walls of many plants, especially corky in nature) is a group of fatty acids which provides initial protection to the tuber against water loss and infection.
 Subsequently, below the suberized cells a meristematic layer of cells is formed which is the periderm, also called as cork cambium This produces new cells which seal off the damaged area. But these processes are temperature and humidity dependent.

Optimum condition for curing of vegetables

Commodity	Temp(OC)	RH (%)	Days for curing
Potato	13-17	>85	7- 15
Sweet potato	27-33	>90	5- 7
Yam	32-40	>90	1- 4
Cassava	30-35	>80	4- 7
Garlic and onion	35-45	60-75	0.5-1 warm forced air

3 **Precooling** **250kg/h** **1**

Introduction
 Development of modern storage structures has made possible long term storage of fresh fruits and vegetables. Storage helps in orderly marketing, controlling market glut and preservation of quality of horticultural produce for much longer time. Storage aims to control various physiological and biological processes and keep the produce in maximum usable form. Hence, pre-cooling plays an important role to prolong the storage life of fruits and vegetables by removing the field / respiratory heat and by reducing the metabolic activities.

Importance of pre-cooling
 Pre-cooling is the first step of good temperature management of fruits and vegetables after harvest. It is essential practice in any successful cool chain management of horticultural produce. However, time and temperature are the two most important features of pre-cooling.
 Speed of cooling depends upon: Accessibility of produce to the refrigerating medium, Difference between the temperature of produce and refrigerating medium, Velocity of refrigerating medium, and Type of cooling medium.

Pre-cooling temperature
 Generally, horticultural produce are cooled to their storage temperature i.e., For example, grapes are cooled to 1-4°C, potato to 5-9°C, and (Do not wash with water).

	<p>Mango, tomato & banana to be cooled to > 10 °C. All fruits and vegetables are mostly cooled by room cooling and or mechanical refrigeration.</p> <p>Advantages of Pre-cooling Inhibition of the growth of decay causing organisms, Restriction of the enzyme activities, Reduction of water loss from the harvested produce, Reduction in rate of respiration and ethylene(C₂H₄) liberation, and Rapid wound healing.</p> <p>Air cooling Horticultural produce is placed in a room and allowed to cool by cold air. Room is insulated and air is cooled by refrigeration unit. It is a slow method and also called room cooling. Its cost is relatively low. Here heat transfer takes place by conduction. All fruits and vegetables can be cooled.</p>		
4	Size Grader	150 Kg/h	1
	BODY MADE OF MS IRON WITH PAINT COATED HEAVY DUTY IRON FRAME WITH IRON RODS,GRADING LEVEL 1+1, POWER-1.5 HP SINGLE PHASE,MOTOR MAKE:- CROMPTON,KIRLOSKAR,ABB ETC.		
5	Sorting Grading Table	Std.	4
	2mtrX0.8mtr. sorting or grading table for manual grading of fruits and vegetable, of food grade material will be provided (SS304)		
6	Cold storage 5°C	1000kg	1
	Capacity: 1000kg, Temperature range: 20°C to 5°C. Internal material SS 304, Chamber - Microprocessor based PID control system. Digital temperature and RH display; Standard grade refrigeration system with permitted refrigerant; Compressor suitable for refrigeration system. Cabinet system		

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TECHNICAL SPECIFICATIONS

SR No	Equipment's	Capacity	Qty
7	Deep freezer for frozen pulp	250 kg	2
	<p>Deep freezer is used for Hardening & Freezing of Frozen Dairy Product like pulp.</p> <p>Storage Capacity : 1200 Ltr</p> <p>Temp. Range : -18°C to -22°C</p> <p>Body : pre coated G.I</p> <p>Inner Bottom : S.S 304</p> <p>Compressor : hermetic Type</p> <p>Tube : 100% Copper Tube</p> <p>Insulation : PUF insulation with Density 40 Kg per m³, Thickness 65 mm</p> <p>Door : 4 nos.</p>		
8	Multifunctional fruits & Vegetable Cutters	100 kg/hr	1
	<p>Suitable for slicing vegetables or fruits like tomato, papaya, carrot, potato and pineapple etc. Unique design produces slices of 2, 3 mm thickness.</p> <p>Power: suitable motor, 415 V. Food Contacted part should be SS304/316</p>		
9	Fruit pulper cum finisher	100 Kg/h	1
	<p>Machine Pulper cum Finisher</p> <p>Products handled fruit and vegetable</p> <p>Handling capacity 100 kgs / hr</p> <p>MOC SS 304 Contact parts & MS Coated non-contact parts</p> <p>Different sieve size</p> <p>Refiner Drum SS 304</p> <p>Rotor SS 304</p> <p>Refiner door SS 304</p> <p>Inner screens SS 304</p> <p>Motor Suitable</p> <p>Power supply 3 Phase / 415 V / 50 Hz</p>		
10	Juice Extractor	200 Kg/h	1
	<p>Suitable for extraction of juice from Lemon, Orange. Consisting of SS Cabinet, with perforated jail, feed hopper / discharge chute</p> <p>Feed Capacity:100 - 150 kg/h</p> <p>Juice discharge through: SS 304 Perforated Mesh Strainer</p> <p>Juice Collection: SS 304 Collection Tank</p> <p>Peels Discharge: Through Bottom Discharge</p> <p>Peels Collection: SS 304 peels Collection Tank</p> <p>Motor Std.</p> <p>Surface finish : 150 Grit Matt finish</p> <p>Power Supply 1/3 Phase / 415 V/ 50 Hz</p>		

TECHNICAL SPECIFICATIONS

SR No	Equipment's	Capacity	Qty
11	Juice storage Tank	100 ltr.	2
	Machine Raw Pulp/juice holding tank MOC SS 304 Type Fixed Manual handling Holding capacity 100 Ltr. Side wall thickness 2 mm thick Handle SS 304 smooth round pipe handle Surface finish 150 Grit Finish		
12	Raw Juice Screw Transfer Pump	50l/h	1
	Machine Raw Pulp Transfer Pump Type Sanitary Type Handling Capacity 200 ltrs / hr Inlet / Outlet Suitable Motor Suitable Motor cover SS 304 Seals Food grade / High temp seals Power supply 3 Phase / 415 V / 50 Hz		
13	Blending cum Deaeration Tank	100 l	1
	Capacity: 100 Ltrs. Blending Tank with standard accessories, for preparing the blend of fruit pulp/Juce and other ingredients type with MOC S.S 304. It is inclusive of Agitator and motor of suitable Power and vacuum pump		



TECHNICAL SPECIFICATIONS

SR No	Equipment's	Capacity	Qty
14	Homogenizer	100 ltr/h	1
	Flow Rate (On water)	100 LPH	
	Product	Fruit juice	
	Maximum Pressure	400 Bar	
	Homogenizing Head	Two stages, manually operated	
	Homogenizing Valve & Valve Seat	Imported Stellite-material	
	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	2 HP @ 710 rpm	
	Rating Power	TEFC Electric Motor, 415 V, 3 Ph, 50 Hz	
	Suction Pressure	1 to 1.5 Bar	
15	Tube in tube filter for automatic delivery	100 ltr/h	1
	Inline Filter tubular type will be fitted in the line in order to remove the foreign materials from the juice. All the food contact surface should have food grade metal.		
16	Processed juice collection tank	100 ltr.	2
	Capacity 100 liters, All contact parts SS 304, with a provision for lid / cover. Suitable for Holding of ready beverage after pasteurizer,		
17	Processed juice transfer pump	50l/h	1
	Stainless Steel Centrifugal Monobloc Pump of sanitary design for transferring blended product, kid mounted/ movable.		
	Head	: 35 MWC	
	Impeller	: SS 316	
	Cover	: SS 304	
	Seal	: TC v/s TC Single Mechanical Seal	

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TECHNICAL SPECIFICATIONS

SR No	Equipment's	Capacity	Qty
18	Pasteurizer	100 l/h	1
	For juice and pulp, Capacity: 100 Liters per hr; Digital temperature indicator, MOC: contact part S.S 316 & non-Contact part S.S 304; electrical motor: suitable.; PID based pasteurizer with heating upto 95° C and cooling to 30° C. Provision of flow diversion valve and other accessories.		
19	Wash Machine for Packaging	100 bpm	1
	Suitable bottle washing unit for cleaning the bottle using water spray		
20	Pulp Packaging Unit - (½ kg to 5 kg packs)	200 pph	1
	500 kg SS 304 tank with nozzle for filling of pulp in desired packaging. Pneumatic impulse sealing machine, suitable to seal pouches Multilayer coextruded film, PP, PE, Metalized polyester of seal width 8-12 mm seal strength suitable for sealing the pulp bags. pneumatic control. Provision for Vacuum liquid filling machine to fill juices and any liquid material.		
21	Piston filler with capping provision	100 l/h	1
	Pneumatic piston Filler - suitable for filling viscous liquid like pulp/puree in jars/cans/plastic pouches. Variable filling range. Suitable for capping machine will be provided with accessory (200-1000mL)		
22	Cooling tank	300 l	1
	Capacity: 300 Litres. Horizontal type with MOC S.S 304. The cooled product will reach 4-5° C and maintain uniform temperature during storage.		
23	Labelling and printing system	100 bpm	1
	Suitable for mechanized printing on bottles should print Batch No. / Mfg date, Expiry / Net Weight etc. Inkjet printer with Conveyor. Automated		

2. PROCESSING LINE FOR FOOD GRAINS AND SPICES BASED PRODUCTS**TECHNICAL SPECIFICATION**

ii) Food products based on food grains and spices			
SR No	Equipment's	Capacity	Qty
1	Cleaning cum De-stoner cum Grader	150 kg/hr	1
	Purpose: Removal of Impurities like Stones and other Foreign Particles from small millets & other grains. Working Principle: Separation by mass of the particle Multiple sieve system must be included to handle the different grain.		

2	De-huller	150 kg/hr	1
	De-Huller will be used to remove husk from any grain or seeds with minimum damage to the bran layer and as far as possible not to break the grains. Contact parts of unit will be		
3	Polisher	150 kg/hr	1
	Function is to polish grains and others. Features: - Hassle free operation. High functionality.		
4	Rice Grinder/pulverizer	150 kg/hr	1
	It is suitable for grinding Rice, Urad dal and soybean. This pastes can be used to make idly, dosa and appalam etc. All food contact surface should be food grade metal with different sieve system		
5	Sieve shaker/Sifter	50 kg/hr	1
	Sieve shakers are devices designed to help promote particle movement through a stack of sieves, facilitating accurate particle separation. As the particle separate, they are retained on the various sieves depending on their size, providing insight into the average particle size of sample. All food contact surface should be food grade metal.		
6	Storage tank/bin	150 kg/bin	1
	It is made with high quality stainless steel SS304/316, which makes it very strong and durable. Easy to clean- it's shape is traditional considering ergonomic design which makes it easy to wipe and clean. Durable joints- its joints are neatly welded and hence are totally durable and will not dissemble with time.		
7	Noodle and pasta making machine	50kg/hr	1
	A Pasta machine is a tool designed to simplify the process of rolling and cutting egg noodles, or other kinds of dough to make fresh pasta. Easy to control with Automation. SS-304		
8	Vacuum Packaging machine	150 kg/hr	1
	Double chambers vacuum packaging machine can complete the set programs of vacuum extraction, gas flushing (optional), sealing, printing, cooling and exhaust automatically with Pneumatic control		

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3. SECONDARY PROCESSING LINE OF TURMERIC GINGER CHILLI AND SPICE POWDER

TECHNICAL SPECIFICATION

Secondary Processing of turmeric / ginger / Chilli / for spice powder / curry powder			
SR No	Equipment's	Capacity	Qty
1	Turmeric / Ginger washer cum peeler	300 kg	1
	Capacity: 300 kg/h; MOC: SS 304; Batch type Turmeric /ginger washer cum peeler will be provided. Customer has to continuously pour the water in chamber		
2	Turmeric steamer		1
	SS304/316 rectangular shaped jacketed tank with steam purging setup and temperature controlling unit will be provided, which will be used to heat the turmeric.		
3	Tray dryer / De-humidified dryer	96 trays	1
	Suitable for drying spices i.e. turmeric, Coriander, Cumin etc. from initial moisture of about 55-85% to final moisture of approx. 5% at 60°C within quickest possible time; Capacity: Approx. 200 Kg per day; Approx. 48 trays; Design: Hygienic design, non-rustable, non-flaking inner surface and food contact surface; Safety features: Proper insulation glass wool; sealing gaskets etc.; Complete protection from rodent entry; Overload protection; Other Specifications: Food Contact Parts / trays made with SS 304 or other suitable food grade material; PID electronic digital temperature controller; Adjustable temperature range; Dimensions suitable for efficient drying.		
4	Roaster (Rotary type)	100 kg/batch	1
	Type Roaster Products handled Semi dried spices MOC SS 304 Contact parts & MS Coated non-contact parts Roaster drum SS 304 Horizontal cylindrical drum Inner basket SS 304 Perforated basket Baffles SS 304 Baffles provided Mounting frame MS Coated mounting frame Heat Source Electrical heater coils Feeding Manual Discharge Manual Cycle time 10 – 30 min Variable Operating Temperature 80 – 120 °C Gear drive Shaft mounted worm reduction gear drive		

TECHNICAL SPECIFICATION

Secondary Processing of turmeric / ginger / Chilli / for spice powder / curry powder			
SR No	Equipment's	Capacity	Qty
5	Pulveriser	100 kg/h	1
	A pulverizer or grinder is a mechanical device for the grinding of many different types of materials. For example, a pulverizer mill is used to pulverize coal for combustion in the steam-generating furnaces of coal power plants.		
6	Vibro sifter	100 kg/h	1
	The Vibro Sifter machine works on the principle of gyratory vibrations. The material is separated based on its particle size. Once the motor gets energized.		
7	Blender	200 kg/batch	1
	Equipment Ribbon Blender Capacity 200 Kgs / Batch Material of Construction SS 304 Blending Spiral Surface Finish 150 Grit Gear Drive Gear Drive Motor Suitable Power Supply 3 Phase / 415 V / 50 Hz		
8	Continuous form Fill sealing machine	40 packs/minute	1
	Speed 40 pouches/min. Depending on the flow rate of the Material. Sealing type Three side seal / Central seal Packing Material Any heat sealable laminate. Filling System Auger Filler Weight to be Packed 50 grams -100 gram Material to be packed Non free flow Powder grinded sugar in a LDPE polybag., like species, Atta, masala, milk powder etc. MOC Contact part SS 304 other Power 3 phase 415 V Ac, 50 Hz. And Pneumatic control		
9	Solar dryer with multi rack tray system	1000 kg/batch	1
	Solar dryer for fruits; Capacity: 100 kg/batch. Drying temperature 60°C to 70°C; tray material: perforated SS 304; Cover-UV stabilized top cover with air blower.		

4. EQUIPMENTS FOR EXTRUSION LINE

TECHNICAL SPECIFICATION

Extrusion Line			
SR No	Equipment's	Capacity	Qty
1	Extruder	150 kg/hr	1
	<p>Compound & continuous rolling unit, 10 dough sheet roller noodle cutter Unit, CI & S.S. supporting structure</p> <ul style="list-style-type: none"> • Capacity: 150kg/Hr, • Hoper SS Material • Compound & Continuous Rolling Unit, • C.I. & S.S. Supporting Structure • Include Hard Tempered Chain System • Single screw • Two feeder system • Computerized <p>All Over Covering M/S with Powder Coating Paint</p>		
2	Steamer	150 kg/hr	1
	SS rectangular shaped jacketed tank with steam purging setup and temperature controlling unit will be provided, which will be used to heat the noodles.		
3	Tray dryer	50 trays	1
	Designed for uniform circulation of hot air in the drying chamber. Fresh air inlet with filter and outlet also with damper control valve.		
4	Packaging Machine (band sealing machine)	100-500 packs/hr	1
	<p>Model IP – 601 H/V</p> <p>Voltage (V/Hz) 220 / 50</p> <p>Power (W) 650</p> <p>Sealing Speed (m/min.) 0 – 12 (0 – 16)</p> <p>Sealing Width (mm) 8 ~ 10</p> <p>Temperature range (Deg.C) 0 ~ 300</p>		
5	Weighing balance	1-50 kg range	1
	<p>Capacity 50 Kg</p> <p>ACC 5 g</p>		
6	Packing Line (Band sealer)	500-1000	1
	Band Sealers are ideal for high volume packaging and sealing thermoplastic materials like polyethylene, plastic-lined, foil and gusseted bags of almost any size or length. Operating speeds can be set lower or higher without wear to the sealer.		

TECHNICAL SPECIFICATION

Extrusion Line			
SR No	Equipment's	Capacity	Qty
7	Spice Coating Drum	100 kg	1
	<p>Other geometrical shape and angle can Also be provided as per Requirement. RPM of pan is fixed with geared motor and pulley. Coating Pan is made of SS304 material and polished to the mirror finished from inside & outside. Easy mounting arrangement for change over from Coating pan. Consists of a suitable HP 2 Phase, 440 V, and 1440-RPM TEFC motor with suitable worm reduction gearbox and cone pulley arrangement.</p> <ul style="list-style-type: none">• Design is GMP - Current Good Manufacturing Practices compliance• All contact parts AISI 304• Conventional coating system for blending of all type of extruded snacks like: - Corn Puff, Kurkure, Namkeen, Fryums Etc.		



5. EQUIPMENTS FOR FLAKING OF FOOD GRAINS

TECHNICAL SPECIFICATION

Flaking of food grains			
SR No	Equipment's	Capacity	Qty
1	Grain Roaster	150 kg/hr	1
	Production Capacity: 150 Kg/Hour (Approx.) Max. Batch Capacity: 100 KG Working Volume: 400 Liters Contact Parts Material: SS 304 Non-Contact Parts Material: MS painted Motor Power: 3 HP 3 Phase RPM 415 V Temp Range: 20 To 240 °C Heating System: Electrical 24 KW		
2	Roller flaker	150 /hr	1
	Sides are covered with the 2 mm SS-304 plates fitted with chilled iron Rolls at 40 mm chilled, Hydraulic pump system fitted for Roll adjustment, Rotatory valve are fitted in the rolls to flow the water continuously, which is help to cool the rolls. Food grade Scraper Blades are fitted with adjustment system for clean the rolls, Feed Roll mounted over the flaker and heaving the high speed magnet system to detect the iron particles, fitted with 1 HP VFD. with electric Motor -12.5 HP Contact part S.S 304.		
3	Sieving Machine	150 kg/hr	1
	Contact Parts: SS304 Motor: 0.5HP 3Phase 415V 50Hz Wire mesh/Screen : SS304		
4	Packing Machine with Nitrogen filling	500-1000 packs/hr	1
	Delivers high outputs, technology and simple design provides excellent reliability in continuous operation. The machine forms, fills and seal from a roll of packaging material such as polyethylene, PET/Poly etc heat sealable laminate / virgin film printed or unprinted. Pneumatic Pouch Packaging Machine. Features: <ul style="list-style-type: none"> • Strip Cutting • Print Registration • Simple to operate, easy to maintain. • Sealing type: Center Seal Intermittent Type. • Former Assay: Three Size Former Assay & one Size Cup Filler Disk Included. • Temp Controller: PID Control, Digital 72*72 mm Controlled by contractor. 		

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	• Air filling : Nitrogen filling .		
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TECHNICAL SPECIFICATION

FLAKING OF FOOD GRAINS			
5	Ribbon blender (for mixing various types of grains for breakfast cereals)		200 kg -250 kg
	Mounting	Heavy Duty Channel Foundation	
	Capacity	200-250 kg/hr	
	Power requirement	10 H.P.	
	Feeding type	Manual Feeding	
	Contact parts	Made of SS-304	
	Internal nut bolts and screw	Included in SS-304	

6. BAKERY AND CONFECTIONARY EQUIPMENTS**TECHNICAL SPECIFICATION**

iii) BAKERY AND CONFECTIONARY PRODUCTS			
SR No	Equipment's	Capacity	Qty
1	Planetary mixer	100 kg/hr	1
	Capacity: 60 Ltr. Power: 2.2 Kw., With 1 No. SS Bowl, Whisk, Flat Beater & Hook.		
2	Dough Kneader	100 kg/hr	1
	30KG DOUGH KNEADER MACHINE Motor: - 1.5 HP, Single Phase with 1 Year Warranty Voltage: - 220v Frequency: - 50Hz Bowl Material: - Stainless Steel(2mm)		
3	Dough Sheeter	100 kg/hr	1
	The sheeter allows you to not only work the dough faster and more conveniently than you could with a rolling pin, but also to create dough of any thickness you desire, which would greatly improve the versatility of the dough.		
4	Rotary oven	100 kg/hr	1
	It is suitable for grinding Rice, Urad dal and soybean. This pastes can be used to make idly, dosa and appalam etc.		
5	Bread slicer	100 kg/hr	1
	To cut a loaf of bread into different thickness of slices quickly and precisely. Bread Slicer is perfect for slicing a variety of		

	<p>bread such as soft or hard-rusted bread depending on your requirements.</p> <p>Slice Thickness: 12mm, Power: 0.25 Kw., Voltage: 220V/50Hz,</p>		
6	Cookies dropper	100 kg/hr	1
	<p>To produce dense and hard dough using automatic forming and dosing on trays of liquid. This computerized machine is capable of storing 99 different programs making changeover simple and quick.</p> <p>Production Capacity: 90-100kg/hr Power: 3 HP Display Panel</p>		
7	Weighing Balance	1-50 kg	1
	<p>Capacity 50 Kg ACC 5 g</p>		
8	Packing line (Band Sealer/Hand Sealer)	500-1000	1
	<p>Band Sealers are ideal for high volume packaging and sealing thermoplastic materials like polyethylene, plastic-lined, foil and gusseted bags of almost any size or length. Operating speeds can be set lower or higher without wear to the sealer.</p>		
9	Stove, Baking moulds, trays, cutter, spoons, utensils, Cooling racks	Lot	1
	<p>Set of useful standard utensils like Stove, baking moulds, trays, cutter, spoons, utensils, Cooling racks and all other accessory</p>		

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7. FOOD Testing Laboratory Equipments

Processing Line: Food testing laboratory

TECHNICAL SPECIFICATION

Equipment required for Food Testing Laboratory			
SR No	Equipment's	Capacity	Qty
1	Hot air oven		1
	Double walled Construction, Outer body MS powder coated - Inner Chamber MS or SS 304 Grade. The gap between the two walls filled with glass wool insulation. Heating Elements placed at bottom, Temp Range: 50°C to 200°C Accuracy: $\pm 2^\circ\text{C}$ controlled by Thermostat. Supplied with S.S. wire mesh shelves as standard. Working on 230V AC 50 Hz Mains Supply.		
2	Soxhlet apparatus		1
	A soxhlet extractor is a laboratory apparatus for the extraction of lipids and other molecules from a solid sample. With multiple sampling system and all accessories.		
3	Protein – Kjeldhal apparatus		1
	Distillation Set housed in the upper box at a higher level and in lower portion a fume duct & heater box to accommodate Kjeldhal Flasks cap 300ml is provided.		
4	Fibre analyzer		1
	It is suitable for grinding Rice, Urad dal and soybean. These pastes can be used to make idly, dosa and appalam etc.		
5	Muffle furnace – ash content		1
	Features: Rectangular Chamber Totally enclosed ceramic muffle with heating elements of super Kanthal Wire Temperature Maxm. Working 1100oC. Two indicating lamps, fibre wool, insulation 230 V AC Mains 50 Hz. Temp Controlled by Microprocessor based PID Controller Cum indicator.		
6	Weighing balance		1
	Weighing Balance 500 gm Accuracy 0.01gm <ul style="list-style-type: none"> • 14 mm Ultra bright RED / GREEN LED Display • Piece counting, grams and carat • Inbuilt rechargeable battery for continuous use • Remote display available • Selectable different weighing modes Useful in Laboratory and General purpose weighing		
7	Laminar flow chamber		1
	Laminar Flow Cabinets complete with HEPA filter having efficiency of 99.997% down on 0.3% microns, pre-filter 90%		

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	down to 5 microns, suitable motor blowing assemblies. Working Table SS top, side Acrylic Panel, Fluorescent Tube lights & pressure differential manometer & castor wheels. Available in metallic construction with attractive Epoxy Powder Coating Finish.		
8	Autoclave		1
	Features: Double walled construction, Inner SS 304, Outer Body SS 304. Lid is of SS die pressed and fitted to the body / container tank by means of wing nuts & bolts working on fly nut system. The lid is fitted with a pressure gauge, safety valve, steam release cock and extra safety valve. Max pressure 18 psi / working pressure 15 psi. Supplied With S.S. Basket.		
9	Incubator		1
	Features: Double walled Construction, Outer Body MS powder coated, Inner MS or SS 304 Grade Chamber. Heating elements placed at bottom; Temperature range: 5oC above ambient to 60oC controlled by Thermostat, built in plexi glass window in the front door is provided for inner observation. Supplied with G.I wire mesh shelves as standard. Working on 230 V AC Mains 50 Hz.		
10	Refractometers		1
	A refractometer is a simple instrument used for measuring concentrations of aqueous solutions such as gases, liquids, and translucent solids		
11	pH meter		1
	pH meters are a common tool in the food processing context. Since acidity is often used as a means to preserve foods, a pH meter is required to confirm that the correct level of acidity is achieved in the product. A pH meter measures the acidity of a substance on a scale from acidic to alkaline		
12	Gun thermometer		1
	infrared thermometer designed to measure surface temperatures for the food industry.		
13	Glassware, pipette, etc.		1
	Graduated cylinders are thin and tall cylindrical containers used for volumetric measurements. Volumetric flasks are for measuring a specific volume of fluid glass pipettes used to transfer small amounts of liquids, but are not graduated or calibrated for any particular volume. The bulb is separate from the pipette body. Pasteur pipettes are also called teat pipettes, droppers, eye droppers and chemical droppers.		

Paula

8. EQUIPMENTS FOR FACILITIES AND CREATING UTILITY SERVICES

TECHNICAL SPECIFICATION

Upgradation of facilities and creating utility services			
SR No	Equipment's	Capacity	Qty
1	Boiler (Diesel fired)	Suitable	1
	Suitable capacity of boiler to be provided considering above process line. Suitable to run for multiple processing line simultaneously.		
2	Generator (Diesel)	Suitable	1
	Suitable capacity of Generator to be provided considering above process line.		
3	Fire safety setup	Suitable	1
	Need to setup desired fired safety setup.		
4	Steam piping + Insulation	Suitable	1
	Need to do full SS/MS/GI pipe and fittings with insulation wherever required.		
5	Electrification	Suitable	1
6	RO system/ Water treatment	Suitable	1
	Suitable capacity of RO Setup to be provided considering above process line.		
7	ETP Setup	Suitable	1
	Suitable capacity of ETP to be provided considering above process line.		

Hoile