



**PROCESS ENGINEERS**

Works : Baldev Nagar Camp, Ambala City-134 003 (Haryana)

Mailing Address : 549-i, Kanshi Nagar, Model Town, Ambala City.

Mobile : +91-98965-53394 ● E-mail: processengineers@yahoo.com

# **TECHNO-COMMERCIAL PROPOSAL FOR VEGETABLE PROCESSING EQUIPMENT**

**Capacity –15 TON/ HR. (INFEED)  
6.5 TON / HR. (FINISH)**

**PROPOSED BY**

**PROCESS ENGINEERS,  
AMBALA CITY , HARYANA  
INDIA**

**FOR**

**M/S VVR NATURALS PVT. LTD;  
VILL. THANT JUT, P.O RAJA KA TAJPUR  
DISTT. BIJNOR, UP - 246735**



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REF NO.– PE/24-25

DATE: 21/12/2024

To  
M/s VVR Naturals Pvt. Ltd;  
Vill. Thant Jut, P.O Raja Ka Tajpur  
Distt. Bijnor, UP - 246735

**Subject : Quotation For vegetable-processing equipments**

**Cap:- 15 ton/hr.(Infeed)  
6.5 ton/hr.(Outfeed)**

Dear sir,

We thank you for the valuable enquiry. We have great pleasure in proposing our best & most competitive offer, as enumerated below for your kind perusal. For your easy evaluation we have segregated the proposal as below:

- ❑ **Proposal with Basis of Design & Technical specifications**
- ❑ **Bill of quantity & price schedule**
- ❑ **Commercial Terms & Conditions [ MOU ]**
- ❑ **Exclusions**
- ❑ **Warrantee - Scope & Terms**

In case of any clarifications, please feel free to get in touch with us.

We trust our offer is in line with your requirement and look forward for your valued order.

Thanking and assuring you of our best attention and service at all times.

Yours Faithfully

**FOR PROCESS ENGINEERS**

SANJEEV KUMAR (9896553394)

For PROCESS ENGINEERS

  
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Dear Sir

Our proposal document includes:

- A. SALIENT FEATURES OF OUR VEGETABLE PROCESSING PLANT**
- B. DESIGN DETAILS**
- C. EQUIPMENT LIST**
- D. GENERAL SPECIFICATIONS**
- E. EXCLUSIONS**
- F. PERFORMANCE GUARENTEE**
- G. COMMERCIAL OFFER**

We trust you will find our offer in line with your requirements and look forward to the pleasure of receiving your valuable order at the earliest.

## **SALIENT FEATURES OF OUR PLANT:**

1. Technology with latest equipments and robust build up.
2. Plant suitable for extraction of various herbs.
3. All necessary safety parameters considered.
4. Bought out equipments from standard suppliers
5. Best product output without heat damage to the active ingredients.
6. User friendly and easy to operate

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## **B.DESIGN PHILOSOPHY:**

- 1. PLANT CAPACITY** : 15000 kg as input per hour.



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**2. BASIS OF OPERATION** : 300 Days / 24 Hrs per Day

**3. RAW MATERIAL** : Various Vegetables

**4. PROCESS BUILDING REQUIREMENT:**

Covered Area required : 50000sq.ft.( approx)

Space requirement for Raw material godown will depend on storage requirement.

**5. Utilities consumption - tentative**

Steam : 2000kg./hr.  
Power : 1200kva

**6. Utilities Requirement at Battery limits**

1. Steam:

Pressure : 7 kg/cm<sup>2</sup> (g), Dry saturated  
Quantity : 800 kg./hr.

2. Cooling Water ( Cooling Tower) ---- n/a

Supply pressure :  
Temperature :  
Capacity :

3. Chilled Water

Supply Pressure : n/a  
Temperature : 2-5 degree C  
Capacity : 25000ltr./hr.

4. Power

Supply Voltage : 415 V AC, 3 phase, 50 Hz  
Connected load : 1200 kva

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## D. EQUIPMENT LIST:

### A) PROCESS LINE

S.NO	EQUIPMENT DESCRIPTION	QTY
1.	<b>FEEDING ELEVATORS</b> Cap.- 3000 kgs. Of pods/hr.each Size – 550mm width x 4 mtr. Height Power – 5.0 h.p Suitable for feeding pea to the depodder. The equipment consists of : A) Modular Belt type conveyor with height of clit 100 mm, placed at a distance of 300 mm. B) S.S. 304 side guides & center guides for partition. C) S.S. feed hopper & discharge chute. D) Fixed speed drive with geared motor & sprockets E) S.S. framework with S.S. supporting.	05
2.	<b>PEA DEPODDER</b> Cap.- 3000 kgs. Of pods/hr./depodder Power – 60 h.p Suitable for depodding of peas. The equipment consists of :- A) Wooden beaters mounted on S.S. beater drum with adjustment arrangement for flow of product. B) Riddle drum fabricated from S.S. 304 sq. pipes with S.S.wire mesh of size 14 mm X 14mmX 2.5 mm thk. C) S.S. feed hopper & discharge chute. D) Apron conveyor (imported) with S.S. framework, M.S drive & driven roller & arrangement for adjustment of apron conveyor. E) S.S framework for mounting of beater drums & riddle drum F) Fixed speed drive with geared motor & sprockets.	05
3.	<b>WASTE COLLECTION CONVEYOR</b> Cap.-10,000 kgs. Of waste/hr.	01

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	<p>Size – 800 mm x 13.5 mtr. Length</p> <p>Power – 2 h.p</p> <p>Suitable for collecting &amp; carrying waste discharged from depodders. The equipment consists of :-</p> <p>A) PVC coated food grade endless belt (imported).</p> <p>B) Side guide, rollers, framework will be from S.S.304.</p> <p>C) Fixed speed drive with geared motor with S.S. base Plate &amp; motor c</p>	
	<p><b>BUCKET ELEVATOR</b></p> <p>Cap.-10000 kgs. Of waste/hr.</p> <p>Size – 600 mm x 3 mtr. Length</p> <p>Power.- 1.0 h.p</p> <p>Suitable for carrying the product to recovery drum. The equipment consists of :-</p> <p>A) S.S. 304 framework with supporting.</p> <p>B) Perforated buckets with side gaurds at both sides.</p> <p>C) Sprockets with S.S. shaft &amp; bearings for driving buckets.</p> <p>D) Fixed speed drive with geared motor.</p>	01
5.	<p><b>RECOVERY DRUM WITH GRAIN CONVEYOR</b></p> <p>Cap.- 10,000 kgs. Of waste/hr.</p> <p>Size – 1.5 mtr. Dia. X 6.3 mtr. Length</p> <p>Power.- 20 h.p</p> <p>Suitable for separating of pea grains waste. The equipment consists of :-</p> <p>A) S.S. perforated drum of perforation size 15 mm. Dia.</p> <p>B) Apron conveyor with S.S. framework &amp; rollers for Separating grains skin pods. suitable blower with Ducting for cleaning of holes regularly.</p> <p>C) S.S. framework with supporting.</p> <p>D) S.S. feed hopper &amp; discharge chute.</p> <p>E) Fixed speed drive with geared motor.</p>	02
6.	<p><b>WASTE DISCHARGE CONVEYOR/ELEVATOR</b></p> <p>Cap.- 10000 kgs. Of waste/hr.</p> <p>Size – 700 mm x 5 mtr + long</p>	01

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	<p>Power – 1 h.p</p> <p>Suitable for carrying waste from recovery drum to loading vehicle. The equipment consists of</p> <ul style="list-style-type: none"> <li>A) PVC conveyor</li> <li>B) S.S. 304 side guides &amp; center guides for partition</li> <li>C) S.S. feed hopper &amp; discharge chute.</li> <li>D) Fixed speed drive with geared motor &amp; sprockets.</li> <li>E) S.S. framework with S.S. supporting.</li> </ul>	
	<p><b>CROSS COLLECTION CONVEYOR</b></p> <p>Cap.- 6500 kgs./hr.</p> <p>Size – 800 mm x 4.0 mtr. Length</p> <p>Power – 4.0 h.p</p> <p>Suitable for collecting peas from depodders &amp; carrying them to grain conveyor. The equipment consists of :-</p> <ul style="list-style-type: none"> <li>A) PVC coated food grade endless belt (imported).</li> <li>B) Side guides, rollers, framework will be from S.S.</li> <li>C) Fixed speed drive with geared motor with S.S. base Plate &amp; motor c</li> </ul>	03
8.	<p><b>GRAIN CONVEYOR</b></p> <p>Cap.- 6500 kgs./hr.(one no.)</p> <p>Size – 800 mm x 3.5 mtr. Length</p> <p>Power – 2.0 h.p</p> <p>Suitable for collecting peas from pod sorter &amp; carrying them to elevator equipment consists of :-</p> <ul style="list-style-type: none"> <li>A) PVC coated food grade endless belt (imported).</li> <li>B) Side guides, rollers, framework will be from S.S.</li> <li>C) Fixed speed drive with geared motor with S.S. base Plate &amp; motor c</li> </ul>	01
8.	<p><b>POD SORTER</b></p> <p>Size- 1.25 mtr x 600 mm(top)</p> <p>Hole size- 14 mm. round</p> <p>Power – 1 h.p</p> <p>Suitable for collecting pea from cross collection &amp; separating the pods depoded peas , transferring the same to the bucket elevator.</p> <p style="text-align: right;">For PROCESS ENGINEERS <i>[Signature]</i> Auth. Signatory</p>	03



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<b>9. BUCKET ELEVATOR</b>	01
<p>Cap.- 6500 kgs. Of grains/hr. Size – 700 mm x 3 mtr length Power – 1.0 h.p Suitable for carrying the product to winower. The equipment consists of :- A) S.S. framework with S.S. supportings. B) Modular belt of 100 mm.clit height with perforated buckets &amp; side guards at both sides. C) Sprockets with S.S. shaft &amp; bearings for driving the buckets. D) Fixed speed drive with geared motor &amp; sprockets.</p>	
<b>10. VIBRATORY WINOWER WITH POD STICK ELIMINATOR VIBRATOR</b>	01
<p>Cap.- 6500 kgs./hr. Size – 800mm x 3.0 mtr. Length Power – 1.5 hp Suitable for removing skin, floaters &amp; warms from the product. The equipment consists of :- A) S.S. Perforated tray placed above SS slotted tray in first section .in second section the perforated tray is above counter conveyor .A blower of suitable capacity is placed above the perforated tray to remove pod skins. B) S.S. supporting with S.S framework &amp; SS stairs with SS platform. C) Blower of suitable capacity. D) S.S. discharge chute with perforated base. E) Double Stage Conveyor System &amp; suitable blower to ensure the removal of pod skins &amp; conveyor system with suitable hopper for discharge of pods F) Fixed speed drive for shaker &amp; blower with electric motor.</p>	
<b>11. BUCKET ELEVATOR</b>	01
<p>Cap.- 6500 kgs. Of grains/hr. Size – 700 mm x 3mtr length Power – 1.0 h.p Suitable for carrying the product to even feed hopper. The equipment</p>	

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	<p>consists of :-</p> <p>A) S.S. framework with S.S. supportings.</p> <p>B) Modular belt of 100 mm lit height with perforated buckets &amp; side guards at both sides.</p> <p>C) Sprockets with S.S. shaft &amp; bearings for driving the buckets.</p> <p>D) Fixed speed drive with geared motor &amp; sprockets.</p>	
12.	<p><b>EVEN FEED HOPPER</b></p> <p>Size – 1200 mm. x 1200 mm. x 1200 mm.</p> <p>Storage Cap. – 1000 kg.</p> <p>Power – 0.5 hp.</p> <p>Suitable for even feeding of product to the line ahead. So as to avoid temp. deviation.</p>	01
13.	<p><b>CONVEYOR</b></p> <p>Cap.- 6500 kgs. Of grains/hr.</p> <p>Size – 700 mm x 4 mtr length ( Variable according to the position at site)</p> <p>Power – 1.0 h.p</p> <p>Suitable for collecting peas from even feed hopper &amp; carrying them to washer. The equipment consists of :-</p> <p>A) PVC coated food grade endless belt (imported).</p> <p>B) Side guides, rollers, framework will be from S.S.</p> <p>C) Fixed speed drive with geared motor with S.S. base Plate&amp; motor cover.</p>	01
14.	<p><b>S.S BELT TYPE WASHER</b></p> <p>Cap.- 6500 kgs./hr.</p> <p>Size – 1mtr. width x 5 m long</p> <p>Power – 2.0 h.p</p> <p>Suitable for washing OF leafy &amp; root vegetables, &amp; removing of foreign particles from the product. The equipment consists of :-</p> <p>A) S.S. balance tank with S.S. centrifugal pump &amp; turbine blower.</p> <p>B) S.S. flume suitable for washing of product &amp; removal of stone &amp; other solid particles.</p> <p>C) Arrangement for washing of product by fresh water&amp; removing fore material.</p> <p>D) Fixed speed drive with geared motor.</p>	01 set

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15.	<p><b>S.S. BELT TYPE BLANCHER</b></p> <p>CAP.- 6500 kgs/hr. SIZE – 1.2 mtr. X 10 mtr. LENGTH (STRAIGHT) POWER – 2.5 H.P</p> <p>Suitable for blanching of product. The equipment consists of :-</p> <ul style="list-style-type: none"><li>A) S.S. outer shell with hinged top covers.</li><li>B) PP Perforated belt (modular) to withstand 180 c temp.</li><li>C) S.S. feed &amp; discharge chute.</li><li>D) VFD drive with geared motor.</li><li>E) S.S pump with duplex filter system to spread water on the product.</li><li>F) PLC Controlled Pneumatically operated solenoid valve assembly with temperature controller.</li><li>G) Steam Spray Nozzle Assembly Placed Under &amp; above the Belt. Water spray assembly placed over the belt &amp; two water level controllers.</li><li>H) PLC with touch screen to control Speed of belt &amp; temperature.</li><li>I) Suitable to adjust blanching temp. between 70 - 94°C &amp; time between 90 – 600 seconds.</li><li>J) Blancher belt is food grade modular belt &amp; mounted as such to enable cleaning without removing belt.</li><li>K) Blancher is suitable for steam blanching, Hot water spray blanching &amp; water dip blanching.</li></ul>	01
16.	<p><b>BELT TYPE AFTER COOLER – THREE STAGE</b></p> <p>CAP.- 6500 kgs./hr. SIZE – 1200 mm Dia. X 7 m LENGTH POWER – 5 H.P</p> <p>Suitable for cooling of product upto 15 c provided feeded by water of temp. 7c. The equipment consists of :-</p> <ul style="list-style-type: none"><li>A) Modular belt frame mounted on SS frame.</li><li>B) S.S. centrifugal pump one nos. with two nos. S.S. balance tanks with filters.</li><li>C) S.S. pipe line up to tanks.</li><li>D) SS Flume for pre cooling of product will be installed between blancher &amp; cooler.</li></ul>	1 Set

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17.	<p><b>DEWATERING SHAKER</b></p> <p>Cap.- 6500 Kgs./Hr.</p> <p>Size – 800 Mm X 3.0 Mtr.</p> <p>Power – 1.0 H.P</p> <p>Suitable for removing of water from the surface of product. The equipment consists of :-</p> <p>A) S.S. slotted tray with S.S. guides &amp; rosta mountings</p> <p>B) S.S. hooper for collecting waste &amp; drain water.</p> <p>C) Suitable 2 no. Vibratory motors of repute make.</p>	01
18.	<p><b>INSPECTION CONVEYOR</b></p> <p>Cap.- 6500 kgs./hr.</p> <p>Size – 1 mtr. width x 5 mtr length</p> <p>Power.- 1.0 h.p</p> <p>Suitable for manual inspection of product. The equipment consists of :-</p> <p>A) PVC coated food grade endless belt (imported).</p> <p>B) Side guides, rollers, framework will be from S.S.</p> <p>C) Platforms on both sides with railing &amp; stairs for comfortable working</p> <p>D) Variable speed drive with VFD &amp; geared motor with S.S. plate</p>	01
19.	<p><b>PRECOOLER</b></p> <p>Cap.- 6500 kgs./hr.</p> <p>Power – 19.5p.</p> <p>The product is taken over from the Inspection Conveyor. The belt is moving through a cabinet where outside air is taken in by means of fans and blown through the product and discharged again.</p> <p>The achieves a relatively easy temperature drop from 5-10°C depending upon incoming product temperature. The belt of the ambient cooling tunnel is designed in such a way that the product is directly dropped over to the IQF Feed Elevator. The retention time in the ambient air-cooling tunnel is</p> <p><i>approximately 4 minutes.</i></p>	01

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20.	<b>BUCKET ELEVATOR FOR IQF</b> Cap.- 6500 kgs. Of grains/hr. Size – 800 mm x 3 mtr. Length Power.- 1.0 h.P Suitable for carrying the product of blancher. The equipment consists of :- A) S.S. 304 framework with supporting. B) Perforated buckets with 100 mm. slit height & side dischargers at both sides. C) Sprockets with S.S. shaft & bearings for driving buckets. D) Fixed speed drive with geared motor.	01
21.	<b>ELECTRICAL PANEL WITH CABLE &amp; CABLE TRAY, INTERNAL PIPELINING C MACHINES, ERECTION &amp; COMMISSIONING</b>	01 LOT

**\*\* Total power required----- 131.5 H.P**

**\*\* COST: Rs. 4,00,00,000 /-**

**\*\*IGST@18% :- Rs. 7200,000/-**

**\*\*TOTAL COST: Rs. 4,72,00,000/-**

## B) IQF

### BASIS OF DESIGN:

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ROOM SIZE	12500mm x 5975mm x 4500mm
PRODUCT TO BE STORED	GREEN PEAS
PRODUCT INCOMING TEMPERATURE	18 DEG C
ROOM TEMPERATURE	MINUS 35 DEG C
FREEZER ROOM COOLING LOAD	202TR
CAPACITY	6500 KG/HR
POWER LOAD	115 KW
FINAL PRODUCT TEMP	MINUS 20 DEG C



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## FLUIDISED IQF FREEZING TUNNEL

The fluidised freezing tunnel (IQF) is the most popular quick-freezing device. Using the fluidisation Technology, the processed product behaves like a boiling liquid: air driven by fans, flows through the evaporator, and then through the perforated belt, causing the product to move, preventing it from sticking to each other.

## MODULAR BELT:

Modular, perforated Poly Actel Belt, dedicated to IQF tunnel with Opening of 21 to 23% for excellent air circulation and drainage. The Smooth surface is easy to clean and Suitable for the temperature application.

## CONVEYOR TRACK SYSTEMS:

The IQF Tunnel Freezer Conveyor track are with two independent tracks and two separate pressure chambers for stable fluidising. The conveyor tracks are fabricated with Stainless steel 304 structures.

## IRS (ICE REMOVAL SYSTEM):

A device for removing Soft Ice frost from the Cooling Coil with the use of blasts of compressed air. Which Help in Extends the working time of the IQF tunnel between frosts up to 22 hours.

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## AMMONIA COOLING COIL:

The Cooling Coil supplied is made of Stainless Steel Tube and Aluminium Fin with Stainless Steel Body Construction Suitable for the IQF Tunnel.

## AIR CIRCULATION FANS:

The Air Flow for Maximise the Fluidising is been done by the energy efficient





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## PLC CONTROL PANEL:

PLC Control panel of the IQF Tunnel allows you Control the operation of all tunnel components without the need to enter its interior. The system is operated via a colour touch panel a communication interface, a remote maintenance connection .The menu navigation for fault handling as well as for maintenance and service work .All drives are designed in the energy efficiency class IE3 and are controlled by frequency inverters.

## HYGIENIC DESIGN:

The insulating floor and the insulating walls are Prefabricated Puff Panels with SS304 0.5mm thick Sheet Laminated Either Side. The floor sheet area is designed with slope and extra-large drains. The system is fully accessible for cleaning. The "hygienic design" and the tool-free disassembling of the frequently cleaned system component allow for effective cleaning.

## QUICK INSTALLATION:

The system is completely pre-assembled for transport, it is unloaded into individual modules and then finally assembled on site on a foundation in a few days. After short commissioning and training, the system is ready for production immediately.

## LONG OPERATION

The IQF Tunnel has air coolers made of stainless steel tubes with aluminium fins and large fin spacing. The ice removal system makes it possible to continuously blow off the fins with air out of the system. With an externally extended infeed, it is possible to wash and dry the belt while the system is still cold, for a virtually continuous operation.

## INFEED SHAKER:

The iqf tunnel has provided with the infeed equal sperader with de watering system which is Fabricated with Stainless Structure 304 With Vibrating Motors and Welded Wedge Screen for hassle free operation.

**Scope Item Supply with Make and Specifications:**

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S.No	Description	Make
1	IQF BELT Size 1000mm Width x 30000mm Total Length x 50mm Pitch. Material POM Colour Blue	MODUTECH/FORBO/SCANB
2	FAN : Backward Curve Plug Fan Impeller Dia 800mm-39000CMH MS Epoxy Painted With Motor 18.5 Kw 4 Pole - 6 Set	TCF & ABB
3	Air Cooling Coil 5000mm Length x 1800mm Width x 900mm Height - 2 Set	ALFA LUVE
4	Gear Drive Motor for Conveyor 1 & 2 and Plustuvator 0.55 Kw , ADF -0.25 Kw	NORD
5	Electrical Control Panel : Enclose SS304 , PLC-Siemens, HMI-Wenintek : 7" Wide Touch Screen VFD 1.1 Kw - 4 Nos for Conveyor, ADF& Pulsuvator, All Switch Gears L&T	PLC - SIEMNES , HMI- WENINT, VFD DANFOSS/ALLEN BRADLEY, SWITCH GEARS : L&T/SCHNIDER
6	Electrical InterConnecting Cables from Control Panel to Motors	LAPP MINUS 40 DEG CV
7	Puff Panel: 150mm Thick With 0.5mm Thick SS 304 Lamination Sheet on Either Side	ISOLLOYOD/KINGSSPAN JIN METEC.
8	IQF Access Door : 600mm Width x 1350mm Height - 2 Nos & 600mm Width x 1000mm Length - 1 No	METAFLEX
		PROCESS
10	Infeed Shaker With SS 304 Structure and SS Welded wedge Screen Removal Type 2400mm Length x 800mm Width With Vibrio Motor -1.35 Kw - 2nos Make SINEX	PROCESS
11	Air Screw Compressor 250 CFM @ 10 Kg/Cm2 Heat Less Drier, Receiver 2000 Ltr -2Nos, with Pre Filter & Carbon Filter And Auto Purge valves	Colt
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**\*\* COST: Rs. 4,50,00,000 /-**

**\*\*IGST@18% :- Rs. 81,00,000/-**

**\*\*TOTAL COST: Rs. 5,31,00,000/-**

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## C) BOILER

Cap.- 2000 kg./hr.(Multifuel Fired)

### TECHNICAL DATA SHEET

#### 1. GENERAL:

MODEL	:	MULTI-PURPOSE 2000 KG/HR
TYPE OF BOILER	:	MULTI-TUBULAR PACKAGE WATER CUM SMOKE TUBE, THREE PASS BOILER
NO. OF BOILER TO BE SUPPLIED	:	ONE
MAKE	:	Steam Tech

#### 2. PARAMETERS OF THE BOILER:

STEAM CAPACITY	:	2000 KG/HR. (AT F & 100°C)
STEAM PRESSURE (KG/CM <sup>2</sup> )	:	10.54 KG/CM <sup>2</sup>
STEAM	:	SATURATED
FUEL TO BE USED	:	Multifuel
TOTAL HEATING SURFACE AREA	:	80 M <sup>2</sup>

#### SCOPE OF WORK & SCOPE OF SUPPLY

##### SCOPE OF WORK:

DESIGN, FABRICATION AND SUPPLY OF COMPLETE BOILER FOR 2000 KG/HR (AT F & 100°C) BOILER CAPABLE OF GENERATING STEAM AS PER TECHNICAL SPECIFICATIONS ENCLOSED.

#### SCOPE OF SUPPLY

##### STEAM BOILER

##### PRESSURE PART

BOILER SHELL IBR  
WATER WALL MEMBRANE  
INCLUDING SMOKE CHAMBER  
MOUNTING AND FITTING

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## NONPRESSURE PARTS

Boiler Front and Rear Smoke Box  
Air Preheater with smoke box and hopper  
Unicyclone with slide action damper

## MCC CONTROL PANEL (AUTOMATIC)

Electricals  
Relays  
Controls  
Switch gears  
Contactors  
Thermocouple

## Accessories & Others (MANUFACTURER SCOPE)

Unicyclone with slide action damper  
Air Preheater with smoke box and hopper  
Boiler Feed Pump - 2 nos.  
ID Fan with Motor 1HP  
FD Fan with Motor 1HP  
Plenum Chamber  
SS Airjet Nozzles  
Fire Door 2 nos.

## TECHNICAL DETAILS


### Steam Boiler

Pressure Parts consisting of the following:

#### Steam Drum

The boiler shall be provided with shell and is of fusion welding construction. The shell is provided with end plates, fitted with tubes, Manhole, Hand Hole doors. The thickness of the shell will be designed based requirement as specification under **INDIAN boiler regulation 1950** with latest amendments.

For PROCESS ENGINEERS

  
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Material of Shell :	ASTM A 516/2002GR2-1992(RA2007)
Material of Tubes :	BS 3059:1987 PTI ERW 320
Boiler Shell :	1600MM X 2000MM X 2 MM
Boiler Tube sheet :	1576MM X 1576 MM X 1 MM



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Tube Size : 63.50 MM OD X 3.66 MM  
ERW Water Wall Panel : 63.50 MM OD X 3.66 MM  
ERW Water Wall Top Headers : 168.3MM OD  
SEAMLESS SCH.40 Bottom Headers: 141.3MM OD  
SEAMLESS SCH.40

## Mounting & Fittings

Main Steam Stop Valve	:	1 No.
Safety Valves	:	2 Nos.
Blow down valve	:	1 No.
Air vent Valve	:	1 No.
Gauge glass cock with drain valves	:	2 Sets
Gauge glass header	:	1 Nos.
Feed check valve on water line	:	1 No.
NRV for feed-water pump	:	3 No.
Pressure gauge with siphon & cock	:	2 No.
Mowbray Control System (Water Auto Cut)	:	1 No.
Isolation valves for Mowbray	:	2 No.
Drainage Valve for Mowbray & Gauge Glass Header.	:	1 No. Each
Valve for Pressure Switches	:	1 Nos.
Pressure Switch	:	1 Nos.
Pressure switch header	:	1 Nos.
SS316 Dial pressure gauge 10"	:	1 No.

## INSTRUMENT CONTROL AND SAFETY

Automatic water level controller for Pump on/off at the set level switch.  
Alarm at low water level.  
Boiler shutoff at extra low water level & Alarm.  
Fusible Plug on the same boiler in case of extra extra low water level.  
Pressure switch for Fan cut-off & in at desired/set pressure.  
Safety Interlock

- o Fan cannot be on unless ID Fan not running.
- o A boiler cannot be operated unless the pressure is less than the set pressure in the pressure switch.

Pressure gauge for steam and water pressure.  
Manually controlled damper for fans.

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## BATTERY LIMITS

Steam - At the outlet of Main Steam Stop Valve/ Safety & Air vent



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## Valve

Soft water -	Inlet to Feed Water Pump
Fuel -	Inlet to Feeder
Electricity -	Inlet to Motor terminals and control panel
Blow Down -	Outlet flange of blowdown valves
Flue Gases -	Outlet below flange of ID Fan

## SHELL & TUBE BOILER MATERIAL FOR CONSTRUCTION

SHELL MATERIAL	SA516GR 70.
TUBE SHEET MATERIAL	SA516 GR 70.
TUBES	BS-3059 PART 1 320 ERW
PIPE (NOZZLES)	SA 516 GR B (AS PER IBR CODES)
FLANGES	SA105/SA515/516GR70 (AS PER IBR CODES)

## FEEDWATER PUMPS

TYPE	VERTICAL
NOS.	2
CAPCITY	2 M <sup>3</sup> / HOUR EACH
HEAD	180 MTR
RPM	2900 RPM
MOTOR RATING	2 HP
MANIFOLD	INLET AND OUTLET

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## AIR PREHEATER

ALIGNMENT	HORIZONTALLY ALIGNED
TYPE	MUTLITUBULAR TYPE
ARRANGEMENT	STAGGERED TYPE ARRANGEMENT
FLOW MEDIUM INSIDE TUBE	FLUE GAS
FLOW MEDIUM OUTSIDE TUBE	AIR



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DUST COLLECTOR	
PRESSURE DROP ACROSS CYCLON	100 MMWG
DUST OUTLET	<350 MG/NM <sup>3</sup>
	<10 M/S

TYPE	CENTRIFUGAL
DESIGN	BACKWARD INCLINED
CAPACITY	3000 CMH
PRESSURE	300 MMWG
MOTOR RATING	7.5 HP
COUPLING TYPE	DIRECT-COUPLED

INDUCED DRAFT FAN	
TYPE	CENTRIFUGAL
DESIGN	BACKWARD INCLINED
CAPACITY	7500 CMH
PRESSURE	250 MMWG
MOTOR RATING	10 HP
COUPLING TYPE	SHAFT DRIVEN WITH PULLEY AND BELT

ELECTRICALS	
MAKE	STEAMTECH
RATED VOLTAGE	415 V
	LT/ SCHNIEDER

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S. NO	ITEM	MAKE OR BRAND





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1.	STEEL	SAIL
	TUBES	TATA/JINDAL/EQUI.
	FANS	STEAMTECH
	FEED PUMP	ALGO/LEO/ EQUI.
	GEARED MOTORS	ABB/EQUI.
	WATER LEVEL GAUGES	MAHAVIR
	PAINTS	BERGER
	CYCLONE	STEAMTECH

VALVES		
1. I		MAHAVIR
2.	SAFETY VALVES	SAFECON/EQUI.
3.	BLOWDOWN VALVES	MAHAVIR

CASTING		
1. M		STEAMTECH
2.	FIRE DOORS	STEAMTECH
		STEAMTECH

ELECTRICALS		
1.	LT MOTORS	ABB/ EQUI.
	MCC PANEL	STEAMTECH
	SWITCH GEAR	L&T/ SCHNIEDER/ EQUI.

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1.	PRESSURE GAUGES	H. GURU/WAREE
	PRESSURE SWITCH/ TEMPERATURE SWI	TRAFAQ

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		SWITZERLAND
3.	THERMOCOUPLE/GAUGE	WAREE

S. NO.	CHARACTERISTICS (FEEDWATER)	FOR 1017.5 KG/CM <sup>2</sup>
	TOTAL HARDNESS (CaCO <sub>3</sub> ) mg/ltr MAX	5.0
2.	Ph value	8.5 to 9.0
	DISSLOVED OXYGEN mg/ltr MAX	0.02
	SILICA (SiO <sub>2</sub> ) mg/ltr MAX	0.05
S. NO.	CHARACTERISTICS (BOILER WATER)	FOR 1017.5 KG/CM <sup>2</sup>
	TOTAL HARDNESS (CaCO <sub>3</sub> ) mg/ltr MAX	5.0
2.	TOTAL ALKALINITY (CaCO <sub>3</sub> ) mg/ltr MAX	
	CAUSTIC ALKALINITY (CaCO <sub>3</sub> ) mg/ltr MAX	200
4.	Ph VALUE	10.5 TO 11.0
	RESIDUAL SODIUM SULPHITE (Na <sub>2</sub> SO <sub>3</sub> ) mg/ltr MAX	
	RESIDUAL HYDRAZINE (NH <sub>2</sub> ) mg/ltr MAX	
	PHOSPHATES (PO <sub>4</sub> ) mg/ltr (IF ADDED)	15 TO 30
8.	TOTAL DISSOLVED SOLIDS mg/ltr MAX	2000
	SILICA (SiO <sub>2</sub> ) mg/ltr	

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	DESCRIPTION	QUANTIT
1.	BOILER SHELL WITH SMOKEBOX FRONT AND REAR	1
2.	WATERWALL MEMBRANE WITH SCREEN TUBES HAVING RISERS AND DOWNCOMERS	1



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3.	AIR PREHEATER WITH SMOKEBOX AND HOPPER	1
4.	UNICYCLONE WITH SLIDE ACTION DAMPER	1
5.	ID FAN WITH MOTOR 10 HP	1
6.	FD FAN WITH MOTOR 5 HP	1
7.	PINHOLE GRATE	20
8.	BOILER FEED PUMP 2 HP	2
9.	BOILER MOUNTINGS	23
10.	BOILER SAFETY VALVES	2
11.	BOILER FIRE DOOR	2
12.	MCC ELECTRIC PANEL IS FULLY AUTOMATIC	1
13.	PLATFORM RAILING AND LADDER	2
14.	FLUE GAS DUCTING COMPLETE	1
15.	BOILER CHIMNEY 16" OD X 60 FT	1
16.	REFRACTORY MATERIAL	1

**\*\* COST: Rs. 50,00,000 /-**

**\*\*IGST@18% :- Rs. 9,00,000/-**

**\*\*TOTAL COST: Rs. 59,00,000/-**

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**D) REFERIGATION FOR IQF & CHILLED WATER**

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Sr. No.	Details of Item	Qty
	<b>IQF COMPRESSORS:</b>	



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1.	<b>KIRLOSKAR make Two Stage refrigeration compressors model KCX72 – For IQF</b> Evaporative Temp.: (-) 40 Deg. Condensing Temp.: 40 Deg. Compressor RPM 750 Compressor Capacity: 120.10 KW (34.14 TR) each. Power required: 94.83 BHP	5 Nos.
2.	<b>KIRLOSKAR make Two Stage refrigeration Compressors Model KCX72 – For Cold Stores</b> Evaporative Temp.: (-) 25 Deg. Condensing Temp.: 40 Deg. Compressor RPM 750 Compressor Capacity: 164.47 KW (46.76 TR) each. Power required: 89.59 BHP	No.
3.	<b>KIRLOSKAR make Single stage refrigeration compressor model KCX72 – For Chiller PHE</b> Evaporative Temp.: (-) 3 Deg. Condensing Temp.: 40 Deg. Compressor RPM 750 Compressor Capacity: 350 KW (100 TR) Power required: 100 BHP	No.
4.	<b>Compressor Accessories:</b> Each compressor will be supplied with following accessories- Drive set consisting of fly wheel, motor pulley, V belts Compressor Base Frame Suction & Discharge Stop Valves Cut outs and Gauges Tubing and Ferrule Panel Plate Tool Kit.	8 Sets

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5.	<b>Electric Motors for compressors: CG/ABB/BBL Equivalent make.</b> For KCX-72 compressor: 150 HP For KCX-63 compressor: 80 HP For KCX-6 compressor: 120 HP All motors TEFC, Sq. cage, 4 pole, 1440 rpm, 3 Ph, 415 Volts, 50 Hz Induction type	5 Nos 2 Nos 1 No.
6.	<b>ATMOSPHERIC CONDENSER:</b> (ATMOSPHERE TYPE Condensers: 750 TR: Design duty: Total Heat Rejection Capacity 700 TR but we are recommended with 10 % extra margin	60 No Of STAND S
7.	<b>AIR COOLING UNITS:</b> <b>DESIGN DUTY: 35 KW X2 ACU EACH ROOM</b> Type Fan: Axial fan Air Volume: 7.0 M3/S, Coil data: 2.5 FPI, SS Tubes with Aluminum fins and 5/8 inches OD, 0.8 thickness, 304 L Tubes. Fans: 3 x 610 mm axial fans, 1440 rpm, 0.50 KW motor Defrost: Coil – Water, Tray – Electric, Fan – Peripheral Heater.	18 Nos
8.	<b>Falling Film Chiller</b> Cap.- 150 TR Water inlet temp. – 26 deg. C Water outlet temp. – 2 deg. C	1 Nos.
9.	<b>Ammonia High Pressure Receiver with skid:</b> Size: 30" OD x 20 feet long Thickness: Shell 16 mm, dish ends 18 mm plate Accessories: Liquid level Glass with isolation valves, dual safety relief valve, purge valve, drain valve and pressure gauge.	2 Nos.
10.	<b>INTER COOLERS:</b> Size: 36" DIA x 7 feet height Thickness: Shell 14 mm Coil: 1.25" coil of 180 feet length	2 Nos.

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11. <b>Ammonia Low Pressure Receiver:</b> Size: 60" OD x 12 feet long, Thickness: 16 mm plate Accessories: Gauge Glass, Isolation valve with matching flanges, and Low liquid level floats mounted on a stand pipe with isolation valves, Purge valve, Dual safety relief valve, Y type strainer, Oil pressure gauge glass and solenoid valve. Ammonia Pumps: FLOWDYNE/HYDRODYNE make, Liquid flow – M3/Hr., Delivery head – 60 Meters, Motor 7.50 kw (7.5 HP). Quantity 4 Nos. Two working and two as stand by.	2 Nos.
12. <b>Ammonia &amp; Water Pipeline</b> <b>MS C class pipe TATA MAKE</b> <b>GI B class JINDAL MAKE</b>	Lot
13. <b>Valves and Fittings:</b> <b>SUPERFREEZE/DANFOSS/SUPER MAINI make</b>	Lot
14. <b>MCC PANEL WITH APFC</b> Cubical shape panel with bus bars, incoming ACB, indicating lamps, switches, fuses, volt meter, amp. Meter. Starters for compressor motors, condenser and ammonia pumps. MCC panel will be fabricated from 16-gauge CRCA sheet having inner corner of required AMPs, MCCB, Al. bus bars and outgoing feeders. All starters up to 9.3 KW shall be DOL type and above that will be FASD type.	1 No.
15. <b>POWER CABLES: POLICAB MAKE-</b> MCC panel to compressor motors, water and ammonia pumps and cooling unit motors	Lot
16. <b>Suction Line Insulation:</b> Insulation of Nitrite Rubber on liquid lines and LPP	Lot
17. <b>First Charge of Ammonia:</b> 6000 Kg. Ammonia and 210 Liters Refrigeration compressor oil drum.	Lot
18. <b>OIL SEPRATER SIZE 5'X18" INCHES &amp; For Chiller</b>	3

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19. Accumulator size 72x36 Inches.	1
20. Angle and Chanel for supporting all lines	One Lot
21. Erection and commissioning:	One Job

**\*\* COST: Rs. 50,00,000 /-**

**\*\*IGST@18% :- Rs.99,00,000/-**

**\*\*TOTAL COST: Rs. 60,00,000/-**

## E) DEEP FREEZER – 6000 MT

SR NO	ITEM	QTY
	<b>Partition Wall</b> Thickness – 120 mm. Top Skin- PPGI – 120 Gsm Bottom Skin- PPGI – 120 Gsm Synergy make PUF Panels with PUF density $40 \pm 2$ kg / m <sup>3</sup> with tongue and groove joining system.	1170sqm
2.	<b>Outer Wall</b> Thickness - 150 mm. Top Skin- PPGI – 120 Gsm Bottom Skin- PPGI – 120 Gsm Synergy make PUF Panels with PUF density $40 \pm 2$ kg / m <sup>3</sup> with tongue and groove joining system.	2050sqm
3.	<b>Ceiling Panels</b> Thickness - 150 mm. Top Skin- PPGI – 120 Gsm Bottom Skin- PPGI – 120 Gsm Synergy make PUF Panels with PUF density $40 \pm 2$ kg / m <sup>3</sup> with tongue and groove joining system. <b>For PROCESS ENGINEERS</b>	2270sqm
4.	<b>Floor Slab</b> Thickness – 60+60 mm. Top Skin- Paper Bottom Skin- Paper Synergy make PUF slab with PUF density $40 \pm 2$ kg / m <sup>3</sup> with tongue and groove joining system. <div style="text-align: right;">   <b>Auth. Signatory</b> </div>	4540sqm



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5.	<b>Anti-Room Walls</b> Thickness – 60 mm. Top Skin- PPGI – 120 Gsm Bottom Skin- PPGI – 120 Gsm Synergy makes PUF Panels with PUF density $40 \pm 2$ kg / m <sup>3</sup> with tongue and groove joining system.	505 sqm
6.	<b>Anti-Room Ceiling</b> Thickness – 60 mm. Top Skin- PPGI – 120 Gsm Bottom Skin- PPGI – 120 GSM Synergy make PUF Panels with PUF density $40 \pm 2$ kg / m <sup>3</sup> with tongue and groove joining system.	515 sqm
7.	<b>Flashing</b> All Type in PPGI All type for fixing of PUF Panels includes U Channel, External L, Internal L and Patta	2500 kg.
8.	<b>No. of Doors</b>	9
	<b>Wooden Pallets for Cold Store</b>	2500
	<b>ERECTION OF THE ABOVE SYSTEM</b>	lot

**\*\* COST: Rs. 3,25,00,000 /-**

**\*\*IGST@18% :- Rs.58,50,000/-**

**\*\*TOTAL COST: Rs. 3,83,50,000/-**

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## F) Mezanine floor

SR NO	ITEM	AMOUNT
	MEZANINE FOR COLD STORE The mezzanine will be fabricated from 125 x 125 x 5 mm. tubes	2,30,00,000
<b>Total –2,30,00,000/-</b>		

**\*\* COST: Rs. 2,30,00,000 /-**

**\*\*IGST@18% :- Rs. 41,40,000/-**

**\*\*TOTAL COST: Rs. 2,71,40,000/-**



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## G) ETP

S.NO.		Amount
	<i>ETP (effluent treatment plant)</i> Cap. – 2,00,000 ltr/day A) Screen Chamber B) Collection Cum Equalization tank C) Coagulation & flocculation Tank D) Blowers & Diffused Aeration System E) Aeration Tank/Bioreactor F) Primary Tube Settler G) Filter Feed tank H) Pressure Sand Filter I) Activated Carbon Filter J) Hypo Dosing System K) Sludge Drying Beds	40,00,000
Total – 40,00,000/-		

**\*\* COST: Rs. 40,00,000 /-**

**\*\*IGST@18% :- Rs. 7,20,000/-**

**\*\*TOTAL COST: Rs. 47,20,000/-**

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## H) BUILDING

S.NO.	DESCRIPTION
	<b>TOTAL COVERED AREA</b> 50,000 Sq. feet
	Cost of civil work for 50,000sq. feet
	Cost of PEB for 50,000 sq. feet

**\*\* COST: Rs. 4,00,00,000 /-**

**\*\*IGST@18% :- Rs.72,00,000/-**



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**\*\*TOTAL COST: Rs. 4,00,000/-**

## I) TRANSFORMER, SERVO AND VCB

S.NO.	DESCRIPTION
1.	<p><b>TRANSFORMER</b> CAP.- 1500 KVA Conventional self-cooled, Oil immersed, Three Phase, ONAN(Cooling) 50 Hz, Copper, Double wound, Indoor type, A class Insulation, Design to ensure better cooling, Low noise Level, better impulse and short circuit withstand capability.</p> <p><b>STANDARD</b> Transformer is designed as per IS:2026, BS-171, IEC-76 &amp; IEC-72 (as applicable)</p> <p><b>VECTOR GROUP</b> Unless otherwise specified, the Transformer will be connected as per vector group reference DY11 in accordance with international practice.</p> <p><b>TERMINAL ARRANGEMENT</b> Following terminal arrangement are provided. (a). H.V. with M.S Box. (b). L.V. with M.S Box. Disconnecting Chambers can also be provided on both HV and LV cable boxes.</p> <p><b>TEMPERATURE RISE</b> Designed for a maximum Temperature rise of 40/50 degree of oil/winding. And lower on request.</p> <p><b>TAPPINGS:</b> +/- 5% In Steps of 2.5%, others on request.</p> <p><b>OIL:-</b> Oil is tested for Resistivity, Dielectric and acidic chareretesissts conforming to IS-335 . Before topping up oil is filtered thoroughly and filled under vacuum.</p> <p><b>Quality Control</b> All Transformers undergo rigorous quality Control testing in our fully equipped laboratory approved by UHBVN &amp; DHBVN and others for. All routine test as per IS standards. Any specific test required by the customer can also be arranged .</p>



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	<b>CORE-</b> Built from low-loss cold-rolled grain-oriented, annealed. Special Frame for clamping the core to reduce the magnetic noise as well as making the whole structure rigid.
2.	AUTOMATIC SERVO VOLTAGE STABILISER & VCB CAP.1500KVA LINEAR TYPE,OIL IMMERESED 300-460-400 VOLTS COPPER WINDED WITH BYPASS C.O.S We shall complete erection & commissioning with all civil work in this price.

**\*\* COST: 35,00,000 /-**

**\*\*IGST@18% :- Rs. 630,000/-**

**\*\*TOTAL COST: 44,30,000/-**

## J) WOODEN PALLETS

S NO	ITEM	AMOUNT
	<b>WOODEN PALLETS FOR COLD STORE</b> Size -1000 x 800 x 150 mm.	21,00,000

**\*\* COST: Rs. 21,00,000 /-**

**\*\*IGST@18% :- Rs. 3,78,000/-**

**\*\*TOTAL COST: Rs. 24,78,000/-**

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## K) PACKING LINE FOR FROZEN VEGETABLES

S.NO	EQUIPMENT DESCRIPTION	QTY
1.	<b>S.S VIBRO FEEDER WITH HOPPER</b> CAP.-2 MT/hr. For hopper Power – 1 h.p (with variable speed) Size - .8mtr.x . 8 mtr. Flow rate – 2000kg./hr.	01



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2.	<b>INSPECTION CONVEYOR</b> Size – 900mm.belt width x 5 mtr. long Height – 900mm. M.o.c – s.s 304 - pvc belt Power – 1h.p The equipment will be in two parts & consists of :- A) PVC coated food grade endless belt (imported). B) pvc Side guides, rollers, framework will be from S.S. C) variable speed drive with geared motors & vfd. D) 04 no. tube lights, electrical control	01
3.	<b>BAND SEALER</b> Size: 200-400gms. Cap.: -400-600 Pouch/hour Power – 300 Watt single phase Complete with variable speed drive, vertical height adjustment & digital control panel.	02
4.	<b>WEIGHING SCALE</b> Two weighing scale 0-100 kg, Four weighing scale 0-5 kg.	lot
5.	<b>STICHING MACHINE</b>	06

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**\*\* COST: Rs. 22,00,000 /-**

**\*\*IGST@18% :- Rs. 3,96,000/-**

**\*\*TOTAL COST: Rs. 25,96,000/-**

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## L) OVERHEAD WATER STORAGE SYSTEM

Sr No.	Item Description	Qty	Amount
1.	<b>OVERHEAD WATER STORAGE TANK</b>	01 lot	20,00,000

**\*\* COST: Rs. 20,00,000 /-**

**\*\*IGST@18% :- Rs. 3,60,000/-**





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**\*\*TOTAL COST: Rs. 23,60,000/-**

## M) DG SET

Sr No.	Item Description	Qty	Amount
1.	<b>DG SET</b> 1000 KVA DG Set	01	60,00,000

**\*\* COST: Rs. 60,00,000 /-**

**\*\*IGST@18% :- Rs.10,80,000/-**

**\*\*TOTAL COST: ~~Rs.~~80,80,000/-**

## N) AIR COMPRESSOR

Sr No.	Item Description	Qty	Amount
1.	<b>AIR COMPRESSOR</b> Power – 60 hp. CFM -300 Air receiver - 1500 ltr. x 2 Complete with electrical panel & pipe line.	01	25,00,000

**\*\* COST: Rs. 25,00,000 /-**

**\*\*IGST@18% :- Rs. 4,50,000/-**

**\*\*TOTAL COST: Rs. 29,50,000/-**

## O) ELECTRICAL PANEL WITH APFC PANEL

Sr No.	Item Description	Qty	Amount
1.	Panel body of 16 SWG sheet with powder coating I/C ACB 2000 Amp.-4P make L&T (Fixed type) AL inter connection Insulator and hardware	01	58,00,000

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Complete metering section i.e Voltmeter, Ammeter indicator, ASS, VSS, CTS etc.		
APFC Panel 1500 KVAR MS Powder coated body I/C ACB 200A-3PH Make L and T - 01 AL. inter connections Insulator and hardware Complete metering section i.e Voltmeter, Ammeter, Indicator, ASS, VSS, CTS etc – 01 APFC relay 14Step01 Capacitor cylindrical type - 800 KVAR Contactor 40 A 01 MCB TP 63A01 Contactor 110A 13 MCCB 125A-3P13 On indicators 44 A/M Selector switch 14 Control MCB SP 16		

**\*\* COST: 58,00,000 /-**  
**\*\*IGST@18% :- Rs. 10,44,000/-**  
**\*\*TOTAL COST: Rs. 68,44,000/-**

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Sr No.	Item Description	Qty	Amount
1.	<b>BORE WELL</b> With 15 hp. Motor Providing & drilling 150 dia. Bore well up to 400 ft. depth including driving PVC casing through out, slotted pipe filters, submersible cable wire	01	12,00,000



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	from power source to pump.		
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**\*\* COST: Rs. 12,00,000 /-**  
**\*\*IGST@18% :- Rs. 2,16,000/-**  
**\*\*TOTAL COST: Rs. 14,16,000/-**

Sr No.	Item Description	Qty	Amount
1.	<b>WEIGH BRIDGE</b> Cap. – 120 MT Make – Leo	01	10,00,000

**\*\* COST: Rs. 10,00,000 /-**  
**\*\*IGST@18% :- Rs. 1,80,000/-**  
**\*\*TOTAL COST: Rs. 11,80,000/-**

Sr No.	Item Description	Qty	Amount
1.	<b>METAL DETECTOR</b> Make - Any Repute make MOC - SS 304 Scope of supply - complete metal detector with conveyor Metal detection limit - 360 deg. detection field for both ferrous , Non - ferrous & stainless steel	01	10,00,000

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**\*\* COST: Rs. 10,00,000 /-**  
**\*\*IGST@18% :- Rs. 1,80,000/-**  
**\*\*TOTAL COST: Rs. 11,80,000/-**



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## The Basic Scheme of Reverse Osmosis Plants are as follows:

1. Dual Media Filter. (MS)
2. Antiscalent dosing system
3. Micron filtration system
4. Reverse Osmosis System
5. Cleaning & Flushing System

### Multigrade Sand Filter

- One MS pressure vessel with Top distribution and bottom collecting system for dual media filter
- One Set of frontal pipe work with B Valve / MPV
- One Initial charge of quards sand media / Carbon Media

### Antiscalent Dosing System

- One Electronic metering Pump complete with suction delivery valves and required flexible high pressure tubing  
Capacity : 6 Ltrs / Hr.  
Back Pressre : 4 Bars  
Make : E- dose / UKL / Rainbow
- One HDPE 100 Ltrs Capacity Chemical Tank

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### Micron Filtration

- One Micron filter housing length 20", inlet / outlet connection 1.5" with air release valve
- One 5 micron rating polypropelene cartridge size 20" long

## Technical Data:



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	<b>Dual Media Filter</b>
	One
	Down Flow
	3.0 Kg / Cm <sup>2</sup>
	4 M <sup>3</sup> / Hr
	1.5"
	150 Kg
	325 mm
	1600 mm

## Reverse Osmosis

### Specification

- Compact MS skid
- Front table for control instruments
- Set of Glycerol filled pressure guages
- Pressure switch for raw water.
- High pressure pump mainly made of stainless steel made by (PNC / SHAKTI / PNC)
- Set of RO Pressure vessel made of glass fiber
- Set of RO membrane (GE / DOW/ Torry)
- Set of ball valves – made of heavy duty UPVC/SS
- Set of Rota meter (ASTER / UKL/MAXFLO)
- Set of SS / UPVC fittings
- Control Panel (ASTER)
- Online TDS meter alongwith TDS sensor (ASTER / DIC)

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TECHNICAL DATA	RO 4000 LPH
Permeate flow rate m <sup>3</sup> /hr	4.0
Operating pressure in bar	15
Recovery max in %	60
Raw water consumption in m <sup>3</sup> /HR	5.6
Raw Water pressure in bars	3
Rejection rate Approx in %	98
Current in V/Hz	400/50
Power installed in KW	5



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No. of pressure vessels	1
Type of pressure vessel	80404
Type of membranes in inch	8040
No. of membranes	4

**\*\* COST: Rs. 17,60,000 /-**

**\*\*IGST@18% :- Rs. 3,16,800/-**

**\*\*TOTAL COST: Rs. 20,76,800/-**

Sr No.	Item Description	Qty	Amount
1.	LAB EQUIPMENTS	01	7,40,000

**\*\* COST: Rs. 7,40,000 /-**

**\*\*IGST@18% :- Rs. 1,33,200/-**

**\*\*TOTAL COST: Rs. 8,73,200/-**

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## E. EXCLUSIONS:

1. Builc
2. All Civil works and foundations.- We will provided all Foundation drawings for our equipments, where ever required
3. Bulk storage of raw material, finished products and by products.
4. Laboratory Equipments
5. Any other items not specified in the equipment list

## F.GENERAL REMARKS:

### 1. SCOPE OF WORK

The scope of works includes the supply of process plant in accordance with the following:

1. Providing site layout drawings, process flow diagrams, P&I drawings and GA drawings of equipments to buyer.





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2. Design, development, manufacture and supply of equipment as listed in equipment list. The transit insurance of the equipments fall into scope of buyer.

3. Information for foundation design. This will include above grade dimensions, static and dynamic loads and the anchor bolt type and locations.

4. Supervision of erection of machinery at buyer's site\*: Food tech Engineers shall depute engineers and skilled manpower at buyer's site to supervise the erection of the equipment.

5. Commissioning , Running, stabilizing and establishing technical performance through trial runs.

6. Operating instructions including description of process, start-up and shut down procedures, safety requirements and maintenance & lubricating instructions.

\* **Buyer shall provide One time to & fro fare,**

7. Electrical specifications and element wiring diagrams. **Local boarding and lodging of acceptable standard, local conveyance and facilities to**

8. We will Depute one Engineer or Skilled free of cost for one month after completion of plant at your site to assist you and train your personnel.

**communicate with office at Ambala free of charge for the person/s deputed by Seller Approved make for all Bought Out Items:**

(Wherever indicated) **Installation and commissioning**

**For PROCESS ENGINEERS**

Sl. No.	Item	Make / Brand Name
	Motors	Crompton, Kriloskar, Bonvario/ Equivalent
	Contactors	Schneider , Siemens, L & T / Equivalent
	Relays	Schneider , Siemens, L & T / Equivalent
	Fuse units and links	Schneider , Siemens, L & T / Equivalent
	On/Off Rotary switch	Schneider , Siemens, L & T / Equivalent
	Forward/Reverse Switch	Schneider , Siemens, L & T / Equivalent
	Indicator lamps	Schneider , Siemens, L & T / Equivalent
	Push Button Stations	Schneider , Siemens, L & T / Equivalent
	Cable Socket	Jainex, McDowell
	Limit switches	Schneider , Siemens, L & T / Equivalent
	Gaskets	Champion , L& T
	Cables	Omega, Finolex, CCI / Equivalent
	HMI	Siemens
	High tensile fasteners	TVS / GKW or Equivalent hardened material



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15. Bearings SKF / FAG / NBC  
Taper Bush Pulley Fenner  
V.Belts Fenner, Dunlop equivalent  
Instruments(PG, TCS, etc.)/Mika/Toshniwal/ Standard Make  
Valves Shenco/ Flowserve/ Flowcon  
Gear Box Bonvario, Greaves, Elecon,  
Mechanical Seal Premium,  
Vacuum Pump Technoseal  
Any other items Kirloskar / PPI/ Equivalent  
( Not mentioned above) Reputed and Standard Make
- NOTE:** Due to our quality policy
21. , In General we buy the best available and standard materials available in the market. *However* due to reasons like obsolete, non-availability; longer delivery period, system non-suitability

For PROCESS ENGINEERS

  
Auth. Signatory

## G. PERFORMANCE

### A) Guarantee for Mechanical Defects

All equipments supplied by us will be provided with a mechanical warranty for a period of eighteen months after delivery or twelve months after commissioning whichever is earlier provided that they are operated/handled as per our instructions and is not due to normal wear and tear.

Electrical components such as motors, contactors, etc. and instrument such as pressure gauges, Thermometers, pressure indicators, etc., are not covered under this warranty. Warranty of Bought out components like pumps, motors, vacuum pumps, VFD etc are guaranteed by us only to the extent of guarantees given to us by our suppliers.

However as we are supplying whole material we will ensure a minimum of 6 months Warranty on our behalf.

Within the warranty period as specified above, upon notification and confirmation of defective



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part(s) or equipment in respect of which complaint is made, we will provide a free replacement on one for one exchange basis.

## B) Guarantees of Performance

All the figures herewith apply simultaneously with +/- 5 % tolerance provided that the plant is operated with the same feed material continuously for at least 24 hours under normal operating conditions with continuous supply of required Utilities.

## H. COMMERCIAL

	DESCRIPTION	AMOUNT
1.	PROCESS LINE	4,00,00,000
2.	IQF	4,50,00,000
3.	BOILER	50,00,000
4.	REFRIGERATION SYSTEM	5,50,00,000
5.	DEEP FREEZER- 6000 MT	3,25,00,000
6.	MEZZANINE	2,30,00,000
7.	ETP	40,00,000
8.	BUILDING	4,00,00,000
9.	TRANSFORMER, SERVO & VCB – 1500 KVA	35,00,000
10.	WOODEN PALLETS	21,00,000
11.	PACKING LINE FOR FROZEN VEGETABLES	22,00,000
12.	OVERHEAD WATER STORAGE SYSTEM	20,00,000
13.	DG SET	60,00,000
14.	AIR COMPRESSOR	25,00,000
15.	ELECTRICAL PANEL WITH APFC PANEL	58,00,000
16.	BORE WELL SYSTEM	12,00,000
17.	WEIGH BRIDGE	10,00,000
18.	METAL DETECTOR	10,00,000
19.	R.O. SYSTEM	17,60,000
20.	LAB EQUIPMENTS	7,40,000
		<b>27,43,00,000</b>
	<b>For PROCESS ENGINEERS</b>	<b>4,93,74,000</b>
		<b>32,36,74,000</b>

**TERMS & CONDITIONS:-**

*[Signature]*  
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Sales Tax: - Included.

Your Scope.

Delivery: - within 4-5 month after getting confirmed order.

## MODE OF PAYMENT:

- A) 40 % advance along with cleared order.  
Balance against Performa invoices on prorata basis.

AXIS BANK, GARNALA, Ambala City  
A/C NO.-9230 3001 5040 997  
IFSC CODE – UTIB0001757

## FOR PROCESS ENGINEERS

SANJEEV KUMAR

For PROCESS ENGINEERS

  
Auth. Signatory