

### **CORRIGENDUM**

**Department of Animal Husbandry ,Livestock Complex ,Sector 68 , S A S Nagar, has extended the schedule date for submission of e-Tender/Notice 3/ 2017-18 from 26-12-2017 to 08-01-2018. This e-tenders can now be submitted online till 08-01-2018 upto 5:00 pm and the same shall be opened on 09-01-2018 at 11:30 am. Hard copies of the said tenders can be submitted at the office of Director Animal Husbandry, Punjab ,Livestock Complex ,Sector 68 , S A S Nagar, till 08-01-2018 upto 5:00 pm.**

### **CORRIGENDUM**

**Department of Animal Husbandry ,Livestock Complex ,Sector 68 , S A S Nagar, has extended the schedule date for submission of e-Tender/Notice 3/ 2017-18 from 14-12-2017 to 26-12-2017. This e-tenders can now be submitted online till 26-12-2017 upto 5:00 pm and the same shall be opened on 27-12-2017 at 11:00 am. Hard copies of the said tenders can be submitted at the office of Director Animal Husbandry, Punjab ,Livestock Complex ,Sector 68 , S A S Nagar, till 26-12-2017 upto 5:00 pm.**

**NOTICE INVITING e-TENDERS**  
**etender.punjabgovt.gov.in**  
**Directorate, Animal Husbandry, Punjab, Livestock Complex, Sector-68, SAS Nagar**  
**e-Tender /Notice-3/ 2017-18**

**The Department of Animal Husbandry, Punjab, Livestock Complex, Sector-68, SAS Nagar, invites e-tender on double bid system for the following items at Punjab Veterinary Vaccine Ludhiana, Punjab.**

- i) Chiller along with distribution system----- One**
- ii) Oil Lubricated Rotary Screw Air Compressor along with Distribution System----- One**
- iii) Oxygen and Nitrogen cylinder along with distribution system-----6 each**
- iv) Laboratory Autoclave-----2 Nos.**
- v) Hot Air Oven-----One**
- vi) Bio Safety Cabinet-----One**

**For additional details such as detailed specifications, important dates etc visit the website: etender.punjabgovt.gov.in. Tender form, specifications, terms and condition can be obtained from this website on payment of Rs. 20/- (online payment) as per e-tendering procedure. Other details/brief description of the work can be seen in the office of the Deputy Director, Animal Husbandry, I/c Punjab Veterinary Vaccine Institute, PAU Campus, Ludhiana The tender will be in double bid system i.e. Technical/Pre-qualification Bids and Financial/Commercial Bids.**

- 1. Tender shall be accepted only from manufacturers/authorized dealers.**
- 2. Complete profile of the Authorized /Registered firm along with organizational structure, Key personnel employed along with their educational qualification and experience.**
- 3. Tenderers should submit complete details on the organization, experience of work, man power with financial details.**
- 4. The bidder must enclose attested copies/proof of consisting, Pan Card, TIN No., Service Tax No., CST, EPE, Registration/Authorisation of the firm etc.**
- 5. The bidder firm should not be black listed/debarred by any department/ organization.**
- 6. Bidder must submit undertaking in the shape of affidavit regarding providing all the information/documentations in the bid to be true and correct.**
- 7. The e-tender should be submitted online till 14-12-2017 upto 5.00 pm and shall be opened on 15-12-2017 at 11. 00 am**
- 8. Tenderers are also required to submit a hard copy of the technical bids of this tender on or before the closing date 14-12-2017 upto 5:00 pm at the office of Directorate, Animal Husbandry, Punjab, Livestock Complex, Sector-68, SAS Nagar.**
- 9. The e-tender must be accompanied with earnest money amounting Rs 500/- (online payment) as per e-tendering procedure.**
- 10. The undersigned reserves the right to accept or reject one or all offers/tenders and holds the discretion to increase/decrease the quantity of any or all the items. The undersigned also hold the discretion to place the order for any or none of the items qualifying in the tender and may increase/decrease the quantity of any or all the items as per requirement of the Department.**
- 11. Successful tenders will have to submit a security deposit of 10% of the ordered value within the stipulated period of time after issuance of orders.**
- 12. For participating in the above e-tender, the bidders shall have to get themselves registered with <http://etender.punjabgovt.gov.in> and get user ID & password. The bidders who have not registered with e-procurement portal need to get registered by paying the requisite registration fee for e-tender participation and obtain Class 3 Digital Signature Certificate (DSC) which are mandatory to participate in the e-tendering process. For any clarification/difficulty regarding e-tendering process, please contact on helpdesk numbers 09257209340, 08054628821, 0172-3934667.**
- 13. The contractors/tenderers/bidders are also required to pay tender processing charges of Rs. 2,280/- or an estimated amount as per tender which are to be deposited online. (This tender processing fee/charges are other than the firm registration amount for Digital Signature Certificate (DSC).**
- 14. e-Tender details can also be obtained from the Departmental website [www.husbandrypunjab.org](http://www.husbandrypunjab.org).**

**FAX No: 0172-2217084**  
**Telephone No. 0172-2217083**  
**Website [www.husbandrypunjab.org](http://www.husbandrypunjab.org)**

**Director Animal Husbandry,**  
**Punjab**

*Tendering Procedure.*

***It will be a two stage tendering. The technical tenders and financial/commercial tenders will have to be submitted AS PER E -TENDERING PROCEDURE.***

*The Technical Bids should contained detail information on the following: -*

- *Nature of Ownership.*
- *Composition of the Firm.*
- *Bankers Name & Address.*
- *GST No.*
- *PAN/TAN No.*
- *Tax clearance.*
- *Whether Manufacturer/Sole Selling Agent/Distributor/Authorized Dealer.*
- *Experience in line.*
- *Capability/Capacity to service the requirement.*
- *Details of relevant infrastructure.*
- *Arrangements of after sale service.*
- *List of Clients.*
- *Quality Assurance/Monitoring system followed.*

*Certificates where needed should be attached duly attested.*

***Financial/Commercial Bids.***

*Financial Bid should contain the price quoted per unit. The following information should be clearly given in the Financial Bid:-*

- *Price per Unit.*
- *Place of Delivery.*
- *Status of Taxation/Duties etc.*
- *Lead time/Delivery Period.*
- *Packing & forwarding.*
- *Mode of Transportation.*
-

- *Payment condition.*
- *Warranty/Guarantee.*
- *Validity of Offer.*
- *Acceptance of Terms of N.I.T.*
- *Details of Earnest money attached.*

*Financial Bids will be opened only of those tenderers, who qualify and are found suitable during the processing of Technical Bids.*

### **TERMS AND CONDITIONS**

1. *Rates should be quoted in Indian Rupees only, FOR anywhere in Punjab/Chandigarh.*
2. *All applicable taxes should be included in the quote.*
3. *Brochure/leaflets/catalogues should be submitted alongwith tender.*
4. *Tender shall be accepted only from manufacturers/authorized dealers.*
5. *Trouble free performance of the complete equipment for a minimum period of two years from date of commissioning should be guaranteed . Any defect intimated should be attended to and rectified within 15 days of receipt of such communication within guarantee period. The guarantee shall include cost of spares and labour.*
6. *The supplier should give an undertaking that they will be responsible to carry out the preventive maintenance and to repair the equipment during guarantee and post guarantee period.*
7. *The product offered should be supported with AMC for next three years on expiry of the guarantee period. Full details of after sale service offered during the post guarantee period should be furnished alongwith tender specified.*
8. *Tenderers should submit complete details on the organization, experience of work, man power with financial details.*
9. *The supplier shall train to the satisfaction of the purchaser one or two technicians at site/factory for operating, servicing and undertaking minor repairs without extra cost.*
10. *Complete profile of registered firm along with organizational structure should be submitted.*
11. *Supplier will have to deposit 10% value of the total price of the items in the form of Demand Draft/FDR payable at Chandigarh in the name of Director, Animal Husbandry, Punjab, Chandigarh within 10 days of receipt of supply order as security money.*

## ***Detailed Specification for E-tender notice no. 3/2017-18***

### ***(1) Chiller***

***One***

***Along with distribution system***

***( blue star, thermo fisher, Voltas, Reynolds)***

- ***Unit should be used for cooling 800 Lit and 80 lt fermenter and inactivation vessel between 4 to 8 deg. C***
- ***The Chiller shall be Air Cooled type with multiple / Single Compressors, Air Cooled Condenser, In-built weather proof Electrical Panel, Electrical Isolators, all electrical parts to conform IP-55, transformer for control circuit, service modem connectivity, open protocol master panel for hook up with BMS with network ready, server centric and web base Client Compatibility.***
- ***Capacity 35 Tr***
- ***Refrigerant must be R-410A / R-407C***
- ***Temperature Range of the chiller should be from -5° to 50° C***
- ***Cooling capacity at 20°C 230V 50 Hz should be 8,500 Watts***
- ***Heating Capacity should be 6 kW @ 460 V or better***
- ***Temperature Stability required is +/- 0.1° C***
- ***The condenser should preferably be Air cooled***
- ***The unit should have a suitable reservoir made of SS316 with heating and cooling partitions.***
- ***The unit should have a centrifugal pump made of 316 SS which operates at 50 Hz with the below specifications;***  
***10 gpm @ 20 psid (37.9 lpm @ 1.4 bar***
- ***The unit should contain a flow control with flow read out that allows adjusting the flow to meet the application requirements & monitor the flow rate to application and set flow alarms via controller.***
- ***The controller should house an LCD multi line alphanumeric display.***
- ***The controller should also have an LCD level indicator to identify the level of internal fluid.***
- ***Anti Drain back feature should be available that prevents fluid from flowing back to the reservoir when the chiller is installed.***
- ***Auto Refill feature should be available that ensures automatic refilling from a facility-supplied water source to ensure that the proper fluid level is maintained.***
- ***Analog and digital communications option should be available for remote operation, monitoring and data logging. It should include sensor port which allows for remote temperature control of an application when used with a remote sensor (optional accessory)***
- ***Should include a Full flow filter to ensure clean fluid to protect the application and maximize recirculation system life***
- ***Should have an easily removable condenser grill and air filter allow for quick and simple cleaning to optimize chiller performance and maximize component life.***
- ***Should house an integrated funnel fill for easy filling.***

- *A Drain port should be located at the back of the unit for operator convenience.*
- *Design should allow two sides of the unit to be blocked, allowing placement in a corner while maintaining full refrigeration performance.*
- *Noise level of the unit should be less than <58dBA*
- *The unit should come with standard lockable casters.*
- *There should be external piping and fittings from chiller to external reservoir to process and back, top up line for reservoir and drain line from the reservoir, non return valve, solenoid valve, pressure gauges etc. And piping to the all the vessels of use along with the return piping.*
- *Civil/structural work included in the installation and commissioning .*
- *Compliance - CE*
- *2 years warranty.*

*The Scope of the work include the following:*

- a. Supply, Design Installation and Commissioning of the Chiller Unit, interconnection piping & fitting (external piping and fittings from chiller to external reservoir to process and back, top up line for reservoir and drain line from the reservoir, Non Return Valve, Solenoid Valve, Pressure gauges etc. And piping to the all the vessels of use along with the return piping.) including the base frames or brackets & Control Panel etc.*
- b. The generation system must be along with the distribution system for Connectivity of pipe from the generation system to other rooms where fermentor and other equipments are installed, which requires chilled water supply minimum piping required approximately 2500 ft, it should include the quote. However for additional piping separate rate for supply line could be quoted per ft., so that in the event of increase or decrease, payment on actual is given .*
  - Utility equipment supplier of chiller to provide utility piping with insulation wherever required with terminal valve up to 1 (One) meter. near the equipment location.*
  - Equipment supplier will connect the last 1 (One) meter. connection to the equipment.*
  - The rates for supply line should be quoted per ft. and the actual will be paid or measurement.*
  - Pendent if needed to be provided by the vendor.*
- c. Supply of all necessary instrumentation.*
- d. Civil / Structural work included in the installation and commissioning.*
- e. Vendor shall quote the necessary essential spares required for one year along with the offer.*
- f. Provide service in case of breakdown within 48hrs of call.*

*Provide preventive maintenance once a month during the warranty period.*

### *Inspection and testing*

- A. The system shall be offered for visual performance trials & hydrotest at the manufacturer's premises for inspection by client / authorised representative.***
- B. Client / authorised representative shall at all times have an access to supplier's / suppliers sub contractor's workshop to witness fabrication stages.***
- C. Internal inspection record shall be maintained by supplier / suppliers sub-contractor at all times, if any stages are found lacking by way of proper records, client reserves the right to ask supplier to modify / amend the fabrication stage at no extra cost.***
- D. All material test certificates shall be reviewed by client during FAT***
- E. Performance trial shall be done at Vendors premises with qualified water and shall be performed at site after installation.***

**Guarantee**

- A. The system supplied shall be guaranteed for trouble free operation for the period of 24 months from the date of handing over. All defects due to faulty design, material and workmanship and also the performance deficiencies which may come up during guarantee period shall be rectified by the vendor at this cost to the purchaser's satisfaction.***
- B. All guarantees from equipment suppliers will be vested in the client.***
- C. Where damage is caused to any other item by any failure of the item guaranteed, then the guarantee shall also include the costs incurred in rectifying that damage.***

**Documentation:**

- A. P&ID clearly demarcating Battery limit terminations.***
- B. GA Drawing.***
- C. Equipment Layout.***
- D. Foundation Drawings.***
- E. Quality Assurance Plan.***
- F. SLD for electrical circuit.***
- G. GA & wiring diagram of control panel.***
- H. PLC control logic, OIU Screens. Operators guide & Ladder logic.***
- I. Piping drawing within battery limit.***
- J. Design Qualification Document***

**During commissioning activities:**



- K. Operation & maintenance manual for all mechanical, electrical & instrumentation items.**
- L. Characteristic performance curves for all pumps, blowers.**
- M. Calibration certificates for all instruments.**
- N. Operation & ladder logic details for PLC.**
- O. Internal inspections & acceptance reports.**
- P. Test & Guarantee certificates.**
- Q. Operation Manual for programming software of PLC & OIU.**
- R. D.Q,I.Q, & P.Q documents of items system being supplied by tenderer.**

### **VENDOR QUALIFICATION**

- **Trouble free performance of the project for a minimum period of two years from date of commissioning should be guaranteed. Any defect intimated should be attended to and rectified within 15 days of receipt of such communication within guarantee period. The guarantee shall include cost of spares and labor.**
- **Vendor should have been manufacturing and supplying the system for atleast last 3 financial years**
- **User reference list of clients complying with GMP**
- **At least one site visit by client to the manufacturer establishment**

### **(2) OIL LUBRICATED ROTARY SCREW AIR COMPRESSOR----- One ALONG WITH DISTRIBUTION SYSTEM**

**(ELGI, ATLAS COPCO, KIRLOSKAR, INGERSOLL RAND)**

**The air cooled, silenced, rotary screw compressor with completely wired and equipped with all interconnecting pipe work and fittings. include a direct driven compressor element, a totally enclosed fan-cooled electric motor, together with lubrication, cooling and regulation systems. Compressed air is used in Fermentor systems, Autoclaves, Filling machine**

**CAPACITY : 2500 SLPM i.e. 88.3 CFM**

**WORKING PRESSURE : 7.5 to 8 bar**

**The compressors enclosed in a sound-insulated bodywork. The front panel comprises of an electronic control module including the start and stop buttons. An emergency stop button is also provided . it should be provided with an air dryer which removes moisture from the compressed air by cooling the air to near freezing point and automatically draining the condensate.**

**All rotating components should be totally enclosed and protected against contamination to ensure long and reliable operation. The compressor cooling system is sized to run perfectly in ambient temperatures up to 46°C/115°F.**

**AIR COMPRESSOR TECHNICAL SPECIFICATIONS**

| <b>Sr. No.</b> | <b>Particulars</b>        | <b>Requirement Specifications</b>   |
|----------------|---------------------------|---|
| <b>1.1</b>     | <b>EQUIPMENT</b>          | <ul style="list-style-type: none"> <li>a. <b>Type: Single stage, Oil lubricated, Air cooled Rotary Screw Compressor</b></li> <li>b. <b>Quantity: 1</b></li> <li>c. <b>Service: Continuous</b></li> <li>d. <b>Working pressure: 7.5 to 8 bar</b></li> <li>e. <b>Air quality should be suitable for pharmaceutical industry</b></li> </ul>  |
| <b>1.2</b>     | <b>PURPOSE</b>            | <b>Compressed air is used in Fermentor systems, Autoclaves, Filling machine, Washing machine etc.</b>   |
| <b>1.3</b>     | <b>SCOPE OF THE WORK</b>  | <p><b>Scope of the work include the following:</b></p> <ul style="list-style-type: none"> <li>a. <b>Supply, Design Installation and Commissioning of Air Compressor system including oil lubricated rotary screw compressors, air receiver, refrigerated air dryers, interconnection piping &amp; fitting, control panel etc.</b></li> <li>b. <b>Supply of all necessary instrumentation.</b></li> <li>c. <b>Vendor shall quote the necessary critical spares required for one year along with the offer.</b></li> <li>d. <b>Provide service in case of breakdown within 48hrs of call.</b></li> <li>e. <b>Provide preventive maintenance once a month during the warranty period.</b></li> </ul>   |
| <b>1.4</b>     | <b>SYSTEM REQUIREMENT</b> | <ul style="list-style-type: none"> <li>a. <b>Single skid mounted</b></li> <li>b. <b>Single stage, Air Cooled, Oil lubricated, Rotary Screw Air Compressor, Pharma grade Air Quality</b></li> <li>c. <b>Suction Air filter</b></li> <li>d. <b>Full load and no-load regulator</b></li> <li>e. <b>Acoustic Canopy/Inlet Silencer &amp; Discharge Silencer to reduce circulation noise and vibration</b></li> <li>f. <b>Inter and after cooler for cooling the air</b></li> <li>g. <b>Common Refrigerated air dryer (which removes moisture from the compressed air by cooling the air to near freezing point and automatically draining the condensate) &amp; Air Receiver Tank for compressor</b></li> <li>h. <b>Refrigerated Cooler to be provided</b></li> <li>i. <b>The compressor cooling system is sized to run perfectly in ambient temperatures up to 46°C/115°F</b></li> </ul> |

| <b>Sl.No</b> | <b>Particulars</b>                                | <b>Requirement Specifications</b>  |
|--------------|---|--|
|              |   | <ul style="list-style-type: none"> <li>j. <b>The system shall be equipped with suitable Anti vibration pads, if required</b></li> <li>k. <b>Three-phase squirrel cage Induction motors with VFD for load control</b></li> <li>l. <b>All working parts of the compressor shall have easy accessibility for inspection /maintenance.</b></li> </ul>  |
| <b>1.5</b>   | <b>POWER SUPPLY</b>                               | <b>Electric Power: 415VAC ±5%, 3 Phase +N+E, 50 Hz</b>   |
| <b>1.6</b>   | <b>STANDARDS/<br/>REGULATIONS/<br/>GUIDELINES</b> | <ul style="list-style-type: none"> <li>a. <b>International Electro Technical Commission (IEC) standards</b></li> <li>b. <b>All electrical components shall be housed in a sheet steel enclosure (IP 55)</b></li> <li>c. <b>Air receiver shall be as per the Pressure vessel design code IS: 2825</b></li> <li>d. <b>Air compressor shall be designed as per latest code &amp; standard</b></li> </ul>  |
| <b>1.7</b>   | <b>SUCTION AIR<br/>FILTER</b>                     | <p><b>Vendor has to specify the following:</b></p> <ul style="list-style-type: none"> <li>a. <b>Type of filter</b></li> <li>b. <b>Pressure drop across the filter</b></li> <li>c. <b>MOC of filter</b></li> </ul>  |
| <b>1.8</b>   | <b>DUPLEX<br/>FILTER</b>                          | <ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> stage: duplex type filters (before air dryer)</b> <ul style="list-style-type: none"> <li>a. <b>Pore size: 3 microns (Gradient filters)</b></li> <li>b. <b>Filters shall be suitable for operating pressure of 8 kg/cm<sup>2</sup> (g) max.</b></li> <li>c. <b>Filter housing shall be SS 304</b></li> </ul> </li> <li>• <b>2<sup>nd</sup> Stage: duplex type filters (after air dryer)</b> <ul style="list-style-type: none"> <li>a. <b>Pore size: 1.2 micron</b></li> <li>b. <b>Filters shall be suitable for operating pressure of 8 kg/cm<sup>2</sup> (g) max.</b></li> <li>c. <b>Filter housing shall be SS 304</b></li> </ul> </li> <li>• <b>3<sup>rd</sup> Stage: duplex type filters (after air receiver)</b> <ul style="list-style-type: none"> <li>a. <b>Pore size: 0.45 micron</b></li> <li>b. <b>Filter housing shall be of SS 304.</b></li> <li>c. <b>Filters shall be suitable for operating pressure of 8 kg/cm<sup>2</sup> (g) max.</b></li> </ul> </li> </ul> <p><b>Vendor must specify the following:</b></p> <ul style="list-style-type: none"> <li>a. <b>Type of filter</b></li> <li>b. <b>Filter size</b></li> <li>c. <b>Pressure drop across the filter</b></li> </ul> |

|  |  |                                   |
|--|--|-----------------------------------|
|  |  | <b>d. MOC of filter cartridge</b> |
|--|--|-----------------------------------|

| <b>Sl.No.</b> | <b>Particulars</b>  | <b>Requirement Specifications</b>  |
|---------------|---------------------|--|
| <b>1.9</b>    | <b>CONDENSER</b>    | <b>a. Type: Air cooled condenser</b><br><b>Vendor to specify the following:</b><br><b>a. Type of condenser</b><br><b>b. Power rating &amp; type of condenser fan motor</b><br><b>c. Suitable starter for fan motor</b><br><b>d. MOC of condenser</b> |
| <b>2.0</b>    | <b>AIR DRYER</b>    | <b>a. Type: Refrigerant type air dryer</b><br><b>b. Refrigerant: R 134A Or Vendor To Specify</b>   |
| <b>2.1</b>    | <b>AIR RECEIVER</b> | <b>a. Volume of air receiver: 1000 liters</b><br><b>b. Air receiver MOC shall be MS with automatic drain and other accessories (safety relief valve, pressure gauge etc.)</b>  |

|     |                                     |  |
|-----|-------------------------------------|--|
| 2.2 | <b>CONTROL PANEL</b>                | <p>a. <b>Electric Power: 415VAC ±5%, 3 Phase +N+E, 50 Hz</b></p> <p>b. <b>The front panel comprises of an electronic control module including the Start and Stop buttons</b></p> <p>c. <b>An Emergency Stop button should also be provided</b></p> <p>d. <b>The following specifications for the Control Panel shall be met:</b></p> <ul style="list-style-type: none"> <li>• <b>Suitable Star Delta Starter with contractor and relays.</b></li> <li>• <b>Dryer On/Off button.</b></li> <li>• <b>Regulator with Timer and Relays.</b></li> <li>• <b>Hour-meter to indicate total hours of operation.</b></li> <li>• <b>Start/Stop button with lamp indicating compressor operation.</b></li> <li>• <b>Indicator for auto operation.</b></li> <li>• <b>Dew point indicator.</b></li> <li>• <b>Easy access for service points.</b></li> </ul> |
| 2.3 | <b>ALARMS &amp; SAFETY FEATURES</b> | <p><b>The control panel of Air Compressor shall have following alarms and safety features:</b></p> <p>a. <b>Motor overload</b></p> <p>b. <b>Outlet air temp. high</b></p>  |
| 2.4 | <b>RECOMMENDED MAKES</b>            | <ul style="list-style-type: none"> <li>• <b>ELGI</b></li> <li>• <b>ATLAS COPCO</b></li> <li>• <b>KIRLOSKAR</b></li> <li>• <b>INGERSOLL RAND</b></li> </ul>   |

**The Scope of the work include the following:**

**g. Supply, Design Installation and Commissioning of the compressor Unit, interconnection piping & fitting**

**h. The generation system must be along with the distribution system for Connectivity of pipe from the generation system to other rooms where fermentor and other equipments are installed, which requires compressed air supply minimum piping required approximately 1000 ft, it should include the quote. However for additional piping separate rate for supply line could be quoted per ft., so that in the event of increase or decrease, payment on actual is given .**

- **Utility equipment supplier of compressor to provide utility piping required with terminal valve up to 1 (One) meter. near the equipment location.**
- **Equipment supplier will connect the last 1 (One) meter. connection to the equipment.**
- **The rates for supply line should be quoted per ft. and the actual will be paid or**

*measurement.*

*- Pendent if needed to be provided by the vendor.*

*h. Supply of all necessary instrumentation.*

*i. Civil / Structural work included in the installation and commissioning.*

*j. Vendor shall quote the necessary essential spares required for one year along with the offer.*

*k. Provide service in case of breakdown within 48hrs of call.*

*Provide preventive maintenance once a month during the warranty period.*

### **Inspection and testing**

*H. The system shall be offered for visual performance trials & hydrotest at the manufacturer's premises for inspection by client / authorised representative.*

*I. Client / authorised representative shall at all times have an access to supplier's / suppliers sub contractor's workshop to witness fabrication stages.*

*J. Internal inspection record shall be maintained by supplier / suppliers sub-contractor at all times, if any stages are found lacking by way of proper records, client reserves the right to ask supplier to modify / amend the fabrication stage at no extra cost.*

*K. All material test certificates shall be reviewed by client during FAT*

*L. Performance trial shall be done at Vendors premises with qualified water and shall be performed at site after installation.*

### **Guarantee**

*D. The system supplied shall be guaranteed for trouble free operation for the period of 24 months from the date of handing over. All defects due to faulty design, material and workmanship and also the performance deficiencies which may come up during guarantee period shall be rectified by the vendor at this cost to the purchaser's satisfaction.*

*E. All guarantees from equipment suppliers will be vested in the client.*

*F. Where damage is caused to any other item by any failure of the item guaranteed, then the guarantee shall also include the costs incurred in rectifying that damage.*

### **Documentation:**

*T. P&ID clearly demarcating Battery limit terminations.*

*U. GA Drawing.*

*V. Equipment Layout.*

*W. Foundation Drawings.*

**X. Quality Assurance Plan.**

**Y. SLD for electrical circuit.**

**Z. GA & wiring diagram of control panel.**

**BB. Piping drawing within battery limit.**

**CC. Design Qualification Document**

**During commissioning activities:**

**DD. Operation & maintenance manual for all mechanical, electrical & instrumentation items.**

**EE. Characteristic performance curves for all pumps, blowers.**

**FF. Calibration certificates for all instruments.**

**HH. Internal inspections & acceptance reports.**

**H. Test & Guarantee certificates.**

**JJ. Operation Manual for programming software of PLC & OIU.**

**KK. As built drawings as listed in item B.**

**LL. D.Q, I.Q, O.Q, & P.Q documents of items system being supplied by tenderer.**

### **VENDOR QUALIFICATION**

- **Trouble free performance of the project for a minimum period of two years from date of commissioning should be guaranteed. Any defect intimated should be attended to and rectified within 15 days of receipt of such communication within guarantee period. The guarantee shall include cost of spares and labor.**
- **Vendor should have been manufacturing and supplying the system for atleast last 3 financial years**
- **User reference list of clients complying with GMP**
- **At least one site visit by client to the manufacturer establishment**

### **(3) Oxygen and Nitrogen cylinder along with distribution system-- 6 each**

**12 cylinders capacity 1.25 cubic meters ( 18kg gas) , test pressure 250 bar , working pressure 140 bar. Cylinders along with regulators.**

**There must be 99.99% purity of both the oxygen and nitrogen gases**

**There should be independent distribution system of O2 and N2 gas upto the utility point i.e. seed fermenter and production fermentor.**

**The distribution piping in clean room area must be SS316L.**

**the distribution Piping for Connectivity of pipe from the cylinders to other rooms where fermentors and other equipments are installed required approximately 250 ft, it should**

*include the quote. However for additional piping separate rate for supply line could be quoted per ft., so that in the event of increase or decrease, payment on actual is given .*

*- the cylinder supplier to provide utility piping required with terminal valve up to 1 (One) meter. near the equipment location.*

*- Equipment supplier will connect the last 1 (One) meter. connection to the equipment.*

*- The rates for supply line should be quoted per ft. and the actual will be paid or measurement.*

#### **(4) Laboratory Autoclave**

**2 Nos.**

*1) Vertical laboratory autoclave with sterilization chamber volume of 50 lit or higher.*

*2) The sterilization chamber constructed of corrosion resistant stainless steel.*

*3) Microprocessor controller for high precision temperature control.*

*4) Display for temp, timer and warning alert checks.*

*5) Automatic sterilization system for unattached operation.*

*6) Sterilization temperature at 121 C*

*7) The pressure gauge attached to the front side for easy check.*

*8) The instrument should have Mechanical Safety Devices :-*

*a) Over current protection.*

*b) Over temperature protection by automatic power cutoff.*

*c) Over pressure protection by automatic and manual safety valve.*

*9) The instrument should have Safety Warning System*

*a) Over temperature warning.*

*b) Sterilization fail warning*

*10) Supplied with two suitable stackable stainless steel bucket for sterilization.*

*11) Supplied with an Extra silicone or suitable gasket.*

*12) Electric requirement : Single phase, 230V, 50-60 Hz*

*Make : MAC, Equitron, Thermo Scientific Works, Snowbell*

#### **(5) Hot Air Oven**

**One**

*Capacity > =325 Litres*

*Control System : Microcontroller based temperature indicator and controller with digital display and sensor.*

*Alarm : Audio Video alarm if the temperature deviates from the present temperature.*

*Heating System : U shaped SS Nichrome wire air heaters.*

*Lighting : Interior illumination for working area.*



***Observation door : Inside see through unbreakable acrylic door.***

***Trays : Stainles Steel Perforated trays.***

***Backup : Battery backup for display in case of power failure.***

***Insulation : 3"thick CFC free PUF Insulation.***

***Temperature Range :5 Deg C above ambient to 300 deg C.***

***Temperature Uniformity : Better than +/-2Deg C.***

***With additional safety thermostat to cut off the air heater in case of overshoot.***

***Make : MAC, Equitron, Thermo Scientific Works***

***(6) Bio Safety Cabinet***

***Bio safety Cabinet Unit, Type A2 meeting BSF Cabinet & American NSF/ANSI 49 with zero recirculation and zero exhaust system. Made of SS 304 inside and Powder coated GI outside frame fitted with isolated view lever.***

***Sliding view lever constructed with suspended Lighting system.***

***Make : MAC, Equitron, Thermo Scientific Works, Snowbell***

***(6) Bio Safety Cabinet***

***One***

***Bio safety Cabinet Unit, Type A2 meeting BSF Cabinet & American NSF/ANSI 49 with zero recirculation and zero exhaust system. Made of SS 304 inside and Powder coated GI outside frame fitted with isolated view lever.***

***Sliding view lever constructed with suspended Lighting system.***

***(Make : Klenzoid, Yorco, Thermo Scientific Works, MAC)***