

The indent AMC specification is for cleaning, inspection and pressure testing of pressure vessels and its associated systems, which include the maintenance, pressure testing and repair services of pressure vessels/ air receivers and its associated systems available at VSSC. List of pressure vessel is enclosed in **Annexure-1**.

PERIOD OF CONTRACT:

This Contract shall be operational for a period of Two years from the date of placement of purchase order. However, VSSC reserve the rights to extend the same for further periods on mutual agreements at same rates, terms & conditions or short close the same by giving one-month prior notice in writing, without any financial obligation on either side.

1. SCOPE OF WORK

The bidder shall provide the service as per the requirement on demand basis by VSSC. At present approximately **384 Nos** of pressure vessels/ air vessels are in operation at VSSC, which are located at different places namely three locations 1. VSSC, 2. CMSE & IISU, Vattiyookavu 3. Valiamala, for the following work.

- 1.1 The work involves cleaning, inspection, testing and certification of all pressure vessels, its associated systems such as pressure gauges, relief valves, vent valves, check valves, drain valves, safety diaphragm, plumbing, flange joints etc., and associated piping systems including changing of damaged gaskets to ensure that the pressure vessel is operational.
- 1.2 Hydro pressure testing of pressure vessels up to first mounting shall be at a pressure of 1.5 times the maximum permissible working pressure of each Vessel or 1.25 times the design pressure whichever is less. Test procedure is enclosed as **Annexure-2**. The periodicity of testing of pressure vessel shall be decided by VSSC (minimum once in two years) as per the Kerala Factories Rules.
- 1.3 A detailed drawing showing pressure vessel and associated systems up to first mountings is enclosed as **Annexure-2A**. Cleaning and inspection of flanges, valves and replacement of gaskets of flange openings removed for testing upto first mounting shall be included in the charges for pressure testing as per Annexure- A and no separate charges shall be paid .
- 1.4 Pressure Vessels owing to its use or construction, **not possible to conduct hydrostatic test**, pneumatic test with a thorough systematic thickness measurement survey shall be carried out. For carrying out pneumatic test, the bidder shall obtain separate approval from the user Division. A detailed procedure for thickness

measurement and pneumatic test is enclosed as **Annexure-2**. After conducting NDT (Ultrasonic testing), the test area where the paints are removed for testing purpose are to be repainted by the bidder no separate payment shall be paid.

- 1.5 Cleaning, inspection, testing of pipelines and its accessories like valves, flanges etc other than first mountings also shall be under the scope of the work. **Testing of Pipelines and maintenance of its accessories beyond first mounting shall be done only** with prior approval from Head, user division and focal point Centre Safety Division, clearly indicating the details of the optional works. The pipeline shall be hydrostatically tested at a pressure of 1.25 times the maximum operating pressure. Relevant design code shall be followed before the finalisation of pressure testing of pipelines. Painting of pipelines shall be as per charges quoted.
- 1.6 Painting of compressors, pressure vessels & its associated systems and pipelines is under the scope of the work. However, it is optional and shall be carried out as per the requirement of the user division, VSSC. Painting includes cleaning of all the external surfaces (external) and painting two coat of **light colour epoxy paint** over one coat of **epoxy primer**. The bidder also has to carry out painting of internal surface of vessel if called for. The bidder shall obtain vessel entry clearance from Divisional safety officer before carrying out the painting activity inside the vessel. The charges for the same shall be quoted separately. **Charges quoted shall be inclusive of paint and primer**
- 1.7 Date of testing, due date for next testing, pressure vessel ID no., Division etc., shall be clearly displayed on the vessel.
- 1.8 The consumables like cotton waste, shellac, kerosene, emery sheets, insulation tapes, Teflon tapes, M-seals, chemicals if any required for cleaning pressure vessels., required for maintenance has to be brought by the bidder.
- 1.9 Dismantling of components, movement of the pressure vessels and its system within VSSC for testing and reinstalling at its original location are under the scope by the bidder.
- 1.10 The pressure relief valve shall be tested in a separate work bench or any other approved method over the required operational range and refitting into the vessel shall be done by the bidder. The periodicity of testing of relief valve is once in a year. The smaller safety relief valves which are not economically feasible to test every year and are not used in corrosive environment shall be replaced with the new one in every two years during the periodic cleaning, inspection and testing of the pressure vessels. The bidder shall issue a certificate (**Annexure-6**) after successful testing of each relief valve separately.

- 1.11 The safety relief valves which cannot be tested inside VSSC, the bidder shall take the relief valves for testing to his premises with the approval of user division, VSSC and same shall be refitted in the vessel after completion of testing.
- 1.12 The pressure gauges shall be calibrated once in a year or as per the requirement of VSSC. The pressure gauges shall be calibrated using dead weight tester/ calibrated master gauge (calibrated in a lab accredited by NABL with a periodicity of at least every six months). Calibration certificate of master gauge shall be submitted to AMC focal point, Safety Division for verification and record. Separate calibration certificate for the pressure gauges shall be provided by the bidder after completion of calibration of pressure gauges as per **Annexure-.5**
- 1.13 The Bidder shall arrange qualified and experienced workforce as per Section-6 to ensure timely completion of testing of pressure vessels before the due dates.
- 1.14 Installation of new pipelines and extension of existing pipelines is not covered under the scope of this contract. However, the replacement of existing corroded/damaged pipelines and its fittings is permitted. Before the replacement of damaged/corroded pipelines the bidder shall obtain prior approval from user division and focal point Centre Safety Division, clearly indicating the length and size of pipeline to be replaced.
- 1.15 All Emergency/Break-down calls shall be attended by the bidder within 24 Hours up on intimation from user division VSSC / AMC Focal Point, Safety Division.
- 1.16 Providing scaffolding for accessing the hi-rise pressure vessels is under the scope of the bidder. The rates for scaffolding shall be quoted as per **Annexure-A**
- 1.17 All the necessary tools and equipment's including calibrated torque wrench, chain puller, high pressure and low-pressure hand operated hydraulic pump essential for maintenance and testing of pressure vessel shall be brought by the bidder.
- 1.18 The bidder shall carryout maintenance of compressors if called for and rates for such maintenance shall be as per **Annexure-B**

2. PERIODICITY OF CLEANING, INSPECTION TESTING AND MAINTENANCE OF PRESSURE VESSELS:

2.1 The periodicity of maintenance shall be as follows:

Cleaning, inspection and maintenance of air receivers/ pressure vessels& its associated systems	:	Once in 24 months. i.e., once in two year
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i. Testing of pressure vessels/air receivers.	:	Once in 24 months. i.e., once in two years
ii. Inspection, testing and calibration of safety relief valves	:	Once in 12 months i.e., once in a year ie., 01 time in a year after pressure testing.
iii. Inspection, testing and calibration of pressure gauges	:	Once in 12 months. i.e., once in a year.
iv. Breakdown Maintenance	:	As and when required as per section 1.15

3. QUALIFICATION CRITERIA:

Bidder shall meet the following qualification criteria. The Bidder shall submit all the relevant documents supporting the qualification criteria. Bids of those bidder who does not meet the criteria will not be considered for evaluation.

- 3.1 Bidder should have successfully executed at-least one similar nature contract for hydrotesting pressure vessels to any Govt/ PSU/Private organisations. The word "similar" also refers to any work involving /erection and commissioning of piping/ pressure vessels in which hydrotesting is an integral part of the work order. Copy of purchase order/agreement shall be enclosed.
- 3.2 The bidder shall have minimum one number of testing personnel having valid ASNT/ISNT Leve-2/Level-3 qualification for conducting all the NDT tests for ensuring air receiver tanks are free of defects. Copy of valid certificate must be submitted duly certified by the authorized signatory of the bidder firm along with bid
- 3.3 The Bidder shall submit a copy of Company's registration certificate / Certificate of incorporation / Partnership Deed / Any other registration certificate (as applicable).
- 3.4 The Bidder shall submit a copy of GST registration and remittance details of the last paid GST.
- 3.5 Bidder shall submit a copy of PAN Card.
- 3.6 Bidder should have Independent Provident Fund code number allotted in favour of his establishment under EPF & Misc. Provisions Act 1952. Documentary proof in this regard shall be uploaded while submitting bid online
- 3.7 Bidder shall upload self attested scanned print out of the online IT statement indicating Zero tax liabilities for four consecutive Assessment Years prior to the tender opening date.

3.8 Bidder shall furnish stipulated documents in support of fulfilment of above qualification criteria. Non-submission or incomplete submission or false information of documents may lead to rejection of offer.

4. OBLIGATIONS

4.1 Required water, electricity for the hydro testing shall be arranged by the concerned user division, VSSC. Nitrogen gas required for calibration of pressure gauges & relief valves shall be provided by VSSC. However, adaptors and connecting hoses required for testing is under the scope of bidder.

5. ARBITRATION:

5.1 In the event of any dispute/s, difference/s or claim/s arising out of or relating to the interpretation and application of the Contract, such dispute/s or difference/s or claim/s shall be settled amicably by mutual consultations of the good Offices of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30 days from the date of receipt of written notice of the existence of such dispute/s, then the unresolved dispute/s or difference/s or claim/s shall be referred to the Sole Arbitrator appointed by the Parties by mutual consent in accordance with the rules and procedures of Arbitration and Conciliation Act 1996 as amended from time to time. The arbitration shall be conducted in Bengaluru in the Arbitration and Conciliation Centre – Bengaluru (Domestic and International) as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be “English” only.

5.2 Work under the Contract shall be continued by the Bidder during the pendency of arbitration proceedings, without prejudice to a final adjustment in accordance with the decision of the Arbitrator unless otherwise directed in writing by the Department or unless the matter is such that the works cannot be possibly continued until the decision (whether final or interim) of the Arbitrator is obtained.

6. WORKFORCE & RESPONSE TIME:

The bidder shall mobilise skilled workforce immediately upon the call/placement of order by VSSC. The bidder shall ensure the response time is contained with 24 hours.

Sl.No	Category	Qualification and competency/knowledge of Pressure Vessel service Personnel's
1	Supervisor	Diploma in Mechanical or Electrical with Two years' experience in erection, commissioning and Maintenance of compressors, pressure

		vessels& air receivers.
2	Fitter	ITI certificate in fitter trade with minimum Two Years' experience in maintenance of compressors, pressure vessels& air receivers.
3	Helpers	10 th class minimum with two years of work experience Maintenance of compressors, pressure vessels& air receivers.

6.1 The bidder shall mobilize the following minimum qualified and experienced workforce for maintenance of the Pressure Vessels.

6.2 Minimum work force needs to be deployed by the Bidder for the maintenance of each Pressure Vessel for two years is as per the following.

SI.No	Category	No of persons (Minimum)	Remark
1	Supervisor	2	Minimum two teams (Total 6 persons, with each team having 3 person) to be engaged by the bidder for carrying out the maintenance activity at VSSC, VKC, &VMC campus based on the requirement. However, at any point of time two teams shall be mandatorily available for pressure testing and maintenance.
2	Fitter	2	
3	Helpers	2	
Total		6	

6.2.1 Depending on the work load, the bidder may have to increase the workforce by additional manpower/existing minimum manpower to execute work before and after office working hours/day as per the instructions of the user facility Engineer-in-charge and AMC engineer in-charge/Focal point, Safety Division.

6.2.2 The bidder shall update the focal point regarding the deputation of Pressure Vessel maintenance teams on daily basis.

6.2.3 The bidder shall furnish complete details of the workforce deployed (Number of persons, qualification and experiences of work) to the AMC Focal Point before the commencement of the work for arranging entry passes.

6.2.4 The Bidder shall submit the necessary documentary evidence for the qualification and experience of the workforce engaged for work.

6.2.5 General working timings for the maintenance workforce including supervisor

is 9.00 hrs to 17.00 hrs on working days (Monday to Friday, Five days a week). Depending on requirement, the working day/hour shall be extended on mutual agreement between Engineer-In-charge of the facility and service agency and approval of AMC focal point, as applicable.

6.2.6 In case, if the bidders fail to complete the maintenance of pressure vessel as per the **schedule in any particular month**, it is the responsibility of the bidder to mobilize additional workforce (day/hour) to complete the same within the stipulated time. **No extra payment will be made** for the additional manpower engaged.

7. GENERAL CONDITIONS:

- 7.1 The Bidder shall arrange own conveyance/transport for their team and materials etc.
- 7.2 Some of the Pressure Vessels/Air Receivers may be deleted from the scope of work during the contract period. Similarly, some new Pressure Vessels/Air Receivers may be included in scope. The bidder shall undertake servicing of such additional Pressure Vessels at the same rates available (Annexure-A) in the contract for similar type/capacity of Pressure Vessels.
- 7.3 Any workforce deployed by the bidder should be medically fit and the fitness is mandatory to work within VSSC premises. In case any health problem is noticed, they shall not be allowed to work inside the premises.
- 7.4 The Bidder shall make their own arrangements for lodging and boarding of their maintenance team during the period of contract. Bidder shall mandatorily arrange an operational office in Trivandrum within 15 days from the award of the contract and same shall be communicated to VSSC. If the bidder fails, the purchase order is deemed to be cancelled.
- 7.5 The Bidder shall register the list of all their items, tools, and equipment etc., brought inside the range, every time at the main CISF security gate.
- 7.6 For Bidder's equipment, tools, materials, etc. which are to be taken out from VSSC campus after completion of work, proper entry shall be made at the main gate duly endorsed by CISF.
- 7.7 The Department shall issue necessary gate passes for taking out the Bidder's materials, as and when required and after completion of work.
- 7.8 Department shall not provide any place to keep a lockable storage cabinet at Work

centre for keeping the tools. The bidder shall be self-equipped with infrastructure towards various gadgets for their materials, issuing reports, documentation and certificates along with provision for providing printouts/scanned images after approval of competent authority. The Bidder shall not make any claim on the Department for the loss of their instruments, tools etc.

- 7.9 The Bidders shall indemnify the Purchaser/and/or any Officer, employee or any assignee thereof harmless from any loss, damage, liability or expense, on account of damage to the property or environment and injuries including death, to any persons not limited to, employees or agents of the Department, workforce of the bidder or its sub-bidders and all other persons performing any part of the work here under any occurrence caused by any act of commission/omission of the bidder or his sub-bidders or any of them. The bidder shall at his expense defend any suits or proceedings brought against the Department on account thereof and shall satisfy all judgments and pay all expenses which may be incurred by or rendered against them or any of them in connection therewith. The Bidder shall ensure the minimum wages to their work force as per Minimum Wages Act from time to time.
- 7.10 The bidder shall insure him and all his staff against accidents for the duration of the contract period at his cost. The bidder shall produce proof of insurance coverage before starting the work at site in VSSC. The Department will not be responsible for any type of injury including death caused to the bidder's personnel during the work. Bidder shall also submit the proof of renewal of the same policy at least two days before the expiry date of the previous policy to VSSC. The bidder will not be allowed to carry out any activity without necessary insurance coverage of their workforce.
- 7.11 The Department shall not accept any liability for the bidder or sub- bidders, their officers, employees or agents, servants or assigners or any of them or for their property while on the premises or in the service of the Department. i.e., Department shall not be responsible for any loss of life of your service personnel while performing the contract at our premises due to natural calamities/accidents/ explosion etc.
- 7.12 In case of any equipment or property of the Department is damaged by the bidder or their workforce/agents, the same shall be rectified "free of cost" by the bidder within the period specified by the AMC Engineer-in-charge/focal point and respective facility in-charge. If the repair is not carried out within the specified period, the bidder shall pay immediately, the amount specified by the Department for the damage otherwise it will be recovered from amount due to them.

- 7.13 The offer shall include all the necessary labour, materials, equipment, transportation services and incidentals connected with the servicing and maintenance (breakdown/preventive/annual/load-test/spares/service for 2 years) of the Pressure Vessels.
- 7.14 A feedback form certified by the user facility and the Pressure Test Certificate/calibration certificate of safety relief valves & pressure gauges duly signed by the bidder, user facility engineer in-charge and Head of the concerned division, shall be submitted to the AMC focal point, Safety Division after completion of each maintenance. The feedback form will be provided to the user division after the award of the contract.
- 7.15 The Department reserve the right to add/delete any number of similar equipment to this Contract during the currency of the Contract.
- 7.16 Before quoting, if required, the bidder shall visit the site for getting necessary inputs about the site conditions such as Pressure Vessel locations and other aspects. Site visit of the facility shall be arranged, with prior communication and on mutually agreed dates, on any working day at least 7 days prior to due date for bid submission.
- 7.17 The offer for AMC for maintenance and testing of Pressure Vessels & associated systems, cost shall be as per Annexure A, B & C of Part- II of the Tender document. (Other type of offers or offer with any other conditions will not be accepted).
- 7.18 If there is any dispute, on the quality of the work or schedules, the decision of the Engineer in-charge of the respective user facility and AMC Focal Point, Safety Division is final and binding on the bidder.
- 7.19 The bidder shall provide required Personnel Protective Equipment (PPE) such as helmets, cotton uniform, gloves, safety belts, shoes, safety goggles etc to all the work force engaged and same should be worn at worksite.
- 7.20 The bidder shall not remove or engage any person without the knowledge and concurrence of the AMC focal point, Safety Division.
- 7.21 The bidder shall abide by the statutory provisions, rules and regulations of Government of India and Government of Kerala in force from time to time for their workforce including ensuring of minimum wages, remittance of EPF and insurance, medical allowance etc. The bidder shall furnish necessary documentary proof to that effect to the satisfaction of the Department as and when demanded. The proof of remittance of EPF subscription and the employee's contributions etc., shall be

submitted to the Department authorities from time to time.

- 7.22 The bidder shall follow strictly the procedure/procedures for performing pressure test, calibration etc., If any deviation found, Department shall reserve rights to close the contract, if any deviation are found / observed.
- 7.23 It is the responsibility of the bidder/their workforce to maintain the cleanliness of the maintenance bay, working premises etc.
- 7.24 The bidder should mobilize their team within 10 days from the date of receipt of the purchase order.
- 7.25 The bidder shall deploy their maintenance staff below the age of 60 years.
- 7.26 The technical information, drawings, specifications and other related documents forming part of enquiry or contract shall be the property of the Department and shall not be used for any other purpose, except for execution of the contract. This technical information, drawings, specifications and other related documents shall be returned to the Department with all approved copies and duplicates, if any, immediately after they have been used for the agreed purpose.

8. ENTRY PASSES FOR BIDDER'S STAFF:

- 8.1 The bidder and their work force need photo entry passes issued by the Department to enter into work spots at VSSC. For this purpose, the bidder shall provide Aadhar proof of all his workforce, attested copies of educational qualification and conduct certificate from local authorities (Police Verification Certificate) to the department before commencement of the work. The bidder shall abide by the security restriction imposed by the Department for their workforce, tools and materials from time to time.
- 8.2 In respect of those Contract workforce, who are removed from rolls, their entry passes shall be returned to the Department immediately after intimation to the AMC focal point. Non- surrender or misplacement of any entry pass shall be charged from the bidder at the rates prescribed by the Department from time to time. As VSSC, Thiruvananthapuram is a highly restricted and sensitive area, the workforce deputed for maintenance shall have very good character and high integrity.
- 8.3 The request for entry pass and complete details of the workforce deployed along with their qualification and areas of work shall be submitted to Engineer in-charge/focal point of the AMC.
- 8.4 If the Bidder needs to add any workforce to the contract, the bidder shall submit necessary documents in order to verify the qualification criteria.

9. COMPLIANCE OF SAFETY REGULATION:

- 9.1 Bidder shall ensure that the workforce deployed to render the service shall observe all safety norms at their cost. VSSC shall not be responsible for any eventuality arising out of any negligence on the part of bidder in observing the safety norms.
- 9.2 Bidder should engage only those workforces who are qualified and experienced for the work to be done and for which PO has been placed.
- 9.3 The Bidder's workforce shall be Indian National for execution of the work. Only skilled workforce with experience of this particular work shall be employed. No workforce below the age of 18 years shall be employed. The bidder shall pay to each workforce, wages not less than those specified by Minimum Wages Act.
- 9.4 Work shall be supervised all the time during the execution period either by the bidder themselves or by qualified authorized supervisor of the bidder.
- 9.5 It is the responsibility of the bidder to ensure safe working of their workers while carrying out the work and shall follow all Statutory Safety norms and precautions. The Bidder shall provide and ensure use of PPE's such as Safety Belts, Face Shield, Masks, Goggles, Glasses, Ear Plug, Welding Shields, Hand Gloves, Safety Shoes, safety belts etc. by their workers for safe working.
- 9.6 The Bidder shall ensure calibrated master gauge for the calibration of pressure gauges. The master gauges shall be calibrated as per standard and copy of certificate shall be provided to AMC focal point, VSSC.
- 9.7 Special precautions shall be taken while working at height or handling heavy jobs. The Bidder shall ensure that none of their workers work at a height without using Safety Belts. The Bidder themselves or their qualified supervisor only shall supervise the work while their workforce work at heights or while handling heavy jobs.
- 9.8 In case of any damage to VSSC property/equipment by the bidder due to their negligence or otherwise, the total expenses for repair/replacement of property/equipment shall be borne by the bidder.
- 9.9 In case any accident occurs causing injury or casualty to any of Bidder's workforce while carrying out the work, the complete responsibility lies with the Bidder. Bidder shall ensure to provide immediate medical help to their injured worker/workers and shall provide compensation as per Workmen's Compensation Act' 1923.

10. TAXES AND DUTIES:

The bidder shall clearly indicate the HSN code and respective GST rates applicable for the services rendered under this contract. The Bidder shall submit to VSSC documentary evidence of GST registration certificate specifying name of services covered under this contract. The Bidder shall submit serially numbered GST invoice, signed by him or a person authorized by him in respect of taxable services provided, and shall contain the following, namely,

- a) The name, address and the registration number of the bidder
- b) The name and address of the bidder receiving taxable service
- c) Description, classification and value of taxable service provided
- d) The GST payable thereon.

All the four conditions shall be fulfilled in the invoice before release of GST payment.

11. REJECTION OF TENDER & OTHER CONDITIONS:

The acceptance of tender shall rest with VSSC, which does not bind itself to accept any tender and reserves to itself full rights for the following: -

- a) To reject any or all tenders.
- b) To award the work in part.
- c) Conditional tenders, tender containing unrealistic rates, tenders which are incomplete or otherwise defective, partly quoted tenders and tenders not in accordance with the tender conditions, ANNEXURES, specifications, etc., are liable to be rejected.

12. SECURITY DEPOSIT:

The bidder shall deposit a sum equivalent of 3% of annual cost of maintenance as interest free security deposit in the form of bank guarantee or Fixed Deposit Receipt valid till the contract period towards performance of contract. In case cancellation of contract due to default bidder, the security deposit shall be forfeited. In case of successful completion of contract, the security deposit will be refunded/adjusted without any interest.

13. DOWN-TIME COMPENSATION:

In case the maintenance/breakdown is not attended to in time, down-time compensation at the rate of 0.5% of the order value per week shall be recovered from the bidder. The reasons for not-attending the maintenance calls in time shall be informed to the division within 12 hours and if the reasons are genuine and

convincing, the Engineer in-charge of AMC and Facility In-charge of Pressure Vessel/Pressure Vessel custodian shall mutually certify service report condoning the delay with the approval of Division Head. The total amount of compensation for delay to be paid under this condition shall not exceed 10% of the maintenance value of the particular Pressure Vessel. i.e., In case the break-down calls are not attended in time, i.e., within 24 hours of our intimation, down-time compensation at the rate of 0.5% of the Annual Maintenance Charges per day shall be recovered from you subject to a maximum of 5%.

14. PAYMENT TERMS:

- 14.1 Payment shall be made on pro-rata basis after the completion of maintenance with pressure testing of each Pressure Vessel & calibration of safety relief valves & pressure gauges. The bills shall be certified by the Engineer in-charge of the facility and duly approved by concern Division Head.
- 14.2 Pro-rata payment shall be made after satisfactory completion of maintenance & pressure testing work for each Pressure Vessels or calibration of safety relief valves/pressure gauges.
- 14.3 The Bidder should submit the monthly status of the works carried out to the Engineer in-charge/focal point, safety division.
- 14.4 For **arranging payment**, the bidder shall submit invoice, service call report, to Accounts officer through Engineer in-charge/focal point, safety division after duly certified and approved by the Engineer In-charge of the facility, Pressure Vessel custodian and concerned Division Head. The invoice shall include the following:
 - a. Maintenance works attended in detail.
 - b. Spare parts supplied if any
 - c. Optional works carried out if any
 - d. Pressure test certificate as per Annexure-6
 - e. Calibration certificate as per Annexure-5
- 14.5 The invoice shall be submitted to user division within 15 days of completion of the work.
- 14.6 The feedback form (Form-1) certified by the user division and the pressure test certificate duly signed by the Engineer in-charge and Division Head of the concerned division shall be forwarded to the Engineer in-charge/focal Point, Safety Division after completion of maintenance. The feedback form will be provided to

the user division after the award of the contract.

15. CANCELLATION OF ANNUAL MAINTENANCE CONTRACT:

- 15.1 The **scope of work cannot be split into parts**, as the resources for executing the contract are shared over a period of execution of contract uniformly. Tenderer shall complete the maintenance of pressure vessels as per the schedule given by the Department in a year. As per the scope of the tendered works viz. maintenance works, load testing and supply & installation of spares etc., are not separable.
- 15.2 In case the bidder does not carry out the work as per terms and conditions of the Contract or their services are not satisfactory, the Department reserves the right to cancel the Annual Maintenance Contract with the bidder by giving an advance notice of two weeks.
- 15.3 The bidder shall be bound by the details furnished by them to the Purchaser while submitting the Bid or at any subsequent stage. In case, any of the documents furnished by them is found to be false at any stage, it would be deemed to be a breach of the Terms and conditions of the Work order making the Vendor liable for legal action besides termination of Work order/blacklisted and forfeiture of Security deposit.
- 15.4 The department shall **reserve the right to terminate the contract** in the circumstances detailed here under:
- a. If the Bidder fails to rectify, re-construct or replace any defective system/sub-system/equipment within a specified period after the Department having given a notice to the Bidder to rectify, re-construct or replace the said defective system/subsystem/equipment or the Bidder delays, suspends or is unable to complete the system/sub-system/equipment by the date mutually agreed upon.
 - b. If the Bidder commits breach of any of the terms and conditions of the contract.
 - c. If the government of India decides to terminate the contract in public interest.
- 15.5 When the Bidder makes themselves liable for action under the circumstances mentioned above, the Department will have power to **forfeit the security deposit** of the Bidder and the Bidder shall have no claim for damages whatsoever on such for future.

16. REPLACED COMPONENTS/SPARES:

- 16.1 All components/spares replaced during the maintenance work shall be returned to the concerned user division of VSSC on completion of each work and to obtain a certificate for payment terms from user facility as per checklist.
- 16.2 Bidder shall provide the rates for the spare parts required for any replacement during AMC as per **Annexure-C**. The bidder shall supply the item based on need basis only. VSSC shall also provide the spares in case of availability and bidder shall replace the spares as per the AMC terms & conditions.
- 16.3 Bidder shall be paid only for the spares included in Annexure-C, which is replaced during the AMC period.
- 16.4 Bidder shall obtain approval from the Engineer In-charge of user facility before replacement of any spare parts.
- 16.5 For all the items regarding this scope , the delivery point is at VSSC.
- 16.6 All the materials supplied or used shall be new and of first quality and manufactured and tested in accordance with the latest editions of the relevant Indian/International standards. Wherever imported components are used, they shall be manufactured in accordance with the relevant standards published in the country of manufacture after allowing for specific aspects under Indian conditions such as tropical climate, etc. Any material or work, where no specific standard is applicable, shall be fabricated as per the instructions and directions of the Department.
- 16.7 All the electrical equipments used shall conform to the latest Indian Electricity Rules as regards safety, earthing and other essential provisions specified there in for installation and operation of electrical parts.

17. SCHEDULE OF WORK:

- 17.1. On receipt of the AMC purchase order, the bidder shall contact the AMC focal point, Safety Division for the details of the pressure vessels which are due for maintenance & pressure testing.
- 17.2. The actual work schedule shall be confirmed by the AMC focal point, Safety Division in consultation with Engineer-in-charge of user facility based on the field requirements and will be informed to the bidder well in advance for planning the resources.

17.3. The maintenance work shall be executed by the bidder as per the instructions of the AMC focal point, safety division.

17.4. No optional works as mentioned in Annexure-B shall be carried out by the bidder without the approval of Engineer in charge, User Division, VSSC and AMC Focal Point Safety Division.

18. SUB-CONTRACT:

18.1. The bidder shall not subcontract the job or part of it to any other agency without the written permission of VSSC. In case VSSC permits to employ a subbidder, competent enough and in the interest of the work, it shall not imply any limitation of bidder's liability to fulfil the work order. The sub-contractor shall also abide by the terms & conditions of the contract.

18.2. All the works carried-out by such sub-bidders shall also be scrutinized, inspected and approved by the Department. However, the responsibility of the performance of such sub-contracted systems shall lie with the Bidder. Any delay in carrying out the work by the sub-bidder which affects the overall schedule of the work does not absolve the Bidder from payment of compensation for the delays. All terms and conditions applicable to the Bidder shall also be applicable to the sub-bidder who has been assigned the activities relevant to systems / sub systems.

19. COMPLIANCE OF STATUTORY REQUIREMENT:

21.1. The bidder shall abide by the statutory provisions, rules and regulations of Government of India and Government of Kerala in force from time to time for their workforce such as ensuring of minimum wages, remittance of PF, insurance, etc., The bidder shall furnish the documentary proof to that effect to the satisfaction of the Department as and when demanded. The proof of remittance of PF subscription and the employee's contributions etc. shall be submitted from time to time as and when demanded.

21.2. All statutory requirements as per labour laws, ESI, PF etc. shall be met by the bidder.

20. FALL CLAUSE:

The charges quoted by you (BIDDER) shall in no event exceed the lowest charges at which you undertake AMC of identical description to any other bidder during the period of this contract. If at any time, during the said period, you reduce such charges to any other customers, it shall be forthwith notified to us and the charges payable under the contract for servicing done after the date of coming into force of such reduction of charges shall stand correspondingly reduced.

LIST OF ANNEXURES

Sl. No	Annexures	Contents/ Particulars
1.	Annexure 1	List of pressure vessels available at VSSC
2.	Annexure 2	Test procedure
3.	Annexure 3	Details of maintenance works to be carried out in compressors.
4.	Annexure 4	Report of examination of pressure vessel or plant
5.	Annexure 5	Calibration certificate for pressure gauge
6.	Annexure 6	Safety relief valve test report
7.	Annexure 7	Certificate for pipeline pressure test
8.	Annexure 8	Compliance statement

LIST OF PRESSURE VESSELS- 2024 ANNEXURE-1

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
1	VSSC-PV-002	Air Compressor/ Air receiver	250	7
2	VSSC-PV-005	Air Compressor/ Air receiver	320	7
3	VSSC-PV-006	Air Compressor/ Air receiver	320	11
4	VSSC-PV-007	Air Compressor/ Air receiver	320	8
5	VSSC-PV-008	Air Compressor/ Air receiver	118	7
6	VSSC-PV-009	Air Compressor/ Air receiver	105	5
7	VSSC-PV-015	Air Compressor/ Air receiver	250	11
8	VSSC-PV-024	Air receiver	4000	15
9	VSSC-PV-029	Air Compressor/ Air receiver	7100	40
10	VSSC-PV-030	Air Compressor/ Air receiver	7100	40
11	VSSC-PV-031	Air Compressor/ Air receiver	28500	40
12	VSSC-PV-045	Air Compressor	255	12
13	VSSC-PV-046	Air Compressor/ Air receiver	265	15
14	VSSC-PV-047	Air Compressor/ Air receiver	1500	7
15	VSSC-PV-051	Hydroclave	12000	65
16	VSSC-PV-053	Air Compressor/ Air receiver	3000	8
17	VSSC-PV-054	Air Compressor	400	8
18	VSSC-PV-056	Air Compressor/ Air receiver	16	3
19	VSSC-PV-057	Air Compressor/ Air receiver	75	7
20	VSSC-PV-058	Air Compressor/ Air receiver	16	7
21	VSSC-PV-059	Air Compressor/ Air receiver	60	7
22	VSSC-PV-062	Air Compressor/ Air receiver	250	8
23	VSSC-PV-066	Air Receiver	250	5
24	VSSC-PV-068	Autoclave	14850	5
25	VSSC-PV-069	Air Compressor/ Air receiver	1500	7
26	VSSC-PV-070	Air Compressor/ Air receiver	1000	7
27	VSSC-PV-071	Air Compressor/ Air receiver	284	5
28	VSSC-PV-073	Air Compressor/ Air receiver	70	7
29	VSSC-PV-075	Air Compressor/ Air receiver	35	60
30	VSSC-PV-084	Air Compressor/ Air receiver	100	8
31	VSSC-PV-088	Air Compressor	95	9
32	VSSC-PV-091	Autoclave	10000	9
33	VSSC-PV-093	Air Compressor/ Air receiver	10000	45
34	VSSC-PV-104	Air Compressor/ Air receiver	110	7
35	VSSC-PV-121	Air Compressor	95	5
36	VSSC-PV-124	Air Compressor/ Air receiver	153	5
37	VSSC-PV-126	Air Compressor	900	7
38	VSSC-PV-127	Air receiver	900	7
39	VSSC-PV-128	Air receiver	118	8
40	VSSC-PV-129	Air receiver	320	7
41	VSSC-PV-130	Air Compressor	50	10
42	VSSC-PV-134	Air Compressor/ Air receiver	160	5
43	VSSC-PV-144	Air Compressor/ Air receiver	100	5
44	VSSC-PV-145	Air Compressor/ Air receiver	100	7
45	VSSC-PV-151	Vertical Air receiver	150	10
46	VSSC-PV-167	Air Compressor/ Air receiver	70	5
47	VSSC-PV-171	Air Compressor/ Air receiver	70	5
48	VSSC-PV-175	Autoclave	10000	12
49	VSSC-PV-176	Air Compressor	50	5
50	VSSC-PV-187	Air Compressor/ Air receiver	175	10
51	VSSC-PV-188	Air Compressor/ Air receiver	75	6

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
52	VSSC-PV-193	Air Compressor/ Air receiver	16	5
53	VSSC-PV-195	Air Compressor	530	10
54	VSSC-PV-196	Air Compressor	110	7
55	VSSC-PV-197	Air Compressor/ Air receiver	70	5
56	VSSC-PV-199	Air Compressor/ Air receiver	70	5
57	VSSC-PV-201	Air Compressor	95	8
58	VSSC-PV-210	Air receiver	300	12
59	VSSC-PV-216	Air receiver	300	8
60	VSSC-PV-217	Air receiver	250	7
61	VSSC-PV-218	Air receiver	250	12
62	VSSC-PV-224	Air receiver	320	8
63	VSSC-PV-225	Air receiver	90	5
64	VSSC-PV-226	Air Compressor	150	9
65	VSSC-PV-229	Air Compressor	50	8
66	VSSC-PV-235	Air Compressor	500	9
67	VSSC-PV-236	Air Compressor	250	10
68	VSSC-PV-237	Air Compressor	250	10
69	VSSC-PV-247	Air compressor	237	12
70	VSSC-PV-250	Air Compressor	185	7
71	VSSC-PV-251	Air receiver	15000	14
72	VSSC-PV-252	Air Compressor	250	7
73	VSSC-PV-253	Air receiver	400	8
74	VSSC-PV-254	Air receiver	70	5
75	VSSC-PV-255	Air receiver	70	5
76	VSSC-PV-257	Air receiver	70	5
77	VSSC-PV-258	Air storage	300	10
78	VSSC-PV-259	Air receiver	250	7
79	VSSC-PV-262	AIR HEATER	250	35
80	VSSC-PV-263	Air receiver	1000	10
81	VSSC-PV-264	Air receiver	500	8
82	VSSC-PV-265	Air receiver	500	10
83	VSSC-PV-266	Reaves Curing Chamber	19000	3
84	VSSC-PV-267	Air receiver	500	10
85	VSSC-PV-268	Pressure Storage Vessel	300	10
86	VSSC-PV- 270	Hydraulic A/C	150	8
87	VSSC-PV-271	Pressure Storage Vessel	45	8
88	VSSC-PV-272	Air Compressor	250	12
89	VSSC-PV-273	Air Receiver	500	7
90	VSSC-PV-274	Air Compressor	160	12
91	VSSC-PV-275	Pressure Storage Vessel	100	9
92	VSSC-PV-277	Air Receiver	500	10
93	VSSC-PV-279	Air Compressor	220	10
94	VSSC-PV-280	Autoclave	63000	10
95	VSSC-PV-281	Air receiver	60000	30
96	VSSC-PV-282	Air receiver	500	10
97	VSSC-PV-283	Autoclave	380	5
98	VSSC-PV-284	Pressure Storage Vessel	250	5
99	VSSC-PV-285	Pressure Storage Vessel	200	10
100	VSSC-PV-286	Autoclave	800	2
101	VSSC-PV-287	Air receiver	500	10
102	VSSC-PV-288	Air Receiver	250	12
103	VSSC-PV-289	Air Receiver	100	1
104	VSSC-PV-291	Air Compressor/ Air receiver	160	7

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
105	VSSC-PV-292	Air Compressor	120	10
106	VSSC-PV-293	Air Compressor	210	10
107	VSSC-PV-294	Air Compressor	100	6
108	VSSC-PV-295	Air Compressor	110	6
109	VSSC-PV-296	Air receiver	360	8
110	VSSC-PV-297	Air Compressor	400	10
111	VSSC-PV-298	Air receiver	280	8
112	VSSC-PV-299	Air Compressor	300	12
113	VSSC-PV-301	Air receiver	45	8
114	VSSC-PV-302	Air Compressor	500	12
115	VSSC-PV-303	Air Compressor	90	8
116	VSSC-PV-304	Air receiver	310	8
117	VSSC-PV-305	Air Compressor	250	12
118	VSSC-PV-307	Air Compressor	96	8
119	VSSC-PV-309	Air storage	150	6
120	VSSC-PV-310	Air storage	220	8
121	VSSC-PV-313	Pressure Storage Vessel	220	10
122	VSSC-PV-319	Storage Vessel	300	8
123	VSSC-PV-320	Storage Vessel	200	8
124	VSSC-PVP321	Air Compressor	100	8
125	VSSC-PV-322	Air Compressor	300	8
126	VSSC-PV-323	Air Compressor/ Air receiver	45	4
127	VSSC-PV-324	Storage Vessel	300	11
128	VSSC-PV-328	Storage Vessel	220	12
129	VSSC-PV-329	Air Receiver	1000	8
130	VSSC-PV-330	Air Compressor	220	10
131	VSSC-PV-331	Air Compressor	200	9
132	VSSC-PV-332	Air Compressor	200	9
133	VSSC-PV-333	Air Compressor	220	10
134	VSSC-PV-334	Pressure Storage Vessel	200	10
135	VSSC-PV-335	Pressure Storage Vessel	200	10
136	VSSC-PV-336	Pressure Storage Vessel	200	10
137	VSSC-PV-337	Pressure Storage Vessel	270	8
138	VSSC-PV-338	Pressure Storage Vessel	250	10
139	VSSC-PV-342	Hydroclave	48000	70
140	VSSC-PV-343	Pressure reactor	7	70
141	VSSC-PV-344	Pressure Storage Vessel/air	270	15
142	VSSC-PV-345	Air receiver reactor	70	8
143	VSSC-PV-346	Air receiver reactor	270	11
144	VSSC-PV-347	Air receiver reactor	270	8
145	VSSC-PV-348	Pressure Storage Vessel	270	12
146	VSSC-PV-349	Resin Impregnation	43	10
147	VSSC-PV-350	Autoclave	167	10
148	VSSC-PV-351	Air Compressor	200	10
149	VSSC-PV-352	Air Compressor	200	10
150	VSSC-PV-353	Pressure storage vessel	200	10
151	VSSC-PV-355	Air compressor	160	8
152	VSSC-PV-356	Air compressor with air	220	12
153	VSSC-PV-357	Pressure storage vessel	220	12
154	VSSC-PV-358	Pressure Storage Vessel	100	7
155	VSSC-PV-359	Blast generator for portable abrasive blasting machine	250	6
156	VSSC-PV-360	Pressure storage vessel	200	10

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
157	VSSC-PV-361	Pressure storage vessel	220	10
158	VSSC-PV-362	Air Receiver	100	8
159	VSSC-PV-363	Air Receiver	1000	8
160	VSSC-PV-364	Pressure storage vessel	100	8
161	VSSC-PV-365	Pressure storage vessel	100	10
162	VSSC-PV-366	Pressure storage vessel	1000	9
163	VSSC-PV-367	Air Receiver	70	6
164	VSSC-PV-368	Air Compressor	220	7
165	VSSC-PV-369	Pressure storage vessel	500	10
166	VSSC-PV-370	Pressure storage vessel	2000	5
167	VSSC-PV-371	Pressure storage vessel	1000	7
168	VSSC-PV-372	Pressure storage vessel	1000	9
169	VSSC-PV-373	Pressure storage vessel	220	9
170	VSSC-PV-374	Pressure storage vessel	45	9
171	VSSC-PV-375	Slurry Moulding Equipment	63	3
172	VSSC-PV-376	Pressure storage vessel	420	9
173	VSSC-PV-377	Air Receiver	200	10
174	VSSC-PV-378	Pressure Storage Vessel	500	10
175	VSSC-PV-382	Pressure vessel	40	4
176	VSSC-PV-385	Air reciever	50	10
177	VSSC-PV-386	Air reciever	40	10
178	VSSC-PV-389	Air reciever(compressor)	160	10
179	VSSC-PV-390	Pressure storage vessel	1000	6
180	VSSC-PV-391	Air reciever	500	13
181	VSSC-PV-393	Propellant feed cylinder	84	4
182	VSSC-PV-394	propellant feed cylinder	84	4
183	VSSC-PV-395	propellant feed cylinder	84	4
184	VSSC-PV-396	propellant feed cylinder	84	4
185	VSSC-PV-397	air reciever	1000	8
186	VSSC-PV-398	air reciever	200	10
187	VSSC-PV-399	compressor	300	12
188	VSSC-PV-400	Pressure Vessel	500	8
189	VSSC-PV-401	Pressure Vessel	500	8
190	VSSC-PV-404	compressor with air receiver	500	12
191	VSSC-PV-405	pressure vessel	40	3
192	VSSC-PV-409	Compressor	45	4
193	VSSC-PV-410A	Air receiver	1500	14
194	VSSC-PV-410B	Air receiver	1500	14
195	VSSC-PV-410C	Air receiver	1500	14
196	VSSC-PV-411	Compressor	500	9
197	VSSC-PV-412	compressor with air receiver	200	10
198	VSSC-PV-414	Air receiver	150	15
199	VSSC-PV-415	Pressure storage vessel	110	8
200	VSSC-PV-416	Pressure storage vessel	110	8
201	VSSC-PV-417	Pressure storage vessel	225	10
202	VSSC-PV-418	Pressure storage vessel	225	10
203	VSSC-PV-419	Pressure storage vessel	225	10
204	VSSC-PV-420	Pressure storage vessel	225	10
205	VSSC-PV-421	Pressure storage vessel	420	10
206	VSSC-PV-422	Air receiver	270	7
207	VSSC-PV-423	Air receiver	500	8
208	VSSC-PV-424	Pressure storage vessel	200	10
209	VSSV-PV-425	compressor with air receiver	200	8

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
210	VSSC-PV-426	compressor with air receiver	200	8
211	VSSC-PV-427	Air Receiver	200	7
212	VSSC-PV-428	Pressure storage vessel	5000	10
213	VSSC-PV-429	Air Receiver	500	10
214	VSSV-PV-430	Air Receiver	200	6
215	VSSC-PV-431	Air Receiver	200	6
216	VSSC-PV-432	Air Receiver	2000	10
217	VSSC-PV-433	Air Dryer	500	10
218	VSSC-PV-434	Air Dryer	500	10
219	VSSC-PV-435	Pressure storage vessel,	200	10
220	VSSC-PV-436	Pressure storage vessel,	500	8
221	VSSC-PV-437	Pressure storage vessel	100	10
222	VSSC-PV-438	Pressure storage vessel	220	12
223	VSSC-PV-439	Pressure storage vessel	100	9
224	VSSC-PV-440	Air reciever	10000	70
225	VSSC-PV-441	Air reciever	6000	54
226	VSSC-PV-442	Air receiver	70	9
227	VSSC-PV-443	AIR RECEIVER	272	16
228	VSSC-PV-444	Stationary Type	1000	8
229	VSSC-PV-445	GN2 Surge Tank	800	7
230	VSSC-PV-446	GN2 Storage Tank	200	5
231	VSSC-PV-447	Pressure Storage Vessel	6200	5
232	VSSC-PV-448	Pressure Storage Vessel	2900	5
233	VSSC-PV-449	Pressure Storage Vessel	100	10
234	VSSC-PV-450	Pressure Storage Vessel	45	5
235	VSSC-PV-452	AIR RECEIVER / AIR COMPRESSOR	220	12
236	VSSC-PV-453	AIR RECEIVER	500	8
237	VSSC-PV-454	AIR RECEIVER	272	15
238	VSSC-PV-455	AIR RECEIVER	2000	10
239	VSSC-PV-456	AIR RECEIVER	1000	7
240	VSSC-PV-457	AIR RECEIVER	2000	7
241	VSSC-PV-458	AIR RECEIVER	1500	9
242	VSSC-PV-459	Air compressor with air	220	12
243	VSSC-PV-460	Air compressor with air	220	12
244	VSSC-PV-461	AIR RECEIVER	500	14
245	VSSC-PV-462	AIR RECEIVER	2000	10
246	VSSC-PV-463	AIR RECEIVER	2000	10
247	VSSC-PV-464	AIR RECEIVER	150	12
248	VSSC-PV-465	AIR RECEIVER	150	12
249	VSSC-PV-466	AIR RECEIVER	150	12
250	VSSC-PV-467	AIR RECEIVER	100	8
251	VSSC-PV-468	AIR RECEIVER	100	10
252	VSSC-PV-469	AIR RECEIVER	100	10
253	VSSC-PV-470	AIR RECEIVER	100	11
254	VSSC-PV-471	Pressure Storage Vessel	100	5
255	VSSC-PV-482	Pressure Storage Vessel	200	10
256	VSSC-PV-483	Pressure Storage Vessel	200	10
257	VSSC-PV-484	Air Recevier	220	12
258	VSSC-PV-485	Pressure Storage Vessel	1000	8
259	VSSC-PV-486	Air Recevier	150	8
260	VSSC-PV-487	Air Recevier	500	12
261	VSSC-PV-488	Other (Propellent Feed	89	10

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
262	VSSC-PV-489	Other (Propellent Feed	89	10
263	VSSC-PV-490	Air Compressor	500	12
264	VSSC-PV-491	Pressure Storage Vessel	1000	240
265	VSSC-PV-492	Pressure Storage Vessel	1000	240
266	VSSC-PV-493	Others	4230	12
267	VSSC-PV-494	Air Receiver	100	10
268	VSSC-PV-495	Compressor	15	6
269	VSSC-PV-496	Compressor	70	6
270	VSSC-PV-497	Air Receiver	1000	10
271	VSSC-PV-498	Air Compressor	300	14
272	VSSC-PV-499	Air Compressor	45	10
273	VSSC-PV-500	Air Compressor	100	10
274	VSSC-PV-501	Air Receiver/	200	10
275	VSSC-PV-502	Pressure Storage Vessel	250	10
276	VSSC-PV-503	Air receiver	270	10
277	VSSC-PV-504	Air receiver	270	13
278	VSSC-PV-505	Preessure storage vessel	220	10
279	VSSC-PV-506	COMPRESSOR	100	10
280	VSSC-PV-507	Pressure Storage Vessel	2000	13
281	VSSC-PV-508	Pressure Storage Vessel	2000	13
282	VSSC-PV-509	Pressure storage vessel	10000	7
283	VSSC-PV-510	Pressure storage vessel	8000	80
284	VSSC-PV-511	Pressure storage vessel	1000	13
285	VSSC-PV-512	Pressure storage vessel	1000	13
286	VSSC-PV-513	Pressure storage vessel	1000	13
287	VSSC-PV-514	Pressure storage vessel	1000	13
288	VSSC-PV-515	Pressure storage vessel	1000	13
289	VSSC-PV-516	Air Compressor	250	8
290	VSSC-PV-517	Air Compressor	220	12
291	VSSC-PV-518	Air Compressor	250	12
292	VSSC-PV-519	Air Compressor	50	8
293	VSSC-PV-520	Air Compressor	220	12
294	VSSC-PV-521	Air Compressor with storage	100	6
295	VSSC-PV-522	Air Recever Reactor	500	8
296	VSSC-PV-523	Air Recever Reactor	500	9
297	VSSC-PV-524	Air Compressor with storage	160	10
298	VSSC-PV-525	Pulsation vessel for air	120	9
299	VSSC-PV-526	Air receiver for 5 NM3 Nitrogen	105	9
300	VSSC-PV-527	Air Receiver-Capsule Type	100	10
301	VSSC-PV-528	Air Receiver-Capsule Type	100	10
302	VSSC-PV-529	Air Receiver	500	11
303	VSSC-PV-530	Compressor with air receiver	200	10
304	VSSC-PV-531	Air Compressor	220	12
305	VSSC-PV-532	Pressure Storage Vessel	800	8
306	VSSC-PV-533	Air Compressor	100	10
307	VSSC-PV-534	Air Compressor	160	8
308	VSSC-PV-535	Air Compressor	160	9
309	VSSC-PV-536	Pressure Storage Vessel	100	10
310	VSSC-PV-537	Air Compressor	150	9
311	VSSC-PV-538	Run Tank	5600	56
312	VSSC-PV-539	Air Recevier	1000	8
313	VSSC-PV-540	N2 Storage Tank	500	5
314	VSSC-PV-541	N2 Surge Vessel	5000	8

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
315	VSSC-PV-542	Storage Vessel	45	8
316	VSSC-PV-543	Storage Vessel	45	8
317	VSSC-PV-544	Pressure Storage Vessel	500	10
318	VSSC-PV-545	Pressure Storage Vessel	1000	10
319	VSSC-PV-546	Pressure Storage Vessel	225	7
320	VSSC-PV-547	Pressure Storage Vessel	500	7
321	VSSC-PV-548	Air Receiver, Capsule shape	200	10
322	VSSC-PV-549	Air Receiver, Capsule shape	200	10
323	VSSC-PV-550	Air Receiver, Capsule shape	200	10
324	VSSC-PV-551	Nitrogen Storage Vessel	2000	45
325	VSSC-PV-552	Pressure Storage Vessel	220	7
326	VSSC-PV-553	Air Compressor with receiver	500	12
327	VSSC-PV-554	Air Compressor with receiver	500	12
328	VSSC-PV-555	Air Receiver	500	10
329	VSSC-PV-556	Autoclave	630	4
330	VSSC-PV-557	Air Compressor with Storage Vessel	220	16
331	VSSC-PV-558	Air Compressor with Storage Vessel	24	8
332	VSSC-PV-559	Air Compressor with Storage Vessel	270	11
333	VSSC-PV-560	Pressure Storage Vessel	25	10
334	VSSC-PV-561	Air Compressor with receiver	270	10
335	VSSC-PV-562	Air Receiver	500	10
336	VSSC-PV-563	Air Compressor	220	6
337	VSSC-PV-564	Pressure Storage Vessel	3000	10
338	VSSC-PV-565	Pressure Storage Vessel	2000	10
339	VSSC-PV-566	Pressure Storage Vessel	2000	10
340	VSSC-PV-567	Pressure Storage Vessel	150	12
341	VSSC-PV-568	Air Compressor with receiver	150	12
342	VSSC-PV-569	Air Compressor with receiver	150	12
343	VSSC-PV-570	Autoclave	300	2
344	VSSC-PV-571	Air receiver	500	6
345	VSSC-PV-572	Pressure Storage Vessel	500	10
346	VSSC-PV-573	Pressure Storage Vessel	90	7
347	VSSC-PV-574	Pressure Storage Vessel	90	7
348	VSSC-PV-575	Pressure Storage Vessel	200	12
349	VSSC-PV-576	Air Receiver Reactor	500	10
350	VSSC-PV-577	Air Receiver	500	9
351	VSSC-PV-578	Air Compressor	180	7
352	VSSC-PV-579	Air Receiver	300	10
353	VSSC-PV-580	Air Compressor with receiver	160	8
354	VSSC-PV-581	Air Compressor with receiver	45	8
355	VSSC-PV-582	Air Receiver	200	10
356	VSSC-PV-583	Air Receiver	50	10
357	VSSC-PV-584	Air Receiver	500	13
358	VSSC-PV-585	pressure casting vessel	100	5
359	VSSC-PV-586	Compressor	250	10
360	VSSC-PV-587	Pressure storage vessel	4000	15
361	VSSC-PV-588	Compressor	200	10
362	VSSC-PV-589	Pressure storage vessel	24	7
363	VSSC-PV-590	Pressure storage vessel	25	8
364	VSSC-PV-591	Pressure storage vessel	15	1
365	VSSC-PV-592	Pressure storage vessel	20	7
366	VSSC-PV-593	Pressure storage vessel	4	1
367	VSSC-PV-594	Air Receiver with compressor	270	10

S.NO	Pressure Vessel No.	Vessel Type	Volume (Ltr)	Operating Pressure (Bar)
368	VSSC-PV-595	Air Receiver with compressor	50	10
369	VSSC-PV-596	Air Receiver with compressor	220	17
370	VSSC-PV-597	Autoclave	49400	9
371	VSSC-PV-598	Compressor with air receiver	500	10
372	VSSC-PV-599	Compressor with air receiver	40	12
373	VSSC-PV-600	Air receiver	500	11
374	VSSC-PV-601	Compressor with air receiver	25	7
375	VSSC-PV-602	Compressor with air receiver	180	11
376	VSSC-PV-603	Pressure storage vessel	200	10
377	VSSC-PV-604	Pressure storage vessel	200	10
378	VSSC-PV-605	Autoclave	145000	8
379	VSSC-PV-606	Pressure storage vessel	60752	23
380	VSSC-PV-607	Pressure storage vessel	60752	23
381	VSSC-PV-608	Pressure storage vessel	50	23
382	VSSC-PV-609	Compressor with air receiver	500	42
383	VSSC-PV-610	Compressor with air receiver	525	42
384	VSSC-PV-611	Compressor with air receiver	500	42

TEST PROCEDURE**PRECAUTIONS TO BE TAKEN DURING HYDRAULIC PRESSURE TESTING OF VESSELS: -**

1. The safer method of pressure testing is the hydraulic method, rather than the pneumatic method, because in the latter, the energy available is large and any failure during the test may result into explosion.
2. All the pressure vessels (which terminology in the VSSC context includes compressors of different variety, autoclaves, air-receivers and pressure-reactors) should be pressure tested by the hydraulic method only.
3. Pneumatic testing can be carried out only on-
 - a. Vessels of such design and construction that it is not practicable for them to be filled with liquid, or
 - b. Vessels for use on processes that cannot tolerate trace of liquids and where the removal of such liquids is impracticable.
 - c. In such cases also pneumatic pressure testing can be carried out only after getting a specific clearance from Centre safety committee.
 - d. Suitable NDT test shall be carried to ascertain the thickness of the vessel before the pneumatic test is carried out.
4. While carrying out the hydraulic pressure testing the following stipulations be observed/precautions be taken:-
 - a. The pressure testing should be carried out under the direct supervision of the Divisional Safety Officer/Facility in charge. Necessary test certificates shall also be issued by bidder after testing as per the conditions specified in certificate of competency (Annexure 4).
 - b. The hydraulic medium should normally be water. Other liquids may be utilized instead, if necessary, if any liquid other than water is used, appropriate additional precautions should be observed in consultation with the Divisional Safety Officer. The liquid should be well below its boiling point and if flammable, should have a flash point above 45°C.
 - c. The possibility of over pressure due to liquid temperature and expansion should be considered and a liquid relief valve should be provided.
 - d. When water is used with austenite stainless steel it is essential to control the chloride and alkali content of the water. The use of demineralized water with chloride content less than 1 PPM is recommended.
 - e. Checks should be made on the effects of static head, on the ability of the vessel and structure to with-stand the weight of the hydraulic liquid, and on the strength of any temporary pipes, connections or blanks.
 - f. The hydraulic liquid shall be completely drained after completion of tests.
 - g. Wherever possible the pressure vessels should be cleaned internally, dried, inspected for corrosion, crack etc. and the internal and external surfaces, painted to protect it from corrosion.

- h. Equipment that is not to be subjected to the pressure test shall be either disconnected from the system or isolated by a blank or similar device. Valves may be used for this purpose shall be provided with valve closure suitable for the proposed test pressure.
5. While doing these operations with vessels, which had contaminated flammable/toxic liquids or gases, necessary personal protective appliances as directed by the Divisional Safety Officer should be worn by the operators.
 - a. While emptying out and cleaning pressure vessels containing flammable/toxic liquids or gases, it should also be ensured that toxic/flammable liquids or gases do not get out of containment and get released into atmosphere posing health hazard and fire hazard. They should be suitably collected in appropriate containers, or vented into atmosphere at suitable heights after sufficiently diluting with an inert gas.
 - b. Whenever persons are required to enter into any vessel, necessary "Vessel Entry Permit" should be obtained. The permit will be issued jointly by the engineer-in-charge of the vessel and the Divisional Safety Officer after making sure that:-
 - The vessel has been disconnected from all sources of flammable/toxic/liquids/gases.
 - The Vessel has been thoroughly cleaned and is made free of any flammable toxic gases.
 - The oxygen concentration of the air inside the vessel is more than 20%.
 - c. Divisional Safety Officer will also suggest suitable personal protective appliances to be worn appropriate to the job to be done inside the vessel.
6. The test should normally be carried out at about ambient temperature. The hazard of brittle fracture should be considered and, if necessary, test temperature should be chosen so that it exceeds the ductile/brittle transition temperature.
7. Accurate and reliable means of measuring the pressure should be provided. This can be in the form of a pressure gauge.
 - a. The gauge should be indicating type and be connected directly to the vessel. The dial of the gauge should be readily visible to the operator controlling the pressure applied to the vessel. The range of the gauge should be as per IS: 2825 or ASME pressure Vessel code-section VIII. It is normally 2 times the test pressure but, in any case, not less than 1.5 times.
 - b. The pressure gauges shall be calibrated against standard dead weight tester or a calibrated master gauge (calibrated in a lab accredited by NABL at least every six months). At least two pressure gauge shall be used for ensuring the correct application and recording of pressure.
 - c. A test certificate shall be issued in the format (Annexure-5) enclosed
8. All filling lines and other fittings (such as pressure relief valve rupture disc etc) which are not intended to be subject to the test pressure, should be disconnected and the openings blinded before pressure is applied.

9. Suitable vents should be provided to the vessel at the highest point so that air can be completely removed. Pockets of air left in the vessel constitute a pneumatic explosion hazard.
10. While testing the pressure vessels which have removable cover plates heads or doors, the holdings bolts, cover plate bolts, slots and retaining rings should be checked for wear and hammer-tested for soundness. Since these parts are badly abused in service and receive considerable wear, it is advisable to replace them periodically.
11. All components of the pressure vessel should be secured to rigid support using adequate number of screws or bolts, hoses and tubing's should be firmly supported, and the ends secured to prevent whipping or lashing in case of the connection fails under pressure.
12. The pressure vessels should be tested behind a barricade. If barricading is impractical, the test controls and the operator(s) should be adequately shielded and the test area evacuated before applying pressure.
13. Warning signs such as "DANGER-PRESSURE TESTING IN PROGRESS – KEEP OUT" shall be posted at all approaches to the test area. The access doors to the test area must be off or got locked so that unauthorized persons do not stray into the area.
14. Pressure tests should be conducted at the pressure designated by the appropriate code to which the vessel has been designed and fabricated.
15. The pressure, during testing, should be increased gradually to a value of 50% of the test pressure and thereafter in stages of approximately 10% of the test pressure until the test pressure is reached.
16. At each stage, it should be ensured that the pressure has been maintained without any drop for a period of at least 10 minutes before increasing the pressure to the next stage.
17. In case of pressure drop at any stage, **it should be ensured that no person approaches the vessel for close inspection immediately.** The pressure should be reduced to the previous lower stage where the pressure was maintained without any pressure drop, and then only close inspection to locate the leak can be carried out.
18. When the final test pressure is reached it should be maintained for 20 minutes with out any pressure drop.
19. Examination for leakage should be made at all joints and connections and all region of high stress as head, knuckles, regions around openings and thickness transition sections after reducing the hydrostatic test pressure not less than the MAWP of the vessel or system.
20. On completion of the test, the pressure should be reduced gradually, step by step. After the pressure is fully relieved and the vessel is brought to ambient pressure the test liquid should be drained out gradually such that no under pressure is created inside the vessel. The vessel shall also be thoroughly dried internally and shall be clearly stamped with the marks and figure indicating the person by whom the test has been carried out.

21. The pressure relief valve shall be tested in a separate work bench over the required operational range before the same is fitted onto the vessel. The reseal pressure shall also be checked during the testing of safety valve. The pop-up pressure of Safety Relief Valve shall be within $\pm 5\%$ of set pressure or marked pressure and reseal pressure shall be above 95% of the pop-up pressure. A separate test certificate (Annexure-6) shall be issued after the test.
22. Procedure for thickness measurement of pressure vessel.
 - a. Minimum eight readings shall be taken on both top and bottom end cover.
 - b. Minimum four readings on each nozzle weld joint in four directions shall be taken.
 - c. Shell plate shall be checked for any corrosion and erosion by measuring thickness at four points in four directions.
 - d. Nozzle pipe shall be checked by ultrasonic thickness survey for corrosion and erosion.
 - e. Thickness of dome and shell near the shell and dome welding shall be taken in all four directions (E, W, N and S).
 - f. The details of thickness survey shall be furnished on a line sketch of vessel along with the testing certificate as per Annexure-4. The preparation of line sketch for vessels shall be in the scope of bidder.

23. Testing of Pipelines and associated systems before painting

Pressure test of pipelines and associated systems includes valves, flanges etc.

Test Procedure:

- a. Before testing all pipelines shall be cleaned internally and externally by fresh potable water or blown with compressed air where water flushing is not desirable to make it free from dirt, loose scale, debris and other loose foreign material.
- b. The minimum hydrostatic test pressure shall be 1.25 times the operating pressure or as per instructions of the user division.
- c. All vents and other connections used as vents shall be left open while filling the line with test fluid for complete removal of air.
- d. Pressure shall be applied only after the system / line is ready and approved by the user division.
- e. Pressure shall be applied by means of a suitable test pump or other pressure source which shall be isolated from the system, as soon as test pressure is reached.
- f. Piping systems shall be pressurized slowly and evenly to prevent vibrations.
- g. The test pressure shall be retained long enough to facilitate inspection of the complete system. Duration of the test in each case shall be fixed up by the user division but in no case, it will be less than 2 hours. Leakage of any kind will not be permissible. The glands of the valves in the system being tested shall be tightened by the party, so as to stop the leakage or leakage is within the leakage specification.

- h. After completion of hydrotest, the pressure shall be released gradually. All vents and drains shall be kept open till the lines are fully drained. After draining, lines / systems shall be dried by air.
- i. Pressure test shall be considered, complete only after approval by the Divisional Safety Officer.
- j. Defects, if any noticed during testing shall be rectified immediately and retesting of the system / line shall be done by the party at his own cost.
- k. Party shall reassemble all the accessories and mountings after completion of the test.

24. Procedure for pneumatic testing of pressure vessel.

The test must be carried out following the requirements of the construction code as applicable.

Precautions:

1. Parts of mechanically assembled systems must not be adjusted while the system is under pressure.
2. Adequate anchoring of equipment if required shall be ensured before the test.
3. Calibrated pressure gauges shall be used during the test.
4. Valves shall be used to isolate the system equipment from the pressure source.
5. A PRD shall be provided
6. The set point of the PRD shall not be greater than the test pressure or shall not exceed 10% of the test pressure.

Test Fluid:

1. If not air, the gas shall be nonflammable and nontoxic.

Test Pressure:

1. The test pressure shall be in accordance with the code of construction (usually 110% of the design pressure)

Preparation:

1. The safe distance, shall be identified by placing appropriate barriers.
2. All staff associated with or conducting a pneumatic pressure test shall be deemed competent by the party conducting the test.
3. A pre-test safety meeting should be conducted by the user division to ensure all personnel present on the site that may be exposed are aware of the hazards and mitigations
4. All visual inspections and non-destructive examinations required by the code of construction shall be completed and evaluated as acceptable.
5. A pre-test inspection shall be made to all connections to verify proper assembly and tightness, positioning of valves, overpressure protection, and control of the test medium.

Pressurization Procedure:

1. The pressure shall be gradually increased until the pressure reaches the lesser of 170 kPa (25 psi) of the test pressure. At this time a preliminary check shall be

made. If leaks are identified, the system shall be de-pressured immediately and repairs made prior to proceeding of further pressurization.

2. Thereafter, the pressure shall be gradually increased in steps until the test pressure is reached. (that is pressure after 50% shall be increased in steps of approximately one-tenth of the test pressure until the required test pressure has been reached). The pressure shall be held at each step long enough to equalize the vessel strains. The safe distance identified in the procedure must be observed during this portion of the test. If leaks are identified, the system shall be de-pressured immediately and repairs made prior to proceeding. Re-pressurization must follow all of the above steps.
3. The test pressure shall then be reduced to the design pressure before examining for leakage.
4. Depressurization must take place in a controlled manner to avoid cooling due to the refrigeration effect, to equalize vessel strains, and to be cautious about the vented test fluid.

Name, Signature and Seal of the Bidder:

DETAILS OF MAINTENANCE WORKS TO BE CARRIED OUT IN COMPRESSORS.

1. Cleaning of the complete air compressor including suction filter unit, oil filters, frame cylinders, valve assemblies, inter-coolers, after coolers and connected pipe lines etc.
2. Checking the operating condition of frame lubrication system, the condition of lubricating oil, oil level, oil pump and pressure of lubrication oil to be checked and maintained.
3. Visual examination of belts, pulleys, suction filters, drive system, water pumps, lubrication oil filters, pressure switches, safety valves, auxiliary valves, pressure gauges, water drain traps etc.,
4. If air leaks observed through pneumatic lines, cylinder joints etc., necessary rectification works are to be carried out.
5. All fasteners should be tightened to the required torque level.

Report of Examination of Pressure Vessel or Plant

1.	CSC Registration Number	
2.	Details of location	
3.	Type of vessel	
4.	<p>Particulars of pressure vessel or plant.</p> <p>a) Date of construction</p> <p>b) Thickness of walls</p> <p>c) Date on which the pressure vessel or plant was first taken to use.</p> <p>d) Maximum permissible working pressure recommended by the manufacturer</p> <p>e) Design pressure, if known (The history should be briefly given, and the examiner should state whether he has seen the last previous report)</p>	
5.	Date of last hydrostatic test (if any) and pressure applied.	
6.	Is the pressure vessel or plant in open, or otherwise exposed to weather or to damp	
7.	What parts (if any) were inaccessible?	
8.	What examination and test were made? (Specify pressure if hydrostatic test was carried out)	
9.	<p>Condition of pressure vessel or plant (State any defects materially affecting the maximum permissible working pressure or the safe working of the pressure vessel or plant)</p> <p>External:</p> <p>Internal:</p>	
10.	Are the required fittings and appliances properly maintained and in good condition? Have the pressure settings been checked and corrected?	
11.	Repairs (if any) required, and period within which they should be executed and any other condition which the person making the examination thinks it necessary to specify for securing safe working;	
12.	Maximum permissible working pressure, calculated from dimensions and from the thickness and other data ascertained by the present examination, due allowance being made for conditions of working if unusual or exceptionally severe. (State minimum thickness of walls measured during the examination);	

13.	Other observations	
-----	--------------------	--

I certify that on.....the pressure vessel or plant described above was thoroughly cleaned and (so far as its construction permits) made accessible for thorough examination and for such tests as were necessary for thorough examination and that on the said date, I thoroughly examined this pressure vessel or plant including its fittings and that the above is a true of my examination.

Signature of the Contractor:

Date:

Signature
Facility in charge, VSSC

CALIBRATION CERTIFICATE FOR PRESSURE GAUGE**1. PRESSURE GAUGE DETAILS:**

Type :

Make :

Range :

Identification No :

2. EQUIPMENTS USED FOR CALIBRATION

SI No	Equipments	Make & Model	Calibration Details

3. DETAILS OF CALIBRATION

Date of Calibration :

Next Calibration Due :

4. TEST RESULTS

SI No	Applied Pressure (Bar)	Obtained Output (Bar)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

SI No	Applied Pressure (Bar)	Obtained Output (Bar)
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		

Least Count	
Max. Error	

Remarks (If Any) :

Signature of the bidder:

Date:

Signature
Facility in charge, VSSC

SAFETY RELIEF VALVE TEST REPORT
(Shall be tested once in a year)

1. General

User division :

Date of testing :

Date last tested :

2. Valve Specification

Valve Sl. No. : Inlet/Outlet size with rating :

Valve Tag No : Orifice Designation :

Service : Set Pressure :

Make : Type of Seat :

3. Valve Test Result:

Set Pressure		Relief Valve Performance		Remarks
Specification (Required)	Valve Performance (Observed)	Relief Valve Pop-up Pressure	Relief Valve Reseat Pressure	

Signature of the bidder:

Date:

Signature

Facility in charge, VSSC

PIPELINE PRESSURE TEST CERTIFICATE

CSC Pressure Vessel No:					Division:			
Length of the pipeline :								
Type of test: <input type="checkbox"/> Hydrostatic <input type="checkbox"/> Pneumatic								
Sl. No.	Pipeline Dia. (in)	Working Pressure (bar)	Tested Pressure (bar)		Test time (hr:min)	Pass	Fail	Remarks
			Start	Finish				
						<input type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	
						<input type="checkbox"/>	<input type="checkbox"/>	

Signature of Bidder:

Signature of facility in charge, VSSC:

CONFORMATION/COMPLIANCE STATEMENT

Sl. No	Description of terms and conditions	Compliance		Reasons for deviation
		Yes	No	If NO, explain the reason (if space is not sufficient separate sheet may be enclosed.)
1.	BIDDER SCOPE OF WORK The period of contract shall be of Two years as per the tender document and entire indent specification along with annexures.			
2.	List of pressure vessels and terms offered for maintenance as per Annexure-1 of tender document.			
3.	Acceptance of Cleaning, inspection and pressure testing of pressure vessels and its associated systems including the maintenance, pressure testing and repair/services of pressure vessels/ air receivers and its associated systems., as per the section 1.1 to 1.18 of tender document.			
4.	Acceptance of consumables supply as per section-1.8 of tender document.			
5.	Acceptance of periodicity of cleaning, inspection testing and maintenance of pressure vessels as per section-2 of tender document.			
6.	Acceptance of qualification criteria and terms as per section-3 of tender document			
7.	Acceptance of VSSC obligations & Arbitration and terms as per section-4 & 5 of tender document.			
8.	Acceptance of Workforce & Response time and terms as per section-6			
9.	Acceptance of general conditions as per section-7 of tender document.			
10.	Acceptance of entry passes and terms as per section-8 of tender document.			
11.	Acceptance of Compliance of Safety Regulation and terms as per section-9 of tender document.			
12.	Acceptance of Taxes & Duties and terms as per section-10 of tender document.			
13.	Acceptance of Rejection of Tender & Other Conditions and terms as per			

	section-11 of tender document.			
14.	Acceptance of Security Deposit and terms as per section-12 of tender document.			
15.	Acceptance of Down-Time Compensation and terms as per section-13 of tender document.			
16.	Acceptance of Payment Terms as per section-14 of tender document.			
17.	Acceptance of Cancellation of Annual Maintenance Contract and terms as per section-15 of tender document.			
18.	Acceptance of Replaced Components/ spares & Quantity Variation and terms as per section-16 of tender document.			
19.	Acceptance of Schedule of Work and terms as per section-17 of tender document.			
20.	Acceptance of Sub-Contract and terms as per section-18 of tender document.			
21.	Acceptance of Compliance of statutory requirements and terms as per section-19 of tender document.			
22.	Acceptance of Fall Clause and terms as per section-20 of tender document.			
23.	Acceptance of Information to Bidders and terms as per section-21 of tender document.			
24.	Acceptance for List of Pressure Vessels for AMC and terms as per Annexure-1 of tender document.			
25.	Acceptance for Spares and terms as per annexure-C of tender document.			
26.	Bidder has to quote for Annexure – A, B, & C of tender document.			
27.	Confirmation of submission of the experience in the maintenance and testing of pressure vessels and list of clients & work orders / Purchase orders furnished along with bid as per section-3			
28.	Confirmation/compliance statement (Annexure-8 has duly filled and submitted along with bid			

**PART-II
PRICE BID**

**CHARGES FOR CLEANING, INSPECTION, TESTING, MAINTENANCE & CERTIFICATION
OF AIR COMPRESSORS AND ITS AIR RECEIVER/ PRESSURE VESSELS**

ANNEXURE-A

SI.No.	Description	Unit	Unit Rate
1.	Charges for Cleaning, Inspection, maintenance and Testing & Certification of air receivers/Pressure Vessels (Includes valves, flanges and piping systems up to first Mountings)		
(a)	Up to 100 Litres	Per No	
(b)	Above 100 Litres and up to 300 Litres	Per No	
(c)	Above 300 Litres and up to 500 Litres	Per No	
(d)	Above 500 Litres and up to 1000 Litres	Per No	
(e)	Above 1000 Litres and up to 5000 Litres	Per No	
(f)	Above 5000 Litres and up to 10000 Litres	Per No	
(g)	Above 10000 Litres and up to 30000 Litres	Per No	
(h)	Above 30000 Litres and up to 60000 Litres	Per No	
(i)	Above 60000 Litres and up to 80000 Litres	Per No	
1.(a)	Charges for Cleaning, Inspection, maintenance and pneumatic Testing & Certification of Autoclaves (Includes valves, flanges and piping systems up to first Mountings)		
(j)	Upto 1000 Litres	Per No	
(k)	Above 1000 Litres and up to 50000 Litres	Per No	
(l)	Above 50000 litres and up to 100000 litres	Per No	
(m)	Above 100000 litres and up to 150000 litres	Per No	
1 (b)	Charges for Scaffolding work	Per Sq.Mtr	
2.	Servicing, testing, certification and painting of Safety Relief Valve		
(a)	Dismantling of safety relief valves from the pressure vessel, servicing, testing, painting, certification and reassembly in to the original orientation of the pressure vessel up to the size 0.5”.	Per Valve	
(b)	Dismantling of safety relief valves from the pressure vessel, servicing, testing, painting, certification and reassembly in to the original orientation of the pressure vessel above the size of 0.5” and up to 1”	Per Valve	
(c)	Dismantling of safety relief valves from the pressure vessel, servicing, testing, painting, certification and reassembly in to the original orientation of the pressure vessel above the size of 1” and up to 2”	Per Valve	

(d)	Dismantling the Safety Relief Valve from the pressure vessel, servicing, testing, painting, certification and reassembly in to the original orientation of the pressure vessel above the size of 2".	Per Valve	
3.	Testing and Calibration of pressure gauges		
(a)	Dismantling & Testing / Calibration of pressure gauges.	Per Each	
4.	Charges for cleaning, inspection and testing of pipelines		
(a)	Up to 1" Pipeline	Per Meter	
(b)	Above 1" upto 2" Pipeline	Per Meter	
(c)	Above 2" upto 4" Pipeline	Per Meter	
(d)	Above 4" upto 8" Pipeline	Per Meter	
5.	Charges for painting of pressure vessels which includes sanding of external surface and applying one coat epoxy primer and two coats of epoxy paint.	Per Sq.M	
6.	Charges for painting of pressure vessels which includes cleaning of internal surface of vessel and applying one coat of epoxy paint over existing paint.	Per Sq.M	

CHARGES FOR OPTIONAL WORKS TO BE CARRIED OUT:

SI.No.	Description	Unit	Unit Rate
1.1	Ultrasonic thickness Test		
	Charges for Ultrasonic thickness survey of pressure vessels along with the thickness survey report.	Per spot	
1.2	Cleaning, inspection and testing of pipelines and its associated systems		
a)	Valves: All type of valves, dismantling from the line or from the pressure vessels includes both flange joints cleaning, servicing, testing, painting marking and cutting of new gaskets into the valves and pipelines and re-erection of the valve into the pipeline in different sizes.		
	Threaded / Flanged valve up to 1" NB	Per valve	
	Above 1" to 2" NB	Per valve	
	Above 2" NB and up to 4" NB	Per valve	
	Above 4" NB and up to 8" NB	Per valve	
	Above 8" NB and up to 12" NB	Per valve	
b)	Flanges: Flange joint, dismantling, cleaning, markings, cutting and fixing of new gaskets, painting, reassembly of pipe and pressure vessels to pipe.		
	Up to 1"	Per flange	
	Above 1" up to 2"	Per flange	
	Above 2" NB and up to 4" NB	Per flange	
	Above 4" NB and up to 8" NB	Per flange	
	Above 8" NB and up to 12" NB	Per flange	
1.3	Charges for replacement of gaskets includes supply, cutting and fixing of new gaskets for vessel openings, flanges and valves etc.		
	Up to 1"	Each	
	Above 1" up to 2"	Each	
	Above 2" NB and up to 4" NB	Each	

	Above 4" NB and up to 8" NB	Each	
	Above 8" NB and up to 12" NB	Each	
1.4	Charges for Other optional works		
a)	Disassemble, cleaning, servicing and re-assemble with replacement of necessary spares and changing of engine oil etc. to the compressor.		
	Up to 100 Ltr	Each	
	Above 100 and up to 300 Ltr	Each	
	a) Single Cylinder	Each	
	b) Double Cylinder	Each	
	Above 300 and up to 500 Ltr	Each	
	a) Single Cylinder	Each	
	b) Double Cylinder	Each	
b)	Pipeline Welding		
	Welding up to 2"	Each	
	welding above 2" & up to 3"	Each	
	welding above 3" & up to 4"	Each	
c)	D.P Testing of welded joints all sizes	Each	
d)	Charges for installation of pipe up to 1" size with all clamps etc	Per Mtr	
e)	Charges for installation of pipe above 1 "up to 3" size with all clamps etc.	Per Mtr	
f)	Moisture absorption/thermal ballast (TIN Containers) filled in 3 vessels vide no.029, 030 & 031 at SWTD, VRC Div. unloading the above ballast from the 3 Pr. Vessels, stacking and reloading to the 3 pressure vessels after completion of testing & painting.	Per M ³	
1.5	Charges for OEM service personnel for maintenance of screw compressor	Lumpsum	

LIST OF STANDARD SPARES

SI.No.	Description of Spares	Make	Unit	Rate
1.	Cock Valve (Threaded/ flanged)*			
	a.	Cock Valve 1/2"		Each
	b.	Cock Valve 3/4"		Each
	c.	Cock Valve 1"		Each
	d.	Cock Valve 2"		Each
2.	Ball Valve (Threaded /flange) *			
	a.	Ball Valve 1/4"		Each
	b.	Ball Valve 1/2"		Each
	c.	Ball Valve 3/4"		Each
	d.	Ball Valve 1"		Each
	e.	Ball Valve 1 1/2"		Each
	f.	Ball Valve 2"		Each
	g.	Ball Valve 3"		Each
	h.	Ball Valve 4"		Each
3.	Gate Valve (Threaded /flange) *			
	a.	Gate Valve 1/4"		Each
	b.	Gate Valve 1/2"		Each
	c.	Gate Valve 3/4"		Each
	d.	Gate Valve 1"		Each
	e.	Gate Valve 1 1/2"		Each
	f.	Gate Valve 2"		Each
	g.	Gate Valve 3"		Each
	h.	Gate Valve 4"		Each
4.	Pressure Gauge with calibration Certificate (Reputed make)			Each
	Dial size: upto 2 "			
	a.	0 to 10 kg/cm ²		Each
	b.	0 to 20 kg/cm ²		Each
	c.	0 to 30 kg/cm ²		Each
	d.	0 to 50 kg/cm ²		Each
	e.	0 to 80 kg/cm ²		Each
f.	0 to 100 kg/cm ²		Each	

SI.No.	Description of Spares		Make	Unit	Rate
	Dial size Above 2 "to 6"				
	a.	0 to 10 kg/cm ²		Each	
	b.	0 to 20 kg/cm ²		Each	
	c.	0 to 30 kg/cm ²		Each	
	d.	0 to 50 kg/cm ²		Each	
	e.	0 to 80 kg/cm ²		Each	
	f.	0 to 100 kg/cm ²		Each	
	Dial size Above 6 " upto 10 "				
	a.	0 to 10 kg/cm ²		Each	
	b.	0 to 20 kg/cm ²		Each	
	c.	0 to 30 kg/cm ²		Each	
	d.	0 to 50 kg/cm ²		Each	
	e.	0 to 80 kg/cm ²		Each	
	f.	0 to 100 kg/cm ²		Each	
5.	Adaptors Brass up to ¼" BSP threaded male or female			Each	
	Adaptors Brass above ¼" to ½ " BSP threaded male or female			Each	
	Adaptors Brass above ½ " to 1" BSP threaded male or female			Each	
6.	Non return valve ½ "			Each	
	Non return valve ¾ "			Each	
	Non return valve 1 "			Each	
7.	Safety Relief Valves			Each	
	a	¼" BSP Brass		Each	
	b	½" BSP Brass		Each	
	c	¾" BSP Brass		Each	
	d	1" BSP Brass		Each	
	e	1 1/2" BSP Brass		Each	
	f	2" BSP Brass		Each	
	g	2" BSP Brass		Each	
8.	Pressure Switch range up to 15 kg/cm ²			Each	

SI.No.	Description of Spares		Make	Unit	Rate
9.	Globe valves flanged type as per standard of AST M and ANSI branch			Each	
	a	2" Class – 300#		Each	
	b	2" Class – 150 #		Each	
	c	3" Class – 300#		Each	
	d	3" Class – 150 #		Each	
10.	SS 316 Stud & Nuts including washers				
	a	Up to size M12		Each	
	b	M16 up to M 22		Each	
	c	M 24 up to M44		Each	
	MS Stud & Nuts including washer				
	a	Up to size M12		Each	
	b	M16 up to M 22		Each	
11.	For spare parts for Reciprocating compressor			Each	
	a	Piston		Each	
	b	Piston ring set		Each	
	c	Read valve plate		Each	
	d	Bearing		Each	
	e	'V' Belt up to size 46"		Each	
	e	'V' Belt above size 46" to size 82"		Each	
	f	Single phase mini starter		Each	
	g	Three Phase starter		Each	
	h	Engine Oil SAE-40 grade		Per Litre	
k	Air filter for compressor		Each		
12.	For spare parts for Screw compressor				
	For ELGI make Screw compressor				
	a	Synthetic oil		Per Litre	
	b	Oil filter		Each	
	c	Oil separator		Each	

SI.No.	Description of Spares		Make	Unit	Rate
	d	Air filter		Each	
For Ingersoll Rand make Screw compressor					
	a	Synthetic oil		Per Litre	
	b	Oil filter		Each	
	c	Oil separator		Each	
	d	Air filter		Each	
For Atlas Copco make Screw compressor					
	a	Synthetic oil		Per Litre	
	b	Oil filter		Each	
	c	Oil separator		Each	
	d	Air filter		Each	
13.	Carbon steel seamless pipe as per the STDs of the ASTM and ANSI			Each	
	a	Up to 2" Sch. 40 Qty minimum 30 mtr. maximum no limit including manufacturers test certificate		Per meter	
	b	Above 2" up to 3" Sch. 40 Qty minimum 30 mtr. maximum no limit including manufacturers test certificate		Per meter	
14.	Fittings C.S. Flanges – weld neck as per std. ASA / ANSI B.16.5, suitable to S.C.H. 40, Forged steel class 300#			Each	
	a.	Upto 2"		Each	
	b	Above 2" and upto 3"		Each	
15.	Elbow, TEES and Reducer			Each	
	a	size upto 2" as per std.		Each	
	b	Above 2" and upto 3"		Each	
16.	a	Auto Drain Valve ¼ "		Each	
	b	Auto Drain Valve ½"		Each	
17.	a	Drain Valve ¼ "		Each	
	b	Drain Valve ½"		Each	

The list given above is only bare essential. The party shall quote for the essential spares not listed here but required for the maintenance.

*Rate shall be quoted separately for threaded/flange types.

