

Ph: +91-5361-271378 Fax: +91-5361-271382

Date :

SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR COMPLETE EQUIPMENT OF CRYOGENIC VESSELS FOR LIQUID OXYGEN 2 X 20 KL STORAGE TANKS AND ACCESSORIES .

4. Before quoting for below, vendor can visit our unit to understand the requirement of the facility and quote accordingly.

NAME & ADDRESS OF THE VENDOR :	NAME & ADDRESS OF THE INDIAN AGENTS(if any) :
TELEPHONE NOS.:	TELEPHONE NOS.:
FAX NOS.:	FAX NOS.:
E-MAIL ADDRESS :	E-MAIL ADDRESS :
DUNS NO. (Of Duns & Bradstreet of USA)	
Scope: Design, Engineering, Supply, Erection,Testing and Commissioning of complete equipment of Cryogenic Vessels for Liquid Oxygen 2 X 20 KL Storage Tanks and accessories.	

Sl.No.	Description of Item	Specified & To be confirmed by	Offered	Deviation	Remarks
	PURPOSE: Establishment of 2 X 20 KL Liquid Oxygen Storage facility with all its accessories and handling system.	Vendor			
1	Specification				
1.1	This specification covers the design, supply erection, testing and commissioning of Liquid Oxygen storage and handling system required for the BHEL, Fabrication Plant, Jagdishpur internal use. The requirement of Oxygen will be a maximum of 500 m ³ /hr and maximum working pressure of 10 Kg/sq. cm of gas .	Vendor			
1.2	The work shall conform to the codes/specification detailed herein, and any deviations shall be clearly spelt out by the bidder. Any changes during the execution of works due to unforeseen circumstances shall be informed in writing in advance to the purchaser/consultants and prior approval obtained in writing before erecting such changes	Vendor			
1.3	The specification is for installing 2 Nos. X 20KL Liquid Oxygen storage vessels with connected facilities as detailed in this document.	Vendor			
2	Scope of supply	Vendor			
2.1	Oxygen Storage Vessels: <i>Supply of 2 nos. X 20 KL Liquid Oxygen storage Tanks confirm ASME, Sec.VIII, Div-1 under third party inspection</i>	Vendor			
	Model	Vendor			
	Capacity: 20,000 ltrs	Vendor			
	Configuration : Vertical	Vendor			
	Working Pr.: 10 Kg/cm²	Vendor			
	Loss rate per day : Below 0.5per day	Vendor			
	Max. Consumption /Hour: 500 Cu.Mts/Hr	Vendor			
	DesignCode: <i>The vessel should confirm ASME, section VIII, Div I or equivalent be</i>	Vendor			

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	Approval: 1. CCOE Approval of Layout Plan. 2. CCOE approval for supply, installation and usage of the equipment. 3. CCOE final Approval. Approval fee to be paid by vendor only. Vendor to submit all original approvals to BHEL	Vendor			
	Standard: Any other standard which is equivalent to the above design code and has the approval from Controller of Explosives can be used.	Vendor			
2.2	Vaporizers for Line pressure: Supply of Atmospheric vaporizers for Line supply at 10 Kg/cm ² Capacity 500 m ³ /hr – 2 nos.	Vendor			
2.3	Vaporizers for Cylinder filling : Supply of suitable Atmospheric vaporizers at pressure 150 Kg/cm ² for cylinder Filling – 2nos.	Vendor			
2.4	Liquid Oxygen Pumps : Supply of Liquid Oxygen pumps – suitable for Cylinder filling at 150 Kg/cm ² – 2nos.	Vendor			
2.5	Filling Manifold banks: Supply of Cylinder filling manifold Bank 9 cylinders x 2 Nos with all accessories - 2 sets	Vendor			
2.6	Safety fittings: All safety fittings for the Vessels and pipe work shall be procured from manufacturer approved by CCE and accompanied by test certificates issued by third party.	Vendor			
2.7	Earthing of Vessels and equipments: The storage Vessels and equipments shall be effectively earthed to prevent build up of static electrically. Vessels shall be earthed with copper strip 25mm X 3mm and connected earth pit as per standard practice. All parts of equipment not intended to be live shall have an effective connection to earth.	Vendor			
2.8	Gas Flow measurement instrumentation system - 1No.	Vendor			

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2.9	<p>Supply line Pippings of suitable capacity for Oxygen upto BHEL's 2 Nos. CNC Gas & Plasma Cutting Facilities. There shall be 02 different supply line emerging from a common header connecting both cryogenic vessels ready to use Oxygen output provision with all accessories, valves, pressure regulators, safety installations etc. for two CNC Gas & Plasma Cutting Machines separately. One additional spare out let shall also be planned at common header that could be used as and when required by BHEL. A typical layout of proposed area for CNC Gas & Plasma Cutting machine installation and oxygen plant requirement is attached in annexure-A showing approximate distances. Vendor shall be responsible for design of complete pippings, its weldings, quality, interconnections etc.</p> <p>Vendor to submit design calculations for selection of pippings for BHEL approval.</p> <p>All inserts, fasteners, structures, anchors, etc. required for above pippings shall be supplied and installed by tenderer.</p>	Vendor			
3.0	General requirements	Vendor			
3.1	<p>The tenderer shall quote for the design, supply of complete technical equipment of Cryogenic Vessels and accessories including instrumentation, valves and fittings and other equipment of Cryogenic pumps, atmospheric evaporators, cylinder filling manifold - erection, testing and commissioning of the system required for the Liquid Oxygen Storage & handling system for BHEL, Fabrication Plant, Jagdishpur. All costs involved to get statutory clearances and other agencies if any are to be borne by the tenderer.</p>	Vendor			
3.2	<p>Reputed indigenous / import make of the components are to be offered by the tenderer. Details of type and make to be indicated in the bid along with Product data and Technical literatures.</p>	Vendor			

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3.3	The tenderer shall be responsible for making final adjustments of foundation levels, dressing or foundation surfaces bedding and grouting of anchor bolts and inserts into the constructed civil works, cutting and patching of existing concrete structure as may be required to be done for the erection of the equipment etc.	Vendor			
3.4	Any civil work damaged by he tenderer, during erection work shall have to made good by the tenderer at his own cost to the satisfaction of the purchaser.	Vendor			
3.5	The tenderer shall be responsible for the delivery of equipment and materials at Stores (at M/s. BHEL,Fabrication Plant, Jagdishpur). The storage facilities shall be offered by purchaser. Tenderer shall be responsible for complete loading, unloading, shifting of all materials and equipments at the time of delivery and Erection &Commissioning at BHEL, Jagdishpur site	Vendor			
3.6	The tenderer shall make arrangement for all the items including consumables required for the proper installation of the Cryogenic vessels till the final acceptance of the equipment by the purchaser. Detailed specification of all consumables shall be furnished to the purchaser for subsequent procurement.	Vendor			
3.7	Tools and tackles, instruments and other accessories required for the assembly and erection shall be provided by the tenderer.	Vendor			
3.8	The tenderer shall be free to quote for alternate design of the plant and equipment which can efficiently perform the specified requirements. The tenderer, shall however submit alternate proposal on the basis of data considered techno-economically superior.	Vendor			

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3.9	All interconnecting piping, valves, miscellaneous fittings together with the support shall be supplied within the design limits .	Vendor			
3.10	The party should supply the Tanks from the manufacturer having reference of 10 vessels of Similar or Higher capacity and the vessels must be working for more than 2 years. Full address of customers with the names of contact person to be given.	Vendor			
3.11	The power supply shall be made available at 415 V, 3Ø, 3 wire, 50 Hz, AC with neutral earthed from the outgoing terminals of the purchaser's substation, circuit breakers / power distribution board switch fuse units. The control shall be 240 V, AC single phase 50 Hz.	Vendor			
3.12	Industrial water for all uses shall be made available at one single point in the Liquid Oxygen Storage area.	Vendor			
3.13	Necessary illumination work shall be done by the Tenderer for and surrounding complete equipment and accessories for appropriate visibility in nights.	Vendor			
3.14	All civil engineering works including foundations, shades for equipments shall be carried out by the purchaser, as detailed in the tenderer's drawing. Necessary civil drawings should be submitted in two weeks from the date of LOI / Order. The inserts. foundation bolts, pundation plates etc. to be supplied by tenderer.	Vendor			
3.15	The tender may visit the purchaser's site for assessment of the quantum of work involved, before quoting.	Vendor			

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3.16	The tender shall indicate details of all input cables of quoted system. Input cabling is under purchase's scope.	Vendor			
3.17	The tenderer shall offer spares for two years of normal operation of complete equipments and accessories plant and equipment supplied by the tenderer. Tenderer shall furnish item-wise spare parts list with corresponding prices for including the parts to be imported.	Vendor			
3.18	Skilled, unskilled and supervisory personnel shall be provided by the tenderer.	Vendor			
4.0	Equipment Manufacture:	Vendor			
4.1	All equipment shall be of reputed make. The make of bought-out items shall be indicated in the tender.	Vendor			
4.2	All equipment supplied by the tenderer shall be painted as per the instructions of the purchaser in accordance with the colour code in practice.	Vendor			
4.3	All moving or rotating parts shall be provided with suitable safety guards	Vendor			
4.4	Adequate safety measures shall be ensured in the design of all equipment for the protection of operators during working of plant and equipment.	Vendor			
4.5	A non-corrodable name plate in English language stating identification number, voltage, full load current frequency, rated capacity, control voltage, speed, etc., which ever is necessary, shall be provided on each equipment	Vendor			

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4.6	The plant and equipment included in Cryogenic storage and handling system shall be designed, assembled and tested in accordance with the latest relevant standards. in cases where suitable Indian standards are not available, the equipment shall conform to relevant International standards, codes and practices	Vendor			
4.7	All electrical equipment shall conform to the latest Indian Electricity Regulations as regards safety, earthing and other provisions specified therein for installation and operation of electrical equipment.	Vendor			
4.8	All equipment shall conform to the provisions of statutory and other regulations in force, such as Indian Explosives Act., Indian Factories Act, Indian Petroleum Act, C.I.E. Regulations – Government of India and Government of Uttar Pradesh.	Vendor			
4.9	All equipment accessories, spares and other components of the plant shall be manufactured with first class materials of approved quality and under best workmanship.	Vendor			
4.10	All the drawings, documents, manuals, etc. shall be in English language, and all dimensions shall be marked in metric system. The instruments shall be calibrated in metric units.	Vendor			
4.11	All surfaces shall be cleaned by wire brushing before painting. Painting shall not be done on exposed work in wet weather.	Vendor			
4.12	All equipment supplied shall be shop tested according to the relevant standards and the test certificate shall be furnished by the tenderer. Purchaser will witness all the major tests as agreed between the tenderer and purchaser at manufacturer's place. Detailed quality plan shall be submitted by the tenderer indicating the data such as items/material specification & make /type of tests/witnessed by.	Vendor			
4.13	Sample specimens of materials and fabrication shall be furnished by tenderer to the Purchaser (if required) free of cost.	Vendor			

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4.14	All items of work welded at site shall be subjected to inspection by the purchaser.	Vendor			
4.15	In case of weld defects, prior approval of the purchaser's inspector shall be obtained before repairs. The repaired joints shall be completed to the satisfaction of the purchaser's inspector.	Vendor			
4.16	Any material declared defective by the purchaser, during fabrication/erection/testing shall be replaced or repaired without delay and at not additional cost.	Vendor			
4.17	Delivery period: 6 months from LOI/PO	Vendor			
5.0	Data to be furnished with the tender	Vendor to submit			
5.1	The tenderer shall submit the following drawings and information along with the tender without which the tender may not be considered.	Vendor to submit			
5.2	Preliminary general arrangement drawing of the Liquid Oxygen storage and handling system, indicating the design limit.	Vendor to submit			
5.3	Broad specifications of the equipments offered indicating the technical features, material of construction, etc.	Vendor to submit			
5.4	Schematic flow and instrumentation diagram of the system	Vendor to submit			
5.5	Preliminary single line diagram of electrical.	Vendor to submit			
5.6	Preliminary schedule of drives indicating rating	Vendor to submit			
5.7	Connected electrical load for 30 minutes of maximum demand	Vendor to submit			
5.8	Service requirements such as water, compressed air, etc. shall be indicated.	Vendor to submit			
5.9	Catalogue, brochures, pamphlets, etc.	Vendor to submit			

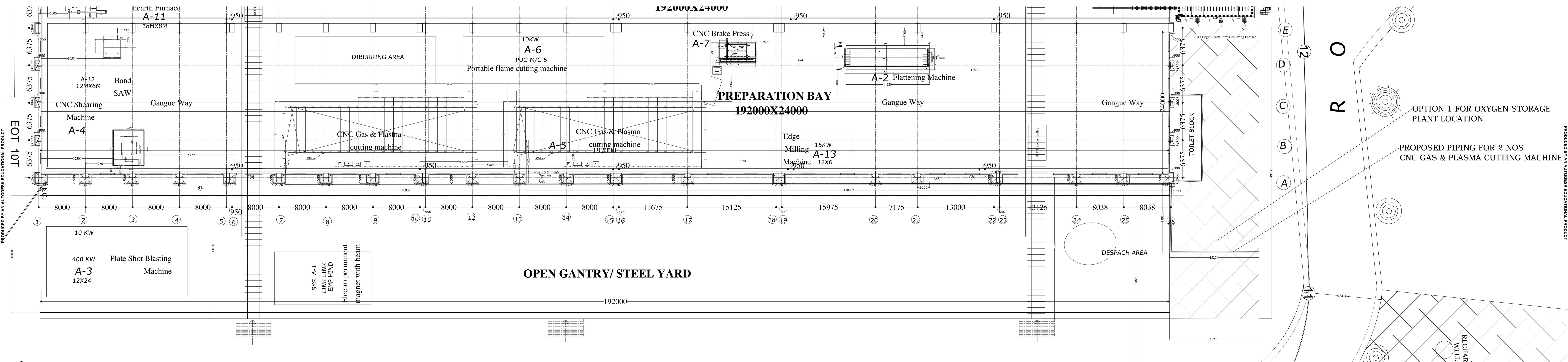
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5.10	The tenderer shall indicate in a bar chart from the schedule for design, manufacture, delivery, erection, testing and commissioning of the plant and equipment to be supplied for BHEL.	Vendor to submit			
6.0	Documentation	Vendor to submit			
6.1	The successful tenderer shall supply six sets of the contract drawings.	Vendor to submit			
6.2	General layout drawings with cross-section showing the overall dimensions of equipment, foundation details, pipe work, valves and electrical cable layout and required clearance, etc.	Vendor to submit			
6.3	Dimension drawing showing front, rear, and sectional views and position of power and control entries and any service connecting lines.	Vendor to submit			
6.4	Electrical circuit control diagram.	Vendor to submit			
6.5	External connection diagram.	Vendor to submit			
6.6	Single line wiring diagram.	Vendor to submit			
6.7	Bill of material with cable schedule.	Vendor to submit			
6.8	Detailed drawings and specifications of all wearing parts and the parts subjects to breakages.	Vendor to submit			
6.9	The above drawings shall be supplied with in a period of two weeks from the date of placement of order	Vendor to submit			
6.10	The tender shall supply six sets of all erection drawings for assembly of vessels and accessories. The erection drawings shall, however, be submitted as early as possible but not later than one month before the dispatch of the respective equipment from the supplier works.	Vendor to submit			
6.11	All the revised design and drawings, pertaining to any modification/alternation to the plant from the date of submission of first drawing till completion of erection, shall be furnished.	Vendor to submit			
6.12	Instruction manuals for operation and maintenance of equipment and controls including lubrication charts shall be supplied with the delivery of equipment.	Vendor to submit			
6.13	Relevant manufacturer's Technical literature shall be supplied with the delivery of equipment.	Vendor to submit			

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6.14	On completion of work, the tenderer shall supply six sets of prints and one set of tracings as built.	Vendor to submit			
6.15	The tenderer shall submit the following data/technical information within 2 weeks from the date of the placement of order.	Vendor to submit			
6.16	Complete load data of equipment including dynamic loading to enable the purchaser to prepare all civil engineering work. the outline of foundations of all equipment under the scope of the supply indicating location of anchor bolts, conduits and other parts to be built in the foundation walls, tunnel and other relevant items.	Vendor to submit			
6.17	Requirement of special materials for civil works.	Vendor to submit			
6.18	Routes, sizes and levels of underground cable tunnels and other openings in the concrete.	Vendor to submit			
6.19	Electrical load data, service consumption data power, cooling water, etc. indicating the maximum, minimum and average consumption.	Vendor to submit			
6.20	The tenderer shall prepare and submit detailed technical specifications of the equipment offered together with general arrangement drawings and other documentation as mentioned above for approval of CCOE before the commencement of manufacture and erection with an intimation and copy to BHEL. Such approval when accorded shall, however, not relieve the tenderer of his responsibilities so far as the satisfactory performance of the system is concerned. Original approval copy to be submitted to BHEL by tenderer.	Vendor to submit			
6.21	The purchaser (BHEL) reserves the right to order the system on any tenderer either fully or part of the system irrespective of the bid ranking.	Vendor			
6.22	No import licence will be provided by BHEL . However the delivery of imported items should match over all project schedule.	Vendor			
7.0	Major Exclusion	Vendor			
7.1	All civil work, Boundary wall or fencing, input cabling.	Vendor			
8.0	Erection	Vendor			

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8.1	All equipments/ parts shall be assembled and erected by the tenderer. All equipment shall be placed on its respective foundations, properly leveled and aligned with precision level measuring instruments, checked for proper clearance between moving and stationary parts whenever applicable and grouted on the foundation.	Vendor			
8.2	The tenderer shall take note of the working conditions, practices and agreements prevailing in the area. The tenderer shall carry out the erection work in such a manner that it shall not affect the operation / construction of the other units.	Vendor			
8.3	After erection all temporary structures, super-structures, storage sheds, etc. constructed by the tenderer shall be removed and the place shall be kept clean.	Vendor			
9.0	Commissioning & Acceptance Tests.	Vendor			
9.1	After erection at site, the tenderer shall conduct, for individual equipment, all tests required to ensure that the equipment supplied conforms to the specified requirements and complies with the requirements or applicable codes.	Vendor			
9.2	Details of such tests shall be mutually agreed upon by the tenderer and the purchaser at least one month before such tests are carried out.	Vendor			
9.3	The tender shall give at least seven days notice for readiness of the plants for acceptance tests to be carried out. Tests shall be carried out in the presence of purchaser's representative. Purchaser shall make available all services required for tests like power, water, etc subject to adequate notice of the requirements by the tenderer. The purchaser will issue preliminary acceptance certificate after the acceptance of the following.	Vendor			
9.4	The equipment is erected conform to the approved drawings	Vendor			
9.5	The equipment is pressure tested in accordance with the accepted norms.	Vendor			
9.6	The correctness of installation of all equipment.Commissioning shall be deemed completed upon satisfactory completion of the guarantee tests and issue of final acceptance certificate. The acceptance certificate shall be governed by the General Conditions of the Contract of M/s Bharat Heavy Electricals Limited, Fabrication Plant, Jagdishpur.	Vendor			

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10	Guarantee	Vendor			
10.1	The tenderer shall stand guarantee for a period of 24 MONTHS after final commissioning and acceptance by BHEL of the plant for materials, equipments, workmanship and steady & safe operation of the Liquid Oxygen storage and handling system with their auxiliaries, as a whole giving the specified output as per the technical specifications or as finalized at the time of placement of order. Any defects arising during the guarantee period shall be made good by the contractor at his own cost to the satisfaction of the purchaser and if necessary, the performance test shall be repeated after the replacement of defective parts or any other modification / rectification carried out by the contractor.	Vendor			
11	Maintenance				
11.1	Vendor can optionally quote for maintenance of complete equipment and accessories supplied for two years after its commissioning and acceptance by BHEL. The scope includes periodic inspections, supervision, examination and rectifications of faults if any, repair, replacements, preventive and corrective maintenance etc. of complete equipment and its accessories for troublefree, efficient and smooth operation of complete system.	Vendor to specify (offered or not offered)			
12	First fill	Vendor			
12.1	Vendor shall be responsible for first fill of Liquid Oxygen in to cryogenic vessels of 2x 20KL. Further all gasses, oils, etc. required for accessories shall be first filled by the tenderer. The respective specification shall be mentioned and to be submitted along with technical documentation.	Vendor			
13	Qualifying Criteria				

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13.1	Vendor should submit a performance certificate from the customer where they have installed at least one complete equipment of Cryogenic Vessels for Liquid Oxygen (or Liquid Nitrogen) 20 KL Storage Tanks or more and accessories for similar application and that should be performing satisfactory after one years after its commissioning till date (as on date of opening of tender).Full address of customers with the names of contact person, email address, Phone Nos., Fax. No. to be given by vendor.	Vendor to submit			



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