

SCOPE: DESIGN, SUPPLY, ERECTION & COMMISSIONING OF OIL TREATMENT PLANT COMPLYING WITH SPECIFICATIONS AS BELOW

S. NO.	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	DAVIATION / REMARK
3.1.2.2	Filtering capacity : Max. particle size shall be less than 0.5 micron in the filtered oil.	Vendor to confirm		
3.1.2.3	(a) Processing temperature: 60 °C to 70 °C (b) Maximum allowed temp. in oil to prevent oxidation: 70 °C. (When oil is at atmospheric pressure)	Vendor to confirm		
3.1.2.4	Degassing chambers of different degree of vacuum should have sufficient surface areas to achieve the final parameters. A detailed justification as to how end parameters shall be met with detailed calculation and test reports in support of the same shall be submitted along with the offer.	Vendor to confirm & submit		
3.1.2.5	Bidder is to furnish along with the bid detailed calculation to establish the sizing and capability of the vacuum pumping system with respect to moisture and gas removal as above.	Vendor to confirm & submit		
3.1.2.6	Bidder is to submit along with the bid test reports, test methodology to prove the capability of the plant offered.	Vendor to confirm & submit		
3.1.2.7	The plant shall be provided with control and indication panel with full automation.	Vendor to confirm		
3.1.2.8	The Ultra high vacuum type oil purification plant shall be complete with oil pumps for drawing oil from transformer and reactors Oil heater, degasifier complete with vacuum pumps, Condensor, Water Cooling System, oil extraction pump etc. of adequate capacity such that throughout from the purification plant is of guaranteed purity as mentioned in Sr. No. 3.2.2.1.	Vendor to confirm		
3.1.2.9	The plant shall also be suitable for cleaning, dehydration and degassing of the oil stored in the storage tanks.	Vendor to specify		
3.1.3	Design & Constructions :	Vendor to confirm		
3.1.3.1	OIL PUMP (INLET SIDE): Two (2) nos. electrically driven oil pumps, each having capacity to maintain 12000 LPH flow rate in process with one (1) working and one (1) standby provision shall be provided. Selection switch is to be provided for selection of either of pumps. The pumps shall be single stage positive displacement gear type. The pump motor shall have insulation class-F with IP-55 protection. Suitable mechanical seals shall be provided to ensure vacuum tightness. A built in pressure relief valve to re-circulate the oil to suction side in case of accidental pressure rise shall be provided. Suction lift of the pump shall be at least 5 meters of transformer oil at atmospheric pressure & temperature. A separate bypass valve shall be provided across the gear pump so that the flow rate through the filter can be adjusted as required. Provision shall be provided with isolation valve to pump the oil directly from plant inlet side to plant outlet line with the help of inlet oil pump. The pumps shall be provided with an interlock with delay such that if there is no oil flow for 30 sec. through the heater, the pump shall trip automatically & also if the pump is not operating the heater will not be energized.	Vendor to Confirm & Specify		
3.1.3.2	MAGNETIC STRAINER: The plant shall be provided with a suitable magnetic strainer with wire mesh to filter all particles of sizes above 0.5 mm & all magnetic particles. The strainer shall be installed at the suction of the oil pump described above.	Vendor to Confirm & Specify		
3.1.3.3	HEATER : - A oil heater for heating up inlet oil shall be provided at the discharge side of the oil pump. The primary source for heating shall be steam which shall be provided by BHEL at one point. The available steam typically shall have pressure ranging 5-8 kg/cm2. The system shall be designed to achieve desired cycle time at minimum of the above specified steam pressure. However, alternate heating through electric heating shall be provided. Both the heating source (steam and electrical) must be designed to work independently and also together in tandem and achieve the desired temperature. - The oil heater vessels shall be of Mild steel welded construction & insulated with glass/mineral wool. - The vessel shall be constructed for ultra high vacuum & pressure application. - Heater shall be provided inside the heater vessel to heat up oil from lowest ambient temperature to temperature required for filtration/ dehydration / degasification operation in single pass. The heater shall also be rated for heating the inlet oil from lowest ambient temperature to 70 °C in single pass during filling up of transformers. Two nos. separate temperature thermostatic controllers shall be provided for this purpose. - The heating shall be indirect type and specific heat load shall not exceed 2.0 W/cm2 in order to avoid local overheating. - In case of electrical heating, total heating capacity shall be divided into three independent thermostatically controlled heating stages evenly balancing the three phases of power supply. The control switches and knob shall be housed on a control panel. - In case of Steam heating, steam supply and return line shall be provided with all accessories like Pressure reducing valve, Steam control valve, Condensate trap module, Pressure safety valve, Pressure gauge (Bourdon tube) before and after pressure reduction, steam isolation valves (Gate valve), Steam pressure measuring transmitter, Steam By-pass valve etc. and required IBR approval. - An additional preset temper proof safety thermostat set at the highest Temperature shall be provided on the heater to put off the heater and give audio and	Vendor to Confirm & Specify		

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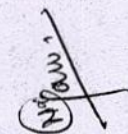

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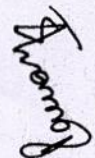
S. NO.	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	DAVIATION / REMARK
	visual alarm to take care of accidental overheating. - The heater body shall be so designed as to allow replacement of heating elements without draining of oil. Suitable pressure relief valve, vent and drain valves & two (2) dial type temperature gauges at inlet & outlet of each heater shall be provided.			
3.1.3.4	FILTER :- Cartridge filter as may be required to ensure maximum particle size to less than 0.5 micron in the filtered oil shall be provided. - The filter body shall be fabricated of mild steel & designed for leak tightness at full vacuum & high pressure. The oil will flow from dirty oil chamber to clean oil chamber through filter elements. - Cartridge type element used shall be suitable for transformer oil in service and submicronic filtration. The media shall be non hygroscopic and of high dirt holding capacity. - The filter elements shall be easily removable for replacement when required. Differential Pressure gauge to indicate pressure across the filter, vent and drain with valves & other necessary accessories shall be mounted on the filter.	Vendor to Confirm & Specify		
3.1.3.5	SOLENOID OPERATED VALVES :- All the required solenoid operated valves shall be provided to ensure automatic operation of the plant. In addition two nos. solenoid operated valves shall be provided at the inlet and outlet of the plant (The moment inlet and outlet pumps are switched on these valves open thus making way for oil to pass. In case of power failure, oil from the transformer will not enter the plant and the vacuum system).	Vendor to Confirm & Specify		
3.1.3.6	DEGASSING CHAMBER :- The degassing chamber shall be of welded construction and suitable for operation under 0.05 torr. The fill of Raschig rings and trays for distribution shall be designed for ensure maximum spread, retention and exposure of oil to the vacuum. Incoming transformer oil should be spread over these rings in the form of film and over a larger surface area, thus achieving better degassing and dehumidification. - The degassing chamber shall be either single stage or multi stage type suitable for ensuring the desired oil properties. Arrangement for condensing back lighter fraction (Aromatics) of the insulating oil into the system shall be provided. - The degassing channels shall have adequate height to allow long enough free fall for complete degassing. Design shall be such as to minimize foam formation. - The degassing chambers shall be provided with suitable level monitor for oil or foam level in the chamber and shall trip the inlet gear pump when the level rises above the designed maximum level in order to prevent foam/oil to enter the vacuum pumping system. The oil inlet pump starts again automatically once the oil level in the degassing chamber falls below the present oil level. - The degassing chambers shall be provided with suitable level monitor for oil in the chamber and shall trip the outlet canned motor pump when the level falls below the designed minimum level in order to prevent dry running of outlet pump. The oil outlet pump starts again automatically once the oil level in the degassing chamber rise above the present oil level. - Necessary illuminated vacuum sealed sight glass shall be provided through which oil flow through the degasser can be viewed clearly. - The degasser shall be provided with vacuum gauges, vacuum breaking valves, main and auxiliary vacuum connections and other necessary accessories.	Vendor to Confirm & Specify		
3.1.3.7	VACUUM PUMPING SYSTEM :- The plant shall be provided with a suitable vacuum pumping system for creating adequate high vacuum (0.1 torr or better) in the degassing chambers. The pumping system shall consist of suitable combination of Roots Blower (Min. Pumping capacity: 1250 m³/CuHr @ 50 Hz) and Rotary vacuum pump (Min. Pumping capacity: 220 m³/CuHr @ 50 Hz) with inter stage condensing units. The pump motor shall have insulation class-F with IP-55 protection. - The Roots blowers shall be of Pfeiffer/Leybold/Shinko Seiki make only. Suitable built in labyrinth packing system, slinger rings, oil return chamber shall be provided between bearings and working chamber to prevent penetration of lubricating oil to the working chamber. The pumps motor shall be dynamically balanced. The pumps shall be suitable for starting evacuation from atmospheric pressure and shall be supplied with necessary over flow valve. A vacuum switch shall be provided for the operation of booster pump in vacuum line. Booster pump shall be operated only after achieving desired vacuum by the rotary vacuum pump. - The rotary vacuum pumps (Make: Pfeiffer/Leybold/Shinko Seiki) shall be installed after the roots blower. An automatic bypass valve across the roots blowers shall permit operation of rotary vacuum pump alone to operate when so required. The rotary vacuum pumps are provided with gas ballast valve to prevent contamination of vacuum pump oil with moisture. The vacuum pump shall also be provided with suitable non-return valve device such that in the event of power failure the vacuum in the degassing chamber shall be maintained and the vacuum pump oil is not sucked back into the degassing chamber. A high vacuum safety valve (piston type) to prevent back streaming of oil and air intrusion shall be provided. Overtemperature protection shall be provided with Roots pump & Rotary vacuum pump and low oil level switch with suitable interlock for rotary vacuum pump shall be provided. - Necessary water cooled condensing unit to shall be provided to condense the moisture particles and light aromatics and to prevent ingress of moisture & oil in Vacuum pump. - Suitable water storage and pumping system consisting of storage tank, pumping system with water cooling unit for recirculation of cooling water shall be provided for condensing unit and vacuum pump to ensure continuous operation of the plant.	Vendor to Confirm & Specify		

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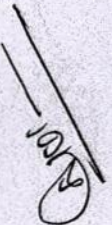
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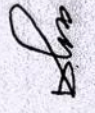
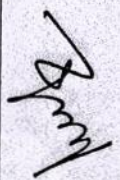
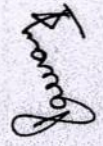
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3.1.3.8	OIL EXTRACTION PUMP :- Suitable pumping system with two (2) nos. electrically driven oil pumps, each having pumping capacity to maintain 12000 LPH flow rate in process with one (1) working and one (1) standby shall be provided for extracting oil from degasser under vacuum and supplying to transformer/reactor etc. The pump shall be glandless centrifugal type with canned motors suitable for extracting oil from high vacuum degassing chamber. The oil extraction pump shall be located at a suitable level below the degasser chamber so as to ensure adequate suction head for the pump. The pump shall be supplied with double check valve assembly and solenoid operated valve in order to stop reverse flow of oil in case of power failure. The pumping system shall preferably be self priming type alternatively priming device with safety interlock to protect pump against dry running shall be provided. Sampling valves shall be provided at the discharge of extraction pump for testing of oil properties. A re-circulation line with valves shall be provided to re-circulate a part of the purified oil to the inlet point if necessary during operation. The pump motor shall have insulation class-F with IP-55 protection. Flow meter and isolation valve at inlet and outlet side of pump shall be provided.	Vendor to Confirm & Specify		
3.1.3.9	ADDITIONAL INLET GEAR PUMP AND LEAKPROOF CENTRIFUGAL PUMP :- 1 no. Inlet Gear Pump of 25 KL Capacity @ 20 Meter head and 1 no. leakproof Centrifugal Pump of 30 KL Capacity @ 30 Meter head for pumping of transformer oil from and to Oil Silos kept under vacuum shall be provided. The pump motor shall have IP-55 enclosure with insulation class-F.	Vendor to Confirm & Specify		
3.1.3.10	PAINTING:- Oil heater, filter vessel, degasser shall be of mild steel construction. The internal and external surface including oil heater, filter vessel, degasser and structural steel work to be painted shall be shot or sand blasted to remove all rust and scale of foreign adhering matter or grease. All steel surface in contact with insulating oil shall be painted with two coats of heat resistant oil insoluble, insulating varnish/paint. - All internal painted steel surface shall be given a primary coat for zinc chromate second coat of oil and weather resistant varnish of a colour distinct from primary and final two coats of glossy oil and weather resisting paint. - All paints shall be carefully selected to withstand heat and extremes of weather. The paint shall not scale off or crinkle or be remove by abrasion due to normal handling.	Vendor to Confirm & Specify		
3.1.3.11	INSTRUMENTATION AND CONTROL :- A PLC based control cabinet (enclosed in cubicle) shall be provided for operation and control of the pumps, valves, switchgears, sensor, indicators, relays etc, as applicable. An HMI of min 10" touch screen type shall be provided on the panel for its operation and control. Note: PLC & HMI shall be of same make. Acceptable makes of PLC and HMI : Siemens, ABB, Allen-Bradley only. PLC system shall contain Analog Input, Analog Output, RTD inputs, Digital Input, Digital Output : As per requirement. Complete back up of PLC & HMI project / programme ladder & pdf shall be given. Suitable communication cable with necessary adapter for communicating/ programming PLC & HMI from windows based PC shall also be provided. (All the I/O's shall be provided with fuses and interposing relays for isolation) Following minimum instruments shall be provided on the purification plant. - Compound gauge at inlet oil pump discharge. - Compound gauge at filter inlet and filter outlet. - Pressure gauge at discharge pump outlet and dry run protection for discharge pump. - Vacuum gauge at degasser. - Differential pressure switch across filter to indicate filter choking. - Pirani vacuum gauge for fine vacuum measurement. - Vacuum gauge in between roots vacuum pump and rotary vacuum vacuum pump. - Sight glass at degasser. - Temperature indicator (Dial type) at heater inlet and heater outlet. - Over temperature protection for vacuum pump and roots pump and low oil level protection for vacuum pump. - Safety interlock for pump and booster cooling water flow. - Voltmeter. - Oil flow meter (positive displacement type) - Ammeter	Vendor to Confirm & Specify		

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3.1.3.12	CONTROL PANEL :- A centralized electrical control panel with auxiliary step down transformer, contactors, back up protection fuses, indicating lamps etc. to be provided with following minimum audio and visual alarms:- (a) High temperature at heater outlet (b) High differential pressure across filters (c) Oil pump trip (d) Vacuum pump trip (e) Loss of vacuum in degassing chamber (f) Booster Pump Trip (g) No oil flow through heater (h) Cooling water flow (i) High & Low oil level in degasser. - Suitable interlock as described against each equipment shall be provided for safe and trouble free operation. - All instrument control hardware and alarms shall be mounted on a suitable control panel. A mimic diagram with indication lamps showing on off status of various equipment shall be provided on the control panel. - The plant shall be fully equipped with adequate instrumentation having provision of Auto and manual operation as required. All necessary control and indicating panel shall be provided.	Vendor to Confirm & Specify	
4.0	ELECTRICAL SYSTEM :-		
4.1	415V $\pm$ 10%, 50 HZ $\pm$ 3%, 3 phase AC (3 wire system without neutral) Power Supply Source will be provided by BHEL at a single point near the Oil Treatment Plant as per layout recommended by VENDOR. All step down transformers, rectifiers & regulators shall also be supplied by the vendor. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine control cabinets, shall be the responsibility of VENDOR. Requirement of grounding / earthing with required material details is to be informed by VENDOR well in advance so that same could be incorporated during construction of foundation.	Vendor to Confirm	
4.2	Tropicalisation: All electrical / electronic equipment shall be tropicalized.	Vendor to Confirm	
4.3	All electrical & electronic control cabinets & panels should be dust and vermin proof fitted with suitable panel air conditioner/s.	Vendor to Confirm	
4.4	All electrical components in the cabinets should be mounted on DIN Rail.	Vendor to Confirm	
4.5	Motors shall conform to IEC or Indian standards.	Vendor to Confirm	
4.6	VENDOR should ensure the proper earthing for the all three plant and its peripherals.	Vendor to Confirm	
4.7	All electrical equipments shall be suitably protected by HRC fuses/ MCBs/ Overload relays & single phase preventives.	Vendor to Confirm	
4.9	All control circuits shall be based on 24 VDC supply. Suitable interlock as described against each equipment shall be provided for safe and trouble free operation.	Vendor to Confirm & Specify	
5.0	SAFETY ARRANGEMENTS:		
	Following safety features in addition to other standard safety features should be provided on plant-		
5.1	Plants should have adequate and reliable safety interlocks / devices to avoid damage to the workpiece and the operator due to the malfunctioning or mistakes. Plants functions should be continuously monitored and audio visual warning indication / alarm number with message (on panels) should be available.	Vendor to Confirm	
5.2	A detailed list of all alarm / indications provided on Plants should be submitted by the supplier with the offer.	Vendor to Confirm	
5.3	All the pipes, cables etc. on the Plants should be well supported and protected.	Vendor to Confirm	
5.4	All the rotating parts used on Plants should be statically & dynamically balanced to avoid undue vibrations.	Vendor to Confirm	
5.5	Emergency switches at suitable locations as per International Norms are to be provided.	Vendor to Confirm	
5.6	Oil & water pipe lines should not run with electrical cable in the same tray.	Vendor to Confirm	
6.0	ENVIRONMENTAL PERFORMANCE :		
	The Plants shall conform to the following factors related to environment-		

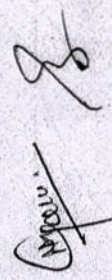
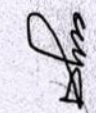
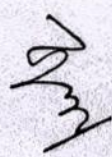
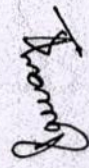


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6.1	Maximum noise level shall be 85 dB at normal load condition, 1mtr. away from the Plant with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16. Supplier to demonstrate compliance to noise level, if so required.	Vendor to Confirm		
6.2	If any safety / environmental protection enclosure is required, it should be built in the plant by the VENDOR and certification of conformance to the pertinent act/rule shall be furnished.	Vendor to Confirm		
7.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE:			
7.1	Special tools and equipment required for erection of the Plant shall be brought by the VENDOR on returnable basis. However, the necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the plant should be supplied. List of such tools should be submitted with offer.	Vendor to Confirm & Submit		
8.0	SPARES:			
8.1	Optional Spares: (The offer for these optional spares is required to be quoted separately). Note: The prices of optional spares will not be considered while evaluating the offers of the item).	Vendor to Confirm		
8.1.1	Item wise breakup of mechanical & hydraulic and electrical & electronic spares used on the plant in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation beyond guarantee period on three shifts continuous running basis should be offered by vendor. The list to include following, in addition to other recommended spares: (Unit Price of each item of spare should be offered)	Vendor to Confirm & Specify		
8.1.1 a)	Mechanical/ Hydraulic Spares: All types of pumps, All types of Valves, All types of pressure switches / transducers, All types of filters, All types of seals.	Vendor to Confirm & Specify		
8.1.1 b)	Electrical / Electronic Spares: All types of Relays, Contactors, Proximity Switches, Push Buttons, Indicating Lamps, Semiconductor Fuses, Special Fuses etc.	Vendor to Confirm & Specify		
8.2	VENDOR to confirm that complete list of spares for Plants and accessories, along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the plant.	Vendor to Confirm		
9.0	DOCUMENTATION: Four sets of following documents (Soft copy in CD as well as Hard copies) in English language should be supplied along with the plant.	Vendor to Confirm		
9.1	Operating manuals of Plant with handbook for operation.	Vendor to Confirm		
9.2	Detailed Maintenance manual of Plants with all drawings of assemblies/ sub- assemblies/ parts including Electrical / Pneumatic / Coolant/ Hydraulic circuit diagrams. All the Drawings as commissioned shall be supplied with the part list also.	Vendor to Confirm		
9.3	Maintenance, Interface & commissioning manuals.	Vendor to Confirm		
9.5	Catalogues, O & M Manuals of all bought out items including drawings, wherever applicable.	Vendor to Confirm		
9.6	Detailed Specification of all rubber items and hydraulic / lube fittings.	Vendor to Confirm		
9.7	Operating manuals, Maintenance Manuals & Catalogues for supplied items & Measuring System, Voltage Stabilizer, Isolation Transformer, vacuum pump and all supplied Accessories.	Vendor to Confirm		
9.8	Soft copy of O & M Manual alongwith drawings to be provided.	Vendor to Confirm		
10.0	TRAINING:			
10.1	BHEL Persons shall be trained at BHEL Works in the field of Operation and Mechanical, Electrical & Electronics maintenance of Plants & other supplied equipment.	Vendor to Confirm		
11.0	FOUNDATION:			
11.1	VENDOR shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI) / P.O. Foundation work will be executed by BHEL. However, detailed foundation drawing with reinforcement details needs to be given by vendor within 4 weeks from the date of approval of lay-out drawing. All fixators, insert plates, supports & brackets shall be supplied by the vendor.	Vendor to Confirm		
12.0	ERECTION & COMMISSIONING			
12.1	Supplier to take full responsibility for carrying out the erection, commissioning, start up and testing of plant. Service requirement like power, air & water shall be provided by BHEL at only one point (to be indicated by supplier in their layout drawings). Other requirements like crane, trolley shall be arranged by the vendor. Details of the requirements should be informed by VENDOR in advance (one month prior to the scheduled date of start of erection/ commissioning activities).	Vendor to Confirm		
12.2	Successful proving of BHEL components by the supplier shall be considered as part of commissioning. All tests, as mentioned at clause 14.0 (Plant Acceptance) shall form the part of commissioning activity.	Vendor to Confirm		

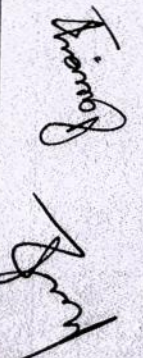


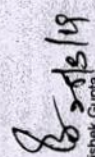
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12.3	Tools, Tackles, Test Material, Instruments and other necessary equipment including Laser Equipment, if any, required to carry out all above activities should be brought by the supplier on returnable basis.	Vendor to Confirm		
12.4	Commissioning spares, required for commissioning of the Plant within stipulated time, shall be brought by the supplier.	Vendor to Confirm		
12.5	All Cover Plates, Platforms (Grill Type), Railing etc. required for the Plant and its peripherals if any, shall be supplied and installed by the vendor.	Vendor to Confirm		
12.6	Portion, if any, of the Plant, accessories and other supplied items where paint has rubbed off or peeled off during transit or erection, should be repainted and merged with the original surrounding paint by the VENDOR. For this purpose, the VENDOR should supply sufficient quantity of touch-up paint of various colours of paints used.	Vendor to Confirm		
12.7	Vendor may note that the E & C charges in this case have been mandatorily fixed at 10% of the total cost. This apportioned price has to be compulsorily agreed by all vendors & no deviation shall be acceptable for this.	Vendor to Confirm		
13.0	AMBIENT CONDITIONS & THERMAL STABILITY:			
13.1	Total Plants and all supplied items should work troublefree and efficiently under following operating conditions and should give specified accuracies. POWER SUPPLY : Voltage : 415 V -10%, +10% . Frequency : 50 Hz +1.5Hz, -1.5Hz No. of phases : 3 ; no neutral Ambient Conditions : Temperature = 5 to 50 degree celsius , Relative Humidity : 95 % (Vendor to confirm that Plant is suitable for above). Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Plants shall be kept in the normal shop floor conditions . Max. temperature variation is up to 25 deg Celsius in 24 hours. (VENDOR to confirm that Plant is suitable for above).	Vendor to Confirm		
13.2	Thermal Stability of the complete Plant keeping in view specified Ambient Conditions and accuracy requirements of BHEL components and trouble free operation of the Plant should be ensured by VENDOR. (VENDOR to confirm that Plant is suitable for above).	Vendor to Confirm		
14.0	PLANT ACCEPTANCE : (Tests / Activities To be Performed by VENDOR)			
14.1	Tests / Activities to be carried out at supplier's works in presence of BHEL Representative on the plant before despatch :	Vendor to Confirm		
14.1.1	Inspection of components, assemblies & sub assemblies with test certificates of OEM.	Vendor to Confirm		
14.1.2	Demonstration of all features of the plants and all Accessories.	Vendor to Confirm		
14.2	Tests to be carried out at BHEL Works while commissioning the Oil Treatment Plant:	Vendor to Confirm		
14.2.1	Demonstration of all features of the Oil Treatment Plant and all Accessories to the satisfaction of BHEL for their efficient and effective use.	Vendor to Confirm		
14.2.2	Prove-out: Minimum three power transformer tank filling cycles will be operated to achieve parameter mentioned in Sr. No. 3.1.2.1.	Vendor to Confirm		
14.2.3	Two weeks supervision of independent operation of Oil Treatment Plant by BHEL after proveout.	Vendor to Confirm		
14.2.4	Training of BHEL operators in operation of complete equipment & accessories etc by the supplier's experts / engineers during their stay at BHEL works.	Vendor to Confirm		
15.0	GUARANTEE:			
15.1	15/24 months from the date of commissioning.	Vendor to Confirm		
16.0	GENERAL : The VENDOR should submit the following information for Oil Treatment Plant :	Vendor to Confirm		
16.1	Plant Model	Vendor to specify		
16.2	Total connected load (KVA)	Vendor to specify		
16.3	Floor area required (Length , Width , Height) for individual Plant & accessories	Vendor to specify		
16.4	Painting of Plant / Electrical Panels : Polyurethane paint (Preferably Apple Green). All the pipeline should be painted in line with 'IS 2379:1990- Pipelines- Identification- color code'.	Vendor to specify		
16.5	Total Weight of the Plant	Vendor to specify		
16.6	First fill of heating oil & hydraulic oil to be supplied by vendor.	Vendor to specify		







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S. NO.	DESCRIPTION FOR BHEL REQUIREMENT	ACTION BY VENDOR	OFFERED	DEVIATION / REMARK
17.0	QUALIFYING CONDITION :			
17.1	Only Original Equipment Manufacturers (OEMs) or their Authorized Dealers/Partners meeting the following conditions are eligible to participate in the tender. (a) The vendors, submitting the quotation, should have supplied and commissioned at least 5 nos. 12 KLPH or higher capacity Oil Treatment Plant in the past seven years for transformer industry can participate.	Vendor to confirm & furnish		
	Or Indian Vendors who have a running Collaboration/ Joint Working arrangement with Foreign Manufacturer (meeting above specified qualifying conditions mentioned in 17.1 (a)) can also participate. Such Indian Vendors (OEMs) shall have to submit a back to back guarantee from their foreign partner for satisfactory performance of the offered plants and collaboration certificate/ joint venture documents to be submitted alongwith offer.			
17.2	The following information is to be submitted by the VENDOR about the companies where such plants have been supplied. This is required from all the VENDORS for qualification of their offer.	Vendor to Confirm		
17.2.1	Name of the customer / company where such Plants are installed (unpriced copy of purchase order to be furnished in line with point no. 17.1)	Vendor to furnish		
17.2.2	Name, designation, Complete postal address, Phone no. and E-mail address of the contact person of the customer.	Vendor to furnish		
17.2.3	Year of commissioning.	Vendor to furnish		
17.2.4	Application for which plants have been supplied.	Vendor to furnish		
17.2.5	Performance certificate from the customers of minimum 3 nos. Oil Treatment Plant supplied in line with point no. 17.1 regarding satisfactory performance of supplied system for minimum one year after commissioning.	Vendor to furnish		
17.2.6	BHEL reserves the right to verify information or visit the place of installation of customer as indicated by VENDOR. In case the information is found to be false / incorrect, the offer shall be rejected.	Vendor to note & confirm		
18.0	TERMS & CONDITIONS			
18.1	Time of Project Completion including material supply, E&C and prove-out (within 24 Weeks from date of LOI)	Vendor to Confirm		
18.2	Schedule of Supply and Erection & Commissioning shall be submitted with the offer.	Vendor to Confirm		

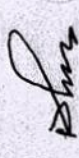
 8-12-19
 Abhishek Gupta
 Sr. Engineer/FCX

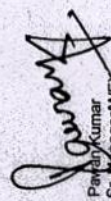

 Prabhakar
 Dy. Mgr./TRM


 D. K. Sharma
 Dy. Mgr./TRM


 Satish Soni
 Dy. Manager/WEX


 Nitin Kumar Gaur
 Manager/WEX


 Dharendra Kumar
 Manager/TRM


 Pavuluri Kumar
 Sr. Manager/WEX