



BHARAT HEAVY ELECTRICALS LIMITED
 (A GOVERNMENT OF INDIA UNDERTAKING)
 SEAMLESS STEEL TUBE PLANT
 TIRUCHIRAPALLI - 620 014.
 TAMILNADU (INDIA)

PHONE : 0431-2578480/8491
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TIN : 33243560005
 CST. No. : 239383
 Dated : 11.06.1991

Corp. Identity No:
 L74899DL1964GOI004281
PURCHASE ENQUIRY

VENDOR CODE 22249	ENQUIRY NUMBER 9350604E	ENQUIRY DATE 28/05/2015	ENQUIRY DUE DATE 18/06/2015	No. OF ITEMS 01
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Office Copy

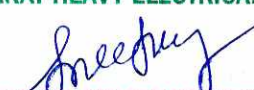
- IMPORTANT POINTS :**
1. Tender Closing Time : 14.00 Hrs.
 2. Tender Opening Time : 15.00 Hrs.
 3. Tender should be submitted in a sealed cover, duly indicating enquiry No. Enquiry date & Enquiry Due Date on the cover.
 4. Offer(s) received through Courier Services after 14.00 Hrs. on Enquiry Due Date will not be considered.
 5. Late Tender(s) is/are liable for rejection.
 6. Offer(s) shall be valid for 60 days from Enquiry Due Date.
 7. Offer(s) in Vendor's Letter head shall contain.
 - a. Offer No. and Date
 - b. Delivery Period
 - c. Delivery Terms
 - d. Payment Terms
 - e. Excise Duty with Tariff Heading Sales Tax (against form-XVII/Form-C). etc.
 - f. Excise Regn. No. and SSI Regn. No.

Kindly arrange to submit your COMPETITIVE OFFER for the following item(s)
 If you are not in a position to submit your Offer, kindly arrange to send your REGRET LETTER.

THIS IS ONLY A REQUEST FOR OFFER AND NOT AN ORDER

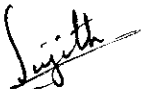
BHEL Material Code and Description	Unit	Requirement	
		Quantity	Delivery
BHEL Material Code : SP3040120045 ----- 1500KVAR HARMONIC FILTER BANK WITH SPECIFICATIONS AS PER THE ATTACHED ANNEXURE NO. 120045	Nos.	01 1.000	29/08/2015
Foot Note :: ----- 1) ANY DEVIATION IN THE SPECIFICATION SHOULD BE MENTIONED IN THE OFFER 2) TC & GC SHALL BE SENT ALONG WITH THE MATERIAL 3) INSPECTION SHALL BE CARRIED OUT PRIOR TO DESPATCH AT SUPPLIER'S WORKS 4) RECOMMENDED SPARES LIST SHALL ALSO BE SENT ALONG WITH THE OFFER. THIS TENDER IS FLOATED ON A "TWO-PART" BID SYSTEM AND Annexure B & C duly completed must be sent back along with part I of your offer. 1) KINDLY QUOTE YOUR RATE ON DOOR DELIVERY BASIS DULY ABSORBING, PACKING, FORWARDING, FREIGHT AND INSURANCE CHARGES. OFFER OTHER THAN DOOR DELIVERY(FOR--SSTP/BHEL) BASIS WILL NOT BE CONSIDERED FOR EVALUATION. 2) KINDLY OFFER WITH MINIMUM DELIVERY PERIOD. 3) CONFIRM YOUR ACCEPTANCE FOR OUR STANDARD PAYMENT TERMS OF 100% PAYMENT AFTER 45 DAYS ON RECEIPT SUBJECT TO ACCEPTANCE OF MATERIALS. 4) MENTION THE ED, TNVAT/CST ETC. IN THE OFFER LETTER WITHOUT FAIL. 5) YOU ARE REQUESTED TO SEND YR OFFER THRO OUR FAX NO 0431 2576828 OR E-MAIL ID pcsn@bheltry.co.in FOLLOWED BY THE ORIGINAL THRO POST/COURIER. "MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the			

IMPORTANT NOTE :
 Delivery Terms : "Free Delivery at BHEL-SSTP STORES" is preferable.
 Payment Terms : 100% payment after 45 days after receipt and acceptance of materials by BHEL.
 Terms and Conditions of Tender : Please see reverse.
 The Technical Requirements/Specification Details/Quality Requirements/Commercial Terms & Conditions are early furnished in the Tender. If Deviation(s) is/are not explicitly brought out in the Offer, it will be construed that the Tenderer is complying with the requirement of BHEL in full without any deviation(s).

For and on behalf of
BHARAT HEAVY ELECTRICALS LTD.

PURCHASE EXECUTIVE

ANNEXURE NO. 120045

Slno.	Description	Vendor response
1	SCOPE	
1.1	This specification covers design & supply of 1500KVAR capacitor bank along with all required equipments to be installed in 11kV sub station. The capacitor bank shall consist of capacitor bank, circuit breaker, Series Reactor, control & relay panel, isolators, LAs, CTs and RVT, conductor, all type of necessary connectors along with suitable mounting structure. All these equipment shall have suitable terminal/equipment connectors.	
1.2	The equipments to be supplied against this specification are required for vital installations where continuity of service is very important. The design, materials and manufacture of the equipment shall, therefore, be of the highest order to ensure continuous and trouble-free service over the years.	
1.3	The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.	
1.4	The equipment shall contain the following components	
1.4.1	14.07 KV, 1500KVAR, 3phase, 50Hz, HT capacitor bank consisting HT capacitor in 3 steps of 500KVAR, 14.07KV HT capacitor	
1.4.2	11 KV outdoor Residual Voltage Transformer	
1.4.3	11 KV, 400 Amp Vacuum Contactors - 3 no.s	
1.4.4	11KV, 630 Amps, 3-ph off load isolator with earth switch	
1.4.5	Control & Protection Equipment-1 set	
1.4.6	11 KV, 3ph, 81.39KVARx3, 26.24x3 Amps, 14% Super Heavy Duty Dry type long life Low losses, Aluminium wounded, Class-F, Epoxy-resin impregnated, panel mounted type, line side, Air Core Series Reactor with 150% Linearity (life expectancy > 15 years) Suitable for 500 KVAR Capacitor Bank - 3 sets	
1.4.7	Neutral Displacement Relay	
1.4.8	Off-load timer for tripping arrangement	
1.4.9	HT HRC Fuse Link	
1.4.10	Space Heater with Thermostat	
1.4.11	Interconnecting bus bars AL	
1.4.12	Microprocessor Based APFC controller	



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 Engineer
 Plant Services - ESTP
 BHEL/Tiruchy - 620 014

4	Standards-Unless otherwise specified elsewhere in the specifications equipments shall conform to the latest revisions of all relevant standards available at the time of placement of the order. The standards are listed in Annexure 'I'. In the event of offered equipment conforming to standards other than the above, the salient points of comparison between the Standard(s) adopted and the relevant IS/IEC shall be indicated in the technical offer to bring out clearly how the chosen standard is equal to or better than the ones stipulated in this specification.	
5	General Technical specifications	
5.1	The capacitor bank and all other equipments other than the indoor control panel shall be suitable for being installed outdoors & would be located at switchyards of various substations.	
5.2	The shunt capacitor should be designed for satisfactory operation even with presence of harmonics in the system. Suitable devices of required ratings should be included in the scope of supply. The general arrangement drawing along with the detailed lay out plan of the capacitor bank shall be submitted for necessary approval.	
5.3	The capacitor bank should have 1500KVAR capacity in 3 steps of 500KVAR each. The inductance value will control amplitude and frequency of the inrush current at back to back switching. Peak capacitor inrush current shall be less than 100% rated value of the capacitor and less than the breaker making current.	
5.4	If the failure of one or more elements cause an over voltage of less than 10% tolerable on the other remaining healthy units, then the unbalance current shall cause in the first step to sound an alarm. But if more than the above numbers of units fail causing the voltage rise of more than 10% on the other healthy units then the unbalance current shall cause to trip and isolate the capacitor bank instantaneously in the second step.	
5.5	Individual units shall be designed to meet the requirements of the permissible overloads & with internal discharge devices as specified in IS- 13925 (Part I)/ 1998.	

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 Director
 Electrical Engineering
 Indian Institute of Technology
 Kharagpur

6.5	The Capacitors shall also be provided with external fuses. It shall be possible to identify the blown off fuse from outside. The tolerance and the degree of unbalances shall also be indicated as per relevant IS. The manufacturer shall supply a set of external fuses together with fixing accessories and a set of three spare fuse links along with the capacitor bank.	
6.6	The outside of the container should have smooth and tidy look and should be coated with weather-proof and corrosion-resistant paint of white or light gray shade. The container/enclosure shall be painted with light gray colour, shade 631 as per IS: 5.	
6.7	The capacitor shall be provided with a rating plate and terminal markings as stipulated in IS: 2834	
7	Vacuum Circuit Breaker	
7.1	The 11KV circuit breakers offered shall be three phase, out door type, 3-pole gang operated, Vacuum contactors having 400 Amps continuous current rating & short circuit rating of 12.5KA for 3 sec.	
7.2	Operating mechanism and control circuitry shall be housed in suitable metallic enclosure. It shall be painted white on the interior and Dark Admiralty Grey to shade no 632 of IS-5 on exterior surface. The enclosures shall be dust, moisture and vermin proof, to provide a Degree of protection to IP 55 in accordance with IS: 13947. Control cubicle for local operation of the breaker shall be mounted at a convenient height to enable easy operation from ground level.	
7.3	In each circuit breaker, one potential free contact of the limit switch of spring charging motor shall be provided for remote indication of spring charged. This contact shall be wired up and brought to the terminal block.	
8	Current Transformers shall be of reputed make.	
9	Residual Voltage Tranformer shall be of outdoor type. The RVT shall have one primary winding and 2 cores on the secondary side- one for metering and the other for unbalance protection	
10	Equipment support structure shall be in the scope of the supplier. All civil works shall be in BHEL scope. The detailed Foundation drawings required for installation of the capacitor bank shall be given immediately after placement of Purchase Order	


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 Plant Engineer
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1.5	It is not the intent to specify herein complete details of design and construction. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements. In actual practice, notwithstanding any anomalies, discrepancies, omissions, in-completeness, etc. in these specifications and the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant Indian Standards, IEC standards, I.E. Rules, I.E. Act and other statutory provisions.	
1.6	The tenderer shall furnish in his offer a list of recommended spares with unit rates for each set of equipment that may be necessary for satisfactory operation and maintenance of circuit breaker and Isolators for a period of 5 years. The cost of such spares shall not be considered for tender evaluation	
1.7	After placement of purchase order and supply of materials, the tenderer shall bring all tools and tackles required for erection and commissioning of the system	
1.8	The list of tools and tackles required for maintenance of the system should be mentioned in the offer. The same shall not be considered for tender evaluation.	
2	Service Conditions	
2.1	Maximum ambient temperature-50 Degree C	
2.2	Minimum ambient Temperature-10 Degree C	
2.3	Relative Humidity- 10 to 100%	
2.4	Altitude above sea level 200m	
2.5	Moderately Hot & Humid Tropical climate	
3	Operating conditions	
3.1	Nominal System voltage-11KV	
3.2	Highest system voltage-12KV	
3.3	Frequency-50Hz±3%	
3.4	Number of phases-3	
3.5	Fault level(minimum)-12.5KA for 3 sec	
3.6	Auxiliary AC supply- 240VAC±10% , 50Hz	

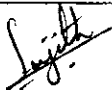
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N. SUJITH

Engineer

Plant Services, BHEL
BHEL/Tiruchy - 620 012

5.6	Internal fuses for individual elements within unit shall be as per the manufacturer's design and shall be ensured for adequacy such as to withstand normal switching inrush transient currents, discharge current when the bank is switched off. Fuses shall be capable of disconnecting a faulty unit or element over a wide range of unit terminal voltages from 70 to 150 %. In case all the elements in the same row are fused out in cascade in an internal fuse unit then the fuse element blown out shall be capable of successful disconnection, with a voltage of not less than 100% rated voltage appearing across its terminals. The unit shall withstand this voltage successfully and continuously. An internal element/elements fuse blowing out shall not cause, case rupture of the container of the unit.	
5.7	Clearances and spacing as indicated below shall be provided. Tenderer shall confirm in their offer that all such clearances shall invariably be provided.	
5.7.1	Phase to phase (Electrical) clearance for Breaker poles(minimum)-280mm	
5.7.2	Phase to phase (Electrical) clearance for C.T.s & P.T.s (minimum)-370mm	
5.7.3	Phase to earth clearance (H.T. Terminal to nearest grounded metal part)-370mm	
6	Capacitor Bank	
6.1	The capacitors shall be arranged in star. Residual voltage transformer provided shall detect any unbalance due to Capacitor unit failure. Star point in the bank shall be ungrounded.	
6.2	The capacitor bank shall be designed, manufactured and tested as Per IS-13925 (Part-I) 1998. The shunt Capacitor bank would be out door type & would be Located at switchyard. Unless otherwise specified, the capacitors shall be suitable for upper limit of temperature category 50° C as per IS-2834.	
6.3	The maximum permissible overloads with regard to voltage, current and reactive output shall conform to IS: 2834/IS: 13925 (part I) 1998 with latest amendments.	
6.4	Suitable discharge device shall be connected across the capacitor units in accordance with the provision of IS: 2834/ IS: 13925 (part I) 1998 with latest amendments. The discharge device shall reduce the residual voltage from the cross value of the rated voltage to 50V or less within 5 minutes after the capacitor is disconnected from the source of supply.	


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11	Suitable current limiting reactors shall be provided on the neutral side of the Capacitor bank. The inductance value will control the amplitude and frequency for the inrush current. The reactor shall be free from annoying hum or vibration. For both capacitor and reactor, the method of mounting and minimum clearance required from live parts shall be indicated clearly and shall be as per IEC 71-2.	
12	Cables from APFC panel to the HT side in BHEL scope. Connection and termination of the same also in BHEL scope.	
13	Delivery: Maximum of 10 weeks from technically and commercially cleared PO	
14	Installation and commissioning in supplier scope	
15	Connecting the system with HT circuit is possible only on sundays and holidays. Supplier has to arrange manpower for the same after supply of materials according to BHEL's convenience.	
16	Performance test are to be carried out in auto and manual mode operation in SSTP premises after installation.	

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ANNEXURE-I: CODES AND STANDARDS


The equipment shall comply with the requirements of latest revision of the following standards issued by BIS (Bureau of Indian Standards) unless specified otherwise:

- IS 5 Colours for ready mixed paints and enamels
 - IS 2099 Bushings for alternating voltages above 1000 v
 - IS 3156 Voltage transformers Parts -1, 2&3
 - IS 5082 Wrought aluminum and aluminum alloy bars, rods, tubes and sections for electrical purposes.
 - IS 5553 Reactors Parts-1.3, 4 & 5
 - IS8084 Interconnecting busbars for AC voltage above 1Kv up to and including 36 KV.
 - IS 694 PVC insulated cables for working voltages upto and including 1100 V
 - IS 1248 Direct acting indicating analogue electrical measuring instruments and their accessories.
 - IS 2071 High Voltage test technique
 - IS 2544 Porcelain post –insulators for systems with nominal voltage greater than 1100 V
 - IS 2705 Current Transformers
 - IS 3156 Voltage transformers
 - IS 3231 Electrical Relays for power system protection
 - IS 3427 AC metal enclosed switch gear and control gear for rated voltage above 1 KV and upto and including 52 KV
 - IS 3618 Phosphate treatment of iron and steel for protection against corrosion
 - IS 5082 Material data for aluminum Bus bars
 - IS 5578 Guide for marking insulated conductors
 - IS: 6005 Code for practicing phosphating of Iron and steel
 - IS 9920 Switches and switch isolators for voltages above 1000 V
 - IS 9921 AC disconnecters (Isolators) and earthing switches for voltage higher than 1000V
 - IS 1061 Dimensions of terminals of High Voltage switch gear and controlgear
 - IS 11353 Guide for uniform system of marking and identification of conductors and apparatus terminals
 - IS 12729 General Requirement of switchgear and control gear for voltages exceeding 1000 V
 - IS 13703 Low voltage fuses for voltages not exceeding 1000 V ac or 1500 v dc.
- Any other relevant national / international standards.

In case of imported equipment, the standards of the country of origin shall be applicable if these standards are equivalent or more stringent than the applicable Indian standards.

The equipment shall also conform to the provisions of Indian Electricity Rules and other statutory regulations currently in force in the country.

In case Indian standards are not available for any equipment, standards issued by IEC/BS/VDE/IEEE/NEMA or equivalent agency shall be applicable.


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