

**Bharat Heavy Electricals Limited**

( A Government of India Undertaking)

**BOILER AUXILIARIES PLANT****RANIPET – 632 406, INDIA**

Phone No.:04172-284623

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**MAINTENANCE & SERVICES DEPARTMENT  
REGISTERED POST WITH ACK.DUE**

<b>NOTICE INVITING TENDER</b>	
Tender Notice No	BAP:M&S:TE: EL:14: 002: DT: 29.04.2014
Name of work	<b>CONDUCTING ENERGY AUDIT AT BHEL RANIPET.</b>
Period of contract	<b>THREE MONTHS</b>
Earnest Money Deposit (EMD) Amount	<b>Rs. 10,000 /- (Rs. Ten thousand only)</b>
Last date & Time for Receipt of the Tender	<b>14.05.2014, 14.30 Hrs.</b>
Date of Tender Opening	<b>14.05.2014, 14.30 Hrs onwards .</b>
Place of submission of Tender	Tender Box placed in M&S Office, BHEL -BAP Ranipet – 632 406
Address on the Sealed Tender Cover to be:	<b>SENIOR MANAGER / M&amp;S PLANNING &amp; ES M &amp; S DEPARTMENT BHARAT HEAVY ELECTRICALS LIMITED RANIPET – 632 406 VELLORE DISTRICT TAMIL NADU</b>
Venue of the Tender Opening	M&S Conference hall

**Important Note:**

- 1) Vendors registered with BHEL, Ranipet/ other BHEL units for similar work is only to quote with evidence. (The qualification requirement details are enclosed in annexure - A).
- 2) Un registered vendors will be considered for the next tender subjected to their eligibility.
- 3) The Tender documents can be down loaded from BHEL website ([http://www.bhel.com/tender/list\\_tender.php](http://www.bhel.com/tender/list_tender.php)) and Govt tender web site: <http://tenders.gov.in/> and also in Central Public Procurement Portal (CPP) website: <http://eprocure.gov.in/epublish/app>
- 4) All corrigenda, addenda, amendments, clarifications etc. to tender specification will be hosted in the web pages ([www.bhel.com](http://www.bhel.com) > Tender notifications > view corrigendum) only and not in the news papers. Bidders shall keep themselves updated with all the such developments.

**Issued to Messers/Thiru****ISSUING OFFICER****P. LAKSHMI RAMANA****Senior Manager  
M & S PLG & ES****BHEL / BAP / RANIPET - 632 406.**

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**SIGNATURE OF THE BIDDER  
WITH SEAL AND ADDRESS**

### **IMPORTANT NOTE TO BIDDRES**

**Bidders are requested to submit their offers `in a sealed cover` consisting of two inner sealed covers such as (1) EMD cover containing DD, ( 2) Technical / Price Bid cover, all super scribing the name of the work, Tender Number, Due date etc.**

- 1) EMD cover shall contain requisite EMD in the form of Demand Draft (DD). Bidders who have already remitted one time EMD of Rs. 2 Lakh need not submit the DD. However they have to furnish the details of Cash Receipt No. & Date on the top of the EMD cover. Tender without EMD / One time EMD reference will be summarily rejected. EMD in any other form will not be accepted.
- 2) The bidder has to quote most competitive rates for all the items in the price bid. The completed Technical / Price Bid cover along with requisite EMD of Rs 10,000 /- for the work in the form of Demand Draft drawn from any Nationalized bank, in favor of **“BHEL, Ranipet”** payable at Ranipet (or) SBI, Mukundarayapuram Branch ( Code : 7013 ) shall reach the Office of the undersigned on or before 14.05.2014 at 14.30 Hrs.  
  
( This earnest money deposit will be refunded to the unsuccessful Bidders after finalization of the award of work. In case of successful bidder, the earnest money will be retained as part of the Security Deposit for satisfactory completion of the work in accordance with BHEL's General Conditions of Contract enclosed. No interest will be paid on the earnest money deposit. EMD by the bidder will be forfeited if i) After opening the tender / price bid the bidder revokes his tender within the validity period or increases his earlier quoted rates ii) The bidder does not commence the work within the period as per LOI / Contract. In case the LOI / Contract is silent in this regard then within 15 days after award of contract ).
- 3) **The Technical / Price Bid will be opened on 14.05.2014 at 14.30 hrs onwards . In case of opening day falls on holiday or happened to be declared as a holiday the receipt and opening of the Tender shall automatically fall at the same timing on the next working day. The bidders or their authorized agents can participate in the tender opening for which they shall bring authorization letter for attending tender opening.**
- 4) **Bidders are required to submit their price bid in the BHEL format only**
- 5) **Seeking clarification on Tender Specification :** Clarifications on tender specification if any may be sought by the bidders during the office hours only from the **Sr.Manager/M&S- phone no - 04172-284623, mobile no: 9442509822 ..**
- 6) Offers received with any deviation or without relevant information are liable to be rejected.
- 7) Price bids received in any form other than prescribed in PRICE BID are liable to be rejected.
- 8) **The bidder has to quote his Rate for all individual items in the Rate Schedule of Price Bid. If the bidder has not quoted the Rate for any item(s), it is considered as incomplete tender and tender can not be accepted.**
- 9) **The tender offer should be kept valid for 3 MONTHS from the date of opening of tender** for acceptance by BHEL. No unsolicited revision in the tender offer shall be entertained after opening of tenders and till expiry of the validity period.

**10)** Quoted rates shall be firm through out the contract period and extended contract period also and no cost escalation is allowed on any account.

**11) The similar works executed in the own name of the bidder only will be considered for eligibility / qualification criteria.**

**SPECIAL TERMS AND CONDITIONS TO ENQUIRY**

1. BHEL reserves the right to increase or decrease the tendered quantity.
2. Lowest prices received against BHEL tenders need not be the technically acceptable one, and in that case, BHEL reserves the right not to consider the same.
3. BHEL reserves the right to negotiate or refloat the tender opened, if L1 Price is not lowest acceptable price to them inter-alia other reasons.
4. BHEL reserves the right to negotiate the L1 rate.
5. The contract will be finalized based on the overall LOWEST value and to be awarded to single party only since split in schedules is not possible.

Clarification if any can be obtained from the undersigned before submitting the offer.

Kindly acknowledge the receipt of the entire set of tender document.

Thanking you,

Yours faithfully,  
For Bharat Heavy Electricals Limited,

**Sr. Manager / M&S Planning & ES  
M&S Department**

## **GENERAL INSTRUCTIONS TO TENDERERS**

1. Tenders must be submitted **in sealed covers** and should be addressed to

**Senior Manager /M&S planning & ES,  
M&S Department,  
Bharat Heavy Electricals Limited,  
RANIPET – 632 406.**

**The Name, Address of the Tenderer and the name of work shall be clearly mentioned on the cover.**

2. Sealed Tenders will be received up to 14.30 Hrs. on 14.05.2014 in the prescribed form and will be opened on 14.05.2014 at 14.30 Hrs. at M&S Conference Hall in the presence of such of those tenderers or their agents who may choose to attend, with authorization letter.
3. All entries in the tender documents should be filled with same ink. Over-writing in the price bid to be avoided. The tenderers concerned should duly sign all cancellations and corrections.
4. Tenderers should fill in all the required particulars in the blank spaces provided for this purpose in the tender documents and also sign and seal each and every page of the tender document/annexures attached thereto before submitting the tender.
5. Conditional and unwitnessed tenders, tender containing absurd rates and amounts, tenders which are incomplete or otherwise considered defective and tenders not in accordance with the tender conditions laid down by the Accepting Officer are liable for rejection.
6. Bidders are advised to quote only as per BOQ given by BHEL. Offers other than price bid proforma of BHEL will not be considered.
7. In quoting the rates, the tenderers are advised to take into account all factors including any fluctuations in the market rates etc. No claim will be entertained on this account after acceptance of the tender or during the currency of the contract.
8. The rates quoted in the tender shall remain valid for a period of Three months from the date of opening of the tender.
9. In the event of tender being submitted by a firm, the tender must be signed separately and legibly by each partner or member of the firm or in their absence, by the person holding the Power of Attorney on behalf of the firm concerned. In the latter case, a copy of the Power of Attorney duly attested by a Gazetted Officer must accompany the tender.
10. Every tender must be accompanied by Earnest Money Deposit of Rs.10,000/- (Rupees Ten thousand only) specified in the instructions to tenders.
11. If the bidder withdraws his offer after submission of his tender or the successful bidder (L1 offerer) with draws or, fails to commence the work in accordance with the instruction of the Engineer/In charge, the EMD deposited by him will be forfeited and order will be cancelled.
12. BHEL tied, reserves the right to reject any or all the tenders received or accept any tender or part thereof without assigning any reason therefor.

13. Should a tenderer find discrepancies or omissions in the tender documents or should be in doubt as to their meaning, he should seek clarifications from the authority inviting the tender. Every endeavour is made to avoid any error which can materially affect the basis of the tender but the successful tenderer shall take up on himself to provide for the risk of any error which may be subsequently discovered and shall make no subsequent claim on account thereof.
14. Tenders submitted by post should be sent preferably by "REGISTERED POST"/ Speed post. This should be posted with due allowance for any delay in postal delivery. On no account the tenders, **received after the due date and time shall be considered.**
15. Quantities shown in the attached schedules are only approximate and liable to variation without entitling the contractor for any compensation.

16. **EARNEST MONEY DEPOSIT(EMD)**

Every Tender must be accompanied by 'Earnest Money Deposit' of Rs.10,000/- (Rupees Ten thousand only) in the form of Demand Draft drawn from any Nationalized bank, in favor of " BHEL, Ranipet " payable at Ranipet (or) SBI, Mukundarayapuram Branch ( Code : 7013 ).

**Note: Cheques, currency notes, Money Orders or Postal Orders will not be accepted .**

**Note: NO INTEREST shall be payable by BHEL on Earnest Money / Security Deposit / or any money due to the Contractor by BHEL.**

17. Tenders received without EMD in full in the form prescribed shall be summarily rejected.
18. The EMD of the successful tenderer will be retained to adjust towards Security Deposit.
19. The EMD of un-successful bidders shall be returned with in 15 days of issue of work order to successful bidder.

20. **SECURITY DEPOSIT** (SD)

- a) Security Deposit shall be collected from the successful tenderer. The rate of Security Deposit will be as below:

Upto Rs.10 Lakhs	:	10%
Above Rs.10 lakhs up to Rs.50 Lakhs	}	: Rs. 10 lakhs : Rs.1 Lakh + 7.5% of the amount exceeding Rs.10 lakhs.
Above Rs.50 Lakhs		

- b) Security Deposit may be furnished in any one of the following forms:

- i) Cash (as permissible under the Income Tax Act)
- ii) Pay Order, Demand Draft in favour of BHEL.
- iii) Local cheques of Scheduled Banks, subject to realization.

- iv) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc., (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).
- v) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.
- vi) Fixed Deposit Receipts issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the Contractor, A/C BHEL, duly discharged on the back.
- vii) Security Deposit shall also be recovered at the rate of 10% from the running Bills. However, in such cases at least 50% of the Security Deposit should be remitted before start of the work and the balance 50% may be recovered from the running bills.
- viii) EMD amount of the successful tenderer can be converted/adjusted against the SD.
- ix) **The security deposit shall not carry any interest.**

**Note:**

Acceptance of Security Deposit against Sl. No. (iv) and (vi) above will be subjected to Hypothecation or endorsement on the documents in favour BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith. The Earnest Money paid at the time of tender will be adjusted as part of the Security Deposit and the balance amount will be recovered by deduction from the running bills of the contractor at the rates mentioned above.

All compensation or other sums of money payable by the Contractor to BHEL under the terms of this contract or under any other contract with BHEL may be deducted from the Security Deposit or from any sums which may be due or may become due to the contractor by BHEL and in the event of this Security Deposit being deducted by reason of such deductions as aforesaid, the Contractor shall within 7 days thereafter, make good in cash or in securities endorsed as aforesaid, any sum by which the Security Deposit has been reduced.

If the contractor fails to execute the contract either fully or partially or violates the contract conditions leading to cancellation of the contract, the security deposit will be forfeited.

The entire security deposit amount so deposited/recovered will be refunded at the end of the contract period and after satisfactory completion of the work.

- 21. Should a tenderer or a contractor has a relative or in the case of a firm or company of contractors any of its shareholders or share holder's relative, employed in Bharat Heavy Electricals Limited, the authority inviting tenders shall be informed of this fact at the time of submission of the tender failing which tender may be disqualified or if such fact subsequently come to light, the contract may be rescinded.
- 22. If a tenderer expires after submission of his tender, the Bharat Heavy Electricals Limited may be at its discretion to cancel such tender.

23. If a partner of a firm expires after submission of the tender or after the acceptance of the tender, Bharat Heavy Electricals Limited may cancel such tender at the discretion unless the firm retains his character.
24. The Bharat Heavy Electricals Limited will not bound by any Power of Attorney granted by the tenderer or changes in the composition of the firm made subsequent to the execution of the contract. They may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contract concerned.
25. If the contractor deliberately gives wrong information in the tender or creates conditions favorable for the acceptance of his tender, Bharat Heavy Electricals Limited reserves the right to reject the tender at any stage.
26. Words imparting the singular number shall also deemed to include the plural number and vice versa where the context so requires.
27. The expenses for completing and stamping the agreement shall be to the contractor's account.
28. The General and Special Conditions of Contract are complimentary to each other and where they are in conflict, the Special Conditions shall prevail. In regard to matters not covered by the General or Special Conditions of Contract, those contained in the specifications approved by Bharat Heavy Electricals Limited shall apply.
29. Tenderers shall not increase their quoted rates or lay additional conditions incase Bharat Heavy Electricals Limited negotiates for reduction of rates, such negotiations shall not amount to cancellation or withdrawal of the original offer and the rates originally quoted shall be binding on the tenderers for a period of three months from the date of opening of tender. In case the above conditions are violated, BHEL is at the discretion to cancel the tender by forfeiting the EMD paid by deviating tenderer.
30. Canvassing in any form in connection with the tender is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.
31. All contractors will have to produce Income Tax clearance certificate from the Income Tax authorities concerned along with their tenders. Those contractors whose income is not taxable will be required to give an affidavit of their income on the prescribed form.
32. The "GENERAL INSTRUCTIONS TO TENDERERS" shall be deemed to form an integral part of contract for the work to be entered into.
33. The tenderer should be present if called for negotiation both technical and commercial. In case, the tender's authorized person is attending the negotiation such person should have the authorization letter and he should be capable of taking spot decisions.
34. **Incuse you are not interested in submitting your quotation, you should return the entire tender papers with a covering letter stating that your regrets for not submitting your offer for this tender.**
35. If needed tenderers may visit the site / working area and obtain all clarifications from Tender Issuing Officer regarding the nature of job before offering their quotation.
36. The contractor shall quote all the applicable taxes in the offer and no tax will be paid after the issue of the contract.

### 37. COMPLIANCE TO REGULATIONS AND BY-LAWS

The Contractor shall conform to the provisions of any statute relating to the work and regulations and Byelaws of any local authority. The Contractor shall be bound to give all notices required by statute regulations or By-Laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof:

#### a) Minimum Wages for the workers engaged for this work:

The Contractor shall remain liable for the payment of all wages or other moneys to his work-men or employees under the payment of Wages Act 1936, Employees Liability Act. 1938, Workmen's Compensation Act 1923 or any other Act or enactment, relating thereto and rules framed, there under from time to time.

**The current minimum wages for skilled worker is Rs 296.00 / day, semi skilled worker is Rs 289.00 / day and for un skilled worker it is Rs. 281.00 / day. The contractor shall ensure to pay wages not less than this minimum wage to the workers deployed by him in this work along with other statutory payments. Any increase in wages during currency of the contract also to be paid by the contractor within the quoted rates.**

In addition to the above the contractor is liable to pay additional lumpsum monthly payment as below.

- Rs.3200/- for unskilled worker
  - Rs.3700/- for semiskilled worker
  - Rs.4100/- for skilled worker
- b) 8.33% bonus (minimum) to be paid.
- c) The contractor shall maintain the detailed list of employees engaged during the contract execution period.
- d) The contractor shall also maintain attendance details of the employees and register of payment and a copy of the details shall be submitted to the authorized official every months along with the bill for verification.
- e) As per employees PF and misc. provisions Act 1952, the employee's contribution payable at present is 12% of wages which shall be recovered by the Contractor from the wages of his workmen and the contractor should pay equal contribution in addition to any administrative charges in this behalf that may be decided from time to time. Remittance shall be made on time (i.e. on or before 15<sup>th</sup> of the following month).
- f) All the contract workers shall be enrolled in ESI (Employees' State Insurance). The effective date will be first day of the latest commencement of running contract concerned. The date shall be entered in the 'Date of Appointment' column of the ESI Declaration Form. The workers who are already members of ESI need not be enrolled again.
- g) The filled ESI declaration forms shall be submitted to the Executive (HR-CLX, REX). In the Declaration Form full address of the contractor shall be mentioned. Whenever a fresh and unregistered worker is engaged during the operation of contract, declaration form in respect of that workman which should be submitted to Human Resources Department within two days of such engagement.

- h) ESI contributions (1.75% employees contribution + 4.75% employer contribution of the total monthly wages) before 20<sup>th</sup> day of every following month. Prescribed challans are available at ESI local office, Ranipet (near Sipcot). Contractors who have got their own code number can remit the contributions on that number.
- i) Along with the challan copy, the details of remittance shall be submitted to the Executive (HR-CLX, REX) in the ESI compliance form.

The contractor should deduct Provident Fund and ESI amount as per the provisions and amount so deducted along with the matching contribution of the contractor shall be remitted to the authorities concerned within the stipulated time. The statement of deduction along with the challans evidencing remittance shall be submitted to Officer-in-charge. If the evidences are not shown, further bills of the contractor will not be paid.

BHEL have the right to withhold the payment of his bills. Submission of statutory returns such as Half Yearly returns of ESI (Form 6), P.F. return (Form 12A), Form 5 and Form 10, Form 3A & Form 6A should be send to the concerned officers in time.

38. In case of any increase in wage rates on account of revision of minimum wages by Government of Tamil Nadu and any revision of rate of contribution in Provident Fund, ESI and Bonus percentages due to statutory amendments, the contractor is bound to pay the revised amount. In case the revision of minimum wages is made by Government of Tamil Nadu with retrospective dates, the contract is bound to pay such arrears arising out of such revision of minimum wages retrospectively, failing which BHEL as the principal employer will retain the amount from the contractor and pay to contract labourers working under him.
39. The workers' particulars such as Name, Age, Father's name, address etc., and their daily attendance have to be maintained by the contractor. The details of Provident Fund and ESI compliance have to be maintained by the contractor in the prescribed format/register.
40. As per the Contract (Regulation & Abolition) Act, 1970 & Allied Rules, the contractor employing 20 or more labourers is required to obtain license from the Inspector of Labour, Vellore. This license shall be amended and/or renewed whenever there is an increase in the workman employed by him or in the event of contract being extended or renewed. The contractor shall inform the License Number so obtained to the Human Resources Department.
41. The contractor shall maintain the following Registers and Records and make them available for inspection at any time. (The list is only for example, but not exhaustive).
- a) Muster Roll
  - b) Register of Wages
  - c) Register of Deductions
  - d) Register of Overtime
  - e) Register of Fine
  - f) Register of Advance
  - g) Wage slips
  - h) Register of Accidents
  - i) Register of Leave with Wages
  - j) ESI Register in Form-7

All registers are required to be maintained as above and shall be produced as and when Government Officials and Statutory Authorities to make inspection from time to time.

42. In case a contract labourer meets with an accident while on duty, the contractor shall immediately intimate the information to Safety Department, Contracting Agency and Human Resources Department and submit the Accident Report duly filled in all respect and send a copy to ESI local office, ESI Dispensary and Inspector of Factories (for major accidents) within 24 hours of accident through Safety and Human Resources Departments. All assistance for the injured workman such as to taking him to ESI Dispensary for treatment must be rendered by the contractor.
43. Compliance of the above provisions does not absolve the obligation of contractor arising out of other statutory obligations.
44. Employment of child labour is strictly prohibited.
45. Contractor should employ only persons having sound health and not above the age of 58 years, and not below the age of 18 years.
46. Payment of Bonus: In respect of work done by the labour, the contractor has to pay to his labourers as laid down by the Payment of Bonus Act – 1965.
47. Necessary 'COMPREHENSIVE INSURANCE' coverage is to be arranged by contractor for his material handling vehicle/drivers/ labors and also for third party liability.
48. The Bidder should be present if called for negotiation both technical and commercial. In case, the Bidder's authorized person is attending the negotiation such person should have the authorization letter and he should be capable of taking spot decisions.
49. In case the Bidder is not interested in submitting your quotation, they should return all the tender papers with a covering letter stating that your regrets for not submitting your offer for this tender.
50. If required bidders may visit the site/working area and obtain all clarifications from Tender Issuing Officer regarding the nature of job before offering their quotation.
51. The bidder shall clearly indicate all the applicable Taxes in the Price Bid and also shall state clearly whether these taxes are inclusive or exclusive of the Basic rate quoted. If any tender does not indicate applicable taxes, BHEL will assume, price quoted is inclusive of all Taxes and Tender will be evaluated accordingly.
52. The contractor should submit notarized copy of the following documents.
  - i. Pan card.
  - ii. TN VAT registration certificate.
  - iii. Service tax registration certificate.
53. The contractor shall indicate all the applicable taxes in the offer and any claim after the issue of contract will not be entertained.

54. In case if any Taxes not applicable, like due to threshold limit etc. Same may be clearly indicated in the offer by the Bidder.

**55. Discrepancy in “words “ & “ Figures “**

- a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
- b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (a) and (b) above.
- d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date up to which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

**56. Service Tax:**

Rates quoted shall include all royalties, terminal taxes, octroi duties, central and provincial excise tax, sales tax and other taxes leviable under the State or Central Government Rules excluding Service Tax. The Bharat Heavy Electrical Limited will not entertain any claim whatsoever in this respect in future.

The Bidder shall not include Service Tax in their quoted rates; but the bidder has to separately indicate the Service Tax rate, amount and workings thereof in the Price bid schedule included in the bid documents.

If service tax amount is not indicated separately in the price bid schedule included in the bid documents, it will be presumed that the quoted rate is inclusive of applicable service tax and bids will be evaluated accordingly.

**Pure Service not involving any supply of materials by Contractor:**

Bidders have to quote the applicable Service Tax payable in the Price bid format included in the Bid document which shall be considered for evaluation. The same shall be considered for reimbursement against valid documentary evidence to successful bidders.

**57. SET OFF Clause:**

BHEL shall have the right to recover any money due from the contractor from any money due to the contractor under this contract or any other contract or from the security deposit.

**58. Payment Terms:**

100% payment shall be made after acceptance of reports against submission of tax invoice in triplicate and statutory documents duly certified by the engineer-in charge of BHEL.

## **CONDUCTING ENERGY AUDIT INSIDE FACTORY**

### **BRIEF OF ELECTRICAL SYSTEM AT BHEL- RANIPET**

BHEL's Boiler Auxiliaries Plant (BAP), Ranipet is one of the manufacturing units of BHEL, located at Ranipet, 120 KM away from Chennai and 25 KM away from Vellore. This was started in the year 1982 with the installed capacity of 57000 MT. Three major boiler auxiliary equipment viz. Fans, Air Pre-heater, Electrostatic Precipitators (Air pollution control equipment), Mechanical Equipment are manufactured here and meeting its production demand by two shifts operation in a day.

#### **Production Process Description:-**

BHEL, Ranipet has five major production shops viz. Air Pre-heater (APH) Shop, Fan Shop, Material Preparation (MP) Shop, Rolling bay and High bay. The entire operation in BHEL is taking place in the following sections:-

- Production Building – Air Pre-heater
- Production Building – Fans
- Service Plant - Air compressor
- Engineering Building
- Administrative Block

#### **Air Pre-Heaters**

Air heaters manufactured with broad range of sizes and capacities of i) Ljungstrom regenerative air heaters and ii) Tubular air heaters for steam generators and process industries to meet the various duty conditions APH has three bays, in the first bay of APH (A1 Bay), collecting electrodes up to 750 mm width and of different lengths are rolled. The heating elements required for air pre-heater are also rolled here. These electrodes are dipped in the anti-corrosive fluid and then sent for packing. In the second and third bays (A2 & A3), various components of air pre-heater like Rotor Post, Sector Plate Assembly, etc are manufactured.

#### **Fan Shop**

Fan shop is also having three bays, in the first bay of Fan Shop (F1 Bay), various types and sizes of fan impellers are manufactured. In the second bay (F2 Bay), various types and sizes of fan housings are manufactured. Fans are manufactured for steam generators and various industrial applications. The third bay of Fan Shop (F3) is called machine shop as it contains most of the machines CNC and old conventional machines. All the components required for shop assembly are machined here. In this bay Pollution Mitigation Equipment such as Electrostatic Precipitators, Coal and Ash handling equipment are manufactured.

#### **Material Preparation Shop**

The raw materials of required size and shape for shop production are prepared in this Material Preparation Shop (MP Shop) and sent to the various shops. MP shop is the material feeding area to the shops. This bay consists of CNC Flame Cutting Machines. Plate Straightening Machines, Saw Cutting Machines and Shearing Machines.

#### **R1 Bay**

The ESP products collecting electrode & heating element are manufactures here. Dipping tank for APH baskets is also present in this bay. CE line & HE line CNC machine are present in this bay.

## **H1 Bay**

Radial fan impellers & APH center sections are manufacture in this bay.

### **Energy Scenario of BHEL:-**

BHEL- Ranipet receives HT 11kV power supply with 3000KVA Sanctioned Demand from TNEB, Vellore Circle. The High Tension service connection (HTSC) no. is 1061. There are 11Nos of 1250kVA (11kV/433V) power distribution transformers at various 11KV substations near to load centers inside the factory. Out of 11 transformers; only five are in normal operation and remaining six are kept as standby. The rate for industrial energy consumption per unit is Rs. 5.50/-. Out of the total monthly units, the units recorded separately during peak hours attract the payment of Rs. 1.10 per unit. The units consumed during night hours attract 5% rebate on the calculated amount done based on Rs. 5.50 per unit. MD charges are Rs. 300 per kVA. The average power consumption per month is 6,00,000 units.

The Main Power supply is being utilized for the production activities in shop bays, street lighting, office lighting, air- conditioning, fabrication yards, compressor house, and VFD facility in fan testing, dining halls, sewage treatment plant, water pumps, high masts and stock yards. The power distribution network inside the factory is through underground cabling.

EOT cranes, Gantry cranes, CNC machines, bay lighting, welding machines and heavy load machines of 100KW average constitute the electrical load of shop floor. Heating furnaces are LPG fired.

3 Nos. of 11KV, 1000 KVA DG sets, 1 No of 500KVA DG set, 2 No of 250KVA, 1 No of 275KVA cater to the load during the TNEB Power failure.

### **Compressor Details:**

<b>Compressor Type &amp; Make</b>	<b>FAD capacity m<sup>3</sup>/h</b>	<b>Motor rating kW</b>	<b>Comp. Air pressure kg/cm<sup>2</sup>g</b>	<b>Approx. energy consumption per year</b>
3 no's of KG Khosla Make Air Compressors (Model 2HA4P)	42.5	250KW	7	12,00,000 Kwh/annum
Screw Air Compressor (ML250) -01 number	43.9	275KW	7.5	4,00,000 Kwh/annum

### **Name Plate Details of Distribution Transformers**

Specifications:

Make : KAVIKA ETC

Capacity : 1250 kVA 1250 kVA

Voltage Ratio : 11/0.44 kV 11/0.44 kV

Current Ratio : 65.6/1666.72 Amps 65.6/1666.72 Amps

Year of manufacturing : 1983

**Name Plate Details of Diesel Generator:**

The major DG sets in the factory are:

HT-1 (1000KVA, 11KV)

Engine Make : Cummins Alternator : Kirloskar

HT-2 (1000KVA, 11KV)

Engine Make : Mitsubishi Alternator : Kirloskar

HT-3 (1000KVA, 11KV)

Engine Make : Perkins Alternator : ToyoDenki

LT-1 (500KVA, 415V)

Engine Make : Cummins Alternator : Kirloskar.

**SCOPE OF WORK:**

Manner of Energy Audit – Every Energy Audit under the Energy Conservation Act shall be conducted in the following manner:-

- 1) Training and awareness programme on energy conservations. As a prelude to the study, two half day awareness programmes shall be conducted for senior and operative level to provide thrust to the study.
- 2) To conduct survey on development in energy usage to compare performance in productivity.
- 3) To make study about the calculation of energy saving for each equipment / feeder / plant /machinery.
- 4) To conduct a detailed audit of heat treatment furnaces, compressors and identify areas for energy conservation.
- 5) To conduct a detailed audit of all utilities and identify areas for energy conservation.
- 6) To study transformer AVR and suggest suitable measures for energy conservation. (AVR capacity 3MVA -1 No).
- 7) To study the tariff structure and suggest suitable operating practices with respect to reduction of energy and demand charges, reactive power and power factor, load factor improvement.
- 8) To conduct a lighting survey and suggest suitable measures for energy conservation.
- 9) To conduct a study of Estate feeders, transformer loading, connected load, transmission losses and energy saving opportunities.
- 10) The energy audit report should be presented in a PPT.

**METHODOLOGY:**

The methodology that to be adopted by energy auditors is given below:

- 1) Discussion with plant personnel.
- 2) Analysis of past performance date, Electricity bills etc.,
- 3) Measurements of required electrical and thermal parameters.
- 4) To conduct performance trials.
- 5) Discussion of the findings and recommendations with plant personnel.
- 6) Recommendations to reduce energy consumption and improve energy efficiency.
- 7) Conduct equipment energy performance measurements with due diligence and caution.
- 8) Preparation of recommendations on energy saving measures, their cost benefit analysis. The recommendations will be categorized in to nil investment, medium and large investment measures with cost-benefit economic analysis.
- 9) A brief description of each recommended measure;
- 10) Any known or expected technical risk associated with each measure.
- 11) A preliminary assessment of financial attractiveness of each measure or assessment of maximum investment feasible based on the estimated energy cost saving potential over the life of the measure.

**TERMS & CONDITIONS:**

- 1) The Energy Audit shall be conducted on total Electrical installation at BHEL-Ranipet.
- 2) The whole Audit shall be conducted within 90 days from the issue of order. In case of escalation of time during the Energy Audit, no extra payment will be made and the rates shall remain firm till completion of the Job.
- 3) You are requested to furnish the work plan for carrying the Energy Audit in detail within 30 days from the date of issue of order.
- 4) The final report should be submitted within a month from the date of final visit of your Audit team.
- 5) Four copies of the final report should be submitted after the completion of Energy Audit.
- 6) Presentation shall be given after the completion of Energy Audit.
- 7) The rates quoted by you shall be firm and inclusive of Transportation of equipment, TA for the Engineers, Technician, officials, Labor, Boarding and lodging and applicable all Taxes, duties etc. However, the Taxes shall be mentioned separately.
- 8) On acceptance of the offer the Tenderer will be required to execute an "Agreement" on stamp paper of value Rs.20/- at your cost with BHEL within 15 days from the date of order.
- 9) No Men, Materials, Testing Equipment, Food & Accommodation, Transport will be provided throughout the work departmentally.
- 10) No advance payment will be made. 100% payment will be made within 30 days from the date of acceptance of Final Report through E-Payment.
- 11) Income Tax & Service Tax will be recovered from the bills as per the relevant provision of Tax Act.
- 12) Necessary Free Entry passes will be arranged for the working officials, Vehicles, Equipment, and Tools etc. by BHEL.
- 13) Any damage to the Departmental Property if found during the work shall be to your account only.
- 14) The Tenderer shall be responsible for taking precautionary measures for the safety of the workman working under them and the responsibility arising due to any mishap during the execution of work, the payment of any compensation etc lies entirely on the part of the Contractor.
- 15) It is advised to visit the Site and get acquaint yourself regarding the nature of the work involved at site conditions before quoting, if required.

**BILL OF QUANTITIES****PRICE BID****Name of Work** : Conducting Energy Audit at BHEL, Ranipet.**Period of Work** : Three Months.**Tender Notice No** : BAP:M&S:TE: EL:14: 002: DT: 29.04.2014.

Sl. No	Description.	Amount in Rs.	
		In figure	In words
1	Conducting Energy Audit at BHEL, Ranipet as per the Scope of Work and Terms & Conditions.		
2		<b>Sub total</b>	
3		<b>Service Tax@_____%</b>	
		<b>Total Amount in Rs.</b>	

## ANNEXURE – A

QUALIFICATION REQUIREMENTS (QR) :		
<b>Name of work:</b> Conducting Energy Audit at BHEL, Ranipet		
S.No	Description	Details ( To be filled by the Contractor )
1	Average annual financial turnover of the Contractor during the last 3 years ending on 31st March 2013, should be at least <b>Rs. 0.90 lakhs</b> and the bidder should submit audited balance sheet and Profit & Loss Account for the last three years (2010 – 11, 2011 – 12 & 2012-13), duly certified by chartered accountant / auditor.	2010 – 11:
		2011 – 12:
		2012 – 13:
2	Contractors having experience of successfully completed similar works (ref. Note 1 below) during the last 7 years as on 31.03.2014 should be either of <b><u>the following three categories.</u></b>	
2. a	<p><b><u>Category no:1</u></b></p> <p>Three similar completed works each costing not less than the amount equal to <b>Rs. 1.20 Lakhs</b></p>	Client : Name of work :  Value of Wok : Rs. Completion Certificate issued by :  Date of completion of work:
		Client: Name of work:  Value of Wok : Rs. Completion Certificate issued by :  Date of completion of work:
		Client: Name of work:  Value of Wok : Rs. Completion Certificate issued by :  Date of completion of work:
OR		

2.b	<u><b>Category no:2</b></u> Two similar completed works each costing not less than the amount equal to <b>Rs. 1.5 Lakhs</b>	Client: Name of work:  Value of Wok : Rs. Completion Certificate issued by :  Date of completion of work:
		Client: Name of work:  Value of Wok : Rs. Completion Certificate issued by :  Date of completion of work:

OR

2.c	<u><b>Category no:3</b></u> One similar completed work costing not less than the amount equal to <b>Rs. 2.4 Lakhs.</b>	Client: Name of work:  Value of Wok : Rs. Completion Certificate issued by :  Date of completion of work:
		Client: Name of work:  Value of Wok : Rs. Completion Certificate issued by :  Date of completion of work:

**Note1: 'Similar Works' mentioned in Sl.No-2 above shall mean successfully conducted energy audits in any industry having maximum demand of 2000KVA or above .**

2. Tender bids not meeting any of the above pre-qualification criteria shall be rejected and shall not be considered for further evaluation of tender.

3. Possession of PF registration number is not mandatory. However the successful tenderer has to register with PF authorities and furnish the registration number before first Running Account Bill.

4. BHEL reserves its right to reject the tender on account of unsatisfactory past performance by the bidder in other projects awarded under different enquiry.

5. The work executed in the own name of the bidder only will be considered for similar works executed for meeting the eligibility criteria.

**Documents required for proof of QR:**

The bidders should submit documents in support of possessing Qualifying requirements as under, duly certified and stamped by their authorized signatory:

- Copy of Balance sheet, Profit & Loss Account duly certified & audited by Chartered Accountant) and work orders along with BOQ and completion certificates in support of the qualifying criteria.
- Copy of authorization letter / power of attorney of the authorized signatory of the tender document (only in case of owner of the firm is different from authorized signatory).

**Details to be filled by the Bidder**

1a	Name of applicant	
1b	Full address	
1c	Nationality	
1d	email cell phone fax	
2	Whether the firm is individual firm or Sole proprietorship firm or partner ship firm or Hindu undivided Family or association of persons or Private Limited company or Public Limited company or any other please specify.	
3	Whether the contractor has registered his workmen under employees State Insurance Act. If so, the Registration No./ Enrolment Number may be furnished.	
4	PAN no and documentary proof .	
5	Registration under Tamil Nadu VAT ACT, TIN number.	
6	The service tax heads under which the enlisting person registered with Excise Authorities and copy of service tax registration certificate has to be enclosed .	
7	Whether the contractor has registered his workmen under Employees Provident Fund and Miscellaneous Provisions Act?	
8	Income Tax return filed acknowledgement for last 3 years has to be enclosed.	

### **SAFETY RULES**

1. The Contractor must inspect the area of work to decide the safety precautions necessary for executing this contract.
2. Whenever people work at height more than six feet, platform shall be provided or the workers shall wear safety belt to avoid fall from the height.
3. Wherever any area declared dangerous, the workers shall not be allowed to work till a written clearance is obtained from appropriate authorities.
4. No material of any kind shall be dropped or allowed to be dropped from any height.
5. Defective ladders shall not be used at all.
6. Inflammable materials shall not be stored near places where the sparks are likely to occur.
7. The necessary safety equipments such as gloves, safety belt, helmet, safety boot etc must be issued to the workmen and strictly to be used while carryout the work. If Personal Protection Equipments not provided by the contractor, BHEL shall provide the required PPEs on chargeable basis, depending upon the stock availability.
8. If the contractor's workmen found violating the safety precautions, punitive action will be taken and or a penalty of Rs.500/- will be imposed and deducted from the contractor bill for each violation.
9. The working area shall be kept clean and free from all obstructions.
10. All safety precautions are to be taken by the contractor at his cost.

These safety measures shall be deemed to form an integral part of the Work Order/  
Agreement

**CERIFICATE OF NO DEVIATION**

I / We ..... of M/s .....

hereby certify that **there is no deviation** from the tender conditions either technical or commercial and I am /We are agreeing to all the terms and conditions mentioned in the Tender Specification.

Date:

**Signature of the Bidder**

