

PROJECT : 5 X 800 MW YADADRI PROJECT
PACKAGE :- WORKSHOP EQUIPMENTS

GeM Tender Enquiry

Index of Annexures

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BHEL PEM GEM ATC

Project: - 5 X 800 MW YADADRI TPS

Package: - WORKSHOP EQUIPMENT

GeM BID No....., Dtd.

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INTRODUCTION

1. This is a Buyer specific document named Additional Terms & Conditions (ATC). This document is applicable for the enquiry issued on Government e-Marketplace (GeM) portal. These terms and conditions must be read in conjunction with GeM-General Terms & Conditions (GTC).
2. In case of any conflict, terms and conditions stipulated in ATC shall supersede those in GTC on GeM.

INSTRUCTIONS TO THE SUPPLIERS

Suppliers are advised to note the following instructions regarding Bid/Offer submission:-

1. To regularly visit GeM portal to access the tender documents and latest updates about the tender.
2. To study all the tender documents carefully. Any submission of tender by the Supplier shall be deemed to have been done after careful study & examination of the tender documents and with full understanding of the implications thereof. Non-compliance with any of the requirements and instructions in the Tender Enquiry shall be treated as an Incomplete Bid/Offer. Suppliers would be liable for actions as per extant policies/guidelines, if they fail to abide by any of the Policies including the terms and conditions stipulated in this document.
3. Ensure submission of their Bid/Offer on or before the latest due date and time indicated in the tender after taking cognizance of all the tender documents including corrigenda (if any) published against this tender.
4. To submit their Bids/Offers on GeM portal only.
5. Not to send copy of Bid/Offer through any other mode i.e. hard copy and or through email etc. In case Bids/Offers are received through any other mode other than GeM portal from any of the Suppliers against this tender, the same shall be ignored.
6. Incomplete Bid/Offer shall be rejected by giving a suitable cut-off date.

ORDER OF PRECEDENCE

In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following order of precedence:

- i. Amendments to Order/ Contract Purchase Order
- ii. Order/ Contract Purchase Order
- iii. Letter of Intent (LOI)/ Letter of Award (LOA)
- iv. Clarifications agreed between Buyer and Supplier in regards to the tender or the bidding conditions
- v. Corrigenda to NIT, with those of later date having precedence over those of earlier date
- vi. Enquiry letter and annexures except documents listed in point no (vii) to (x) below.
- vii. Technical Specifications
- viii. Additional Terms & Conditions (ATC)
- ix. Special Conditions of Contract (SCC)
- x. GeM General Terms & Conditions (GTC)

DEFINITION OF TERMS

Throughout the Tender Documents including the Enquiry Letter, the following words shall have the meanings assigned to them herein, unless the subject matter or the context requires otherwise: -

- 1 **Owner** shall mean the **Customer** or **Client** for whose project the enquiry is issued by Buyer and shall include its successors and assignees as well as authorized officer(s)/ representative(s).
- 2 **Sub-Supplier** shall mean the person/ firm/ company/ organization to whom any part of the work has been sub-contracted by Seller/Supplier, with the written consent of Buyer, and shall include sub-Contractor's heirs, executors, administrators, representatives and assignees as agreed between Seller/Supplier and Buyer (BHEL).

Note - The term Supplier is used for Seller/ Bidder/ Vendor/Manufacturer in this document. The term Sub-Supplier is used for Sub-Contractor/ Sub-Vendor in this document.

- 3 **Site** shall mean and include the land and place on which the project station related facilities are to be constructed and any adjacent land which may be allocated or used by *Owner, Buyer or Supplier* in performance of the Order/ Contract.
- 4 **Erection** shall mean include all work required for complete installation, from receiving, unloading, storage, preservation, to fixing & securing the equipment in its space.
- 5 **Commissioning** shall mean successful/ satisfactory completion of Trial Operation and readiness of the contracted/ ordered package / plant and materials unit wise/ set wise/ individual sub-system etc. including associated stand by for commercial use. This will include all consumables and inputs required for pre-commissioning.
- 6 **Inspection Agency (IA)** shall mean person(s) authorized by Buyer / Owner to inspect the stores as per Order/ Contract at Supplier's / Sub-Supplier's works. Suppliers to raise inspection call on BHEL - Quality Surveillance System (<https://cqir.bhel.in>).
- 7 **Month** shall mean calendar month and **Week** shall mean 7 days.
- 8 **Services** shall include Engineering, Study, Calibration, Type Test, Supervision of Erection and/or Commissioning, Installation Check, PG Test, Demonstration, Operation & Maintenance (O&M), Annual Maintenance of Contract (AMC), etc.
- 9 **Performance Guarantee Test** shall mean a test to be conducted by the Supplier at Site and witnessed by Owner/ Buyer, as per procedure submitted by the Supplier and approved by Owner/ Buyer describing the objective of the test, detailed procedures to test the guaranteed parameters, obligations as per the order/ contract, results presentation procedure and verification & acceptance criterion.

TERMS & CONDITIONS

1	BID SECURITY/ EARNEST MONEY DEPOSIT (EMD)
1.1	a) EMD: Not Applicable b) EMD: Applicable , EMD amount shall be Rs. 2,50,000.
1.2	Modes of Deposit: EMD shall be accepted only in the following forms: (i) Electronic Fund Transfer credited in BHEL account (before tender opening): BHEL-PEM account details is given at the link https://pem.bhel.com/Documents/VendorSection/BHELBANKER.pdf (ii) Banker's cheque/ Pay order/ Demand draft, in favour of BHEL (along with offer) (iii) Fixed Deposit Receipt (FDR) (iv) Bank Guarantee from any of the Scheduled Banks (v) Insurance Surety Bonds Scanned copy of EMD shall be uploaded by Supplier in the online bid and hard copy of the same (excluding EFT at pt.1.2(i)) shall have to be submitted to the Buyer within 7 (Seven) working days of bid opening, failing which the bid shall be rejected by giving a suitable cut-off date.
1.3	The EMD shall remain valid for a period of 45 (forty-five) days beyond the final bid/offer validity period. The EMD shall also be extended in case of extension of bid/offer validity.
1.4	Forfeiture and Release/Return of EMD: i) A Supplier's EMD will be forfeited if the Supplier withdraws or amends its/his tender or impairs or derogates from the tender in any respect within the period of validity of the tender or if the successful Supplier fails to furnish the required performance security within the specified period mentioned in the Tender. ii) EMD by the Buyer shall be withheld in case any action on the Supplier is envisaged under the provisions of extant "Guidelines on Suspension of Business Dealings with Suppliers/ Contractors" of BHEL and forfeited/ released based on the action as determined under these guidelines placed at https://www.bhel.com/supplier-registration . iii) Bid securities of the unsuccessful Suppliers shall be returned to them at the earliest after expiry of the final bid validity period and latest by the 30 th day after the award of the contract. However, in case of two packet or two stage bidding, Bid securities of unsuccessful Suppliers during first stage i.e. technical evaluation shall be returned within 30 days of declaration of result of first stage i.e. technical evaluation. iv) Bid security shall be refunded to the successful Supplier on conclusion of the Order/ receipt of a performance security (if applicable).
1.5	EMD shall not carry any interest.

2	PART-II BID OPENING IS SUBJECT TO FOLLOWING CONDITIONS:
	<ul style="list-style-type: none"> i) Qualification of Technical and/or Financial PQR as applicable. ii) Techno-commercial compliance to the NIT (Bid). iii) Mandatory conformance to applicable Govt. of India rules/ guidelines/ notifications/ circulars as issued or amended time to time. iv) Approval of Supplier by Owner (if applicable).
3	REGISTRATION IN BHEL-PEM
	It is strongly recommended that suppliers get themselves registered in BHEL-PEM as a "Regular Supplier". Regular Suppliers for the package are informed about the floated tender enquiries by BHEL-PEM. Suppliers to apply online through registration portal available at www.pem.bhel.com - Vendor Section - Online Supplier Registration . All credentials and/or documents duly signed and stamped related to registration can be uploaded & submitted online through the website.
4	TECHNICAL PQR
	<p>a) Technical PQR: Not Applicable</p> <p>b) Technical PQR: Applicable</p> <ul style="list-style-type: none"> i) Supplier has to provide the details as per TECHNICAL PQR in its Offer. Supplier to note that bids of only those Supplier(s) shall be evaluated who meet the Pre-Qualifying requirements. ii) This item/package /system falls under the list of items defined in para 3 of ministry of finance guideline dated 20.09.16 (Procurement of items related to Public safety, Health, Critical Security operations & Equipment's etc.) & hence criteria of prior experience/Turnover shall be same for all the Suppliers including Start-up/MSME.
5	FINANCIAL PQR
	<p>a) Financial PQR: Not Applicable</p> <p>b) Financial PQR: Applicable</p> <p>Supplier has to provide the details as per FINANCIAL PQR in its Offer. Supplier to note that bids of only those Suppliers shall be evaluated who meet the Pre-Qualifying requirements.</p>
5A	Above terms of BHEL PQR(s) shall prevail in conflict (if any).
6	INTEGRITY PACT (IP)
6.1	<p>a) IP: Not Applicable</p> <p>b) IP: Applicable</p>

6.2

~~IP is a tool to ensure that activities and transactions between the Company and its Suppliers are handled in a fair, transparent and corruption free manner. A panel of Independent External Monitors (IEMs) have been appointed by BHEL with the approval of CVC.~~

- ~~a) Name..... Email ID.....~~
- ~~ii) Name..... Email ID.....~~
- ~~iii) Name..... Email ID.....~~

~~The IP (format as enclosed) is to be submitted (duly signed by authorized signatory) along with techno-commercial bid. Only those Suppliers who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this pact would be a preliminary qualification.~~

~~Please refer Section 8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the any of the IEMs mentioned above. All correspondence with the IEMs shall be done through email only.~~

~~“No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department officials whose contact details are provided below.”~~

7

PQR DOCUMENTS VERIFICATION

Suppliers to ensure that Third party / Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document / certificate issuing authority in the format given below. Suppliers to furnish latest verification details for checking veracity of document(s) by the Buyer. In case the same is found not available, Buyer has right to reject such document(s) from evaluation: -

Sl. No.	Project Name	Customer Name, Contact Address, Phone No. & Email ID	Contract/ Order No.	Value of Contract/ Order	Brief of Work	Completion Date

8

CONFLICT OF INTEREST

A Supplier shall not have conflict of interest with other Suppliers. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. **The Supplier found to have a conflict of interest shall be disqualified.** A Supplier may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- a) they have controlling partner (s) in common; **or**
- b) they receive **or** have received any direct or indirect subsidy/ financial stake from any of them; **or**

	<p>c) they have the same legal representative/agent for purposes of this bid; or</p> <p>d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Supplier, or</p> <p>e) Supplier participates in more than one bid in this bidding process. Participation by a Supplier in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid; or</p> <p>f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorise only one agent/dealer. There can be only one bid from the following: f.i. The principal manufacturer directly or through one Indian agent on his behalf; and f.ii. Indian/foreign agent on behalf of only one principal, or</p> <p>g) A Supplier or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid, or</p> <p>h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Suppliers must proactively declare such sister/common business/ management units in same/similar line of business.</p>
9	LIMIT FOR SUPERVISION OF E&C CHARGES
	Supervision of E&C charges, if applicable, should not exceed 2% of the Total Contract Value (including Main Supply, E&C, Mandatory Spares, etc.) excluding freight & GST, failing which the quoted amount shall be adjusted (2% of the total contract value) by Buyer at the time of ordering. Payment shall be made as per the adjusted amount.
10	DETAILED PRICE BREAK-UP
	Suppliers to mention freight/GST percentage for all the items as part of un-priced bid to be submitted along with their Techno-Commercial offer. Detailed Price Break-up shall be submitted by Supplier within Three (03) working days of Reverse Auction. If Price Break-up is not furnished within 03 working days, Buyer shall proceed ahead with its Price Break-up, which shall be binding on the Supplier.
11	PRICES
	Prices shall be FIRM with PVC (wherever applicable) for the entire scope of work in line with the tender documents and subsequent clarifications / confirmations till completion of Order / Contract.
12	DELIVERY SCHEDULE & CONTRACT VALIDITY

<p>12.1</p>	<p>1. Delivery Schedule</p> <p>a) Main Supply including quantity variation: Delivery completion for Main supply shall be ... “204” ... days from the PO date.</p> <p>b) Mandatory Spares etc., (if applicable): Not Applicable</p> <p>c) Services (if applicable) like supervision of E&C, PG test, Installation Check, Demonstration Test etc.: Choose an item.</p> <p>Supervision of E&C:- Vendor to depute its service engineer for Supervision of E&C within 15 days from BHEL's intimation (for deputing service engineer). For delay in deputing service engineer, LD on Supervision of E&C portion shall be applicable @ ½% of the total Supervision of E&C portion contract value (excluding element of taxes) per week or part thereof, with applicable GST. However, total LD (supply + Supervision of E&C) shall be limited to 10% of cumulative total contract value excluding taxes and freight (supply + Supervision of E&C).</p> <p>2. Supplier to start manufacturing/supply only after getting the applicable engineering Drgs. /docs approved from Buyer/ Owner. Drawings /documents submission/re-submission schedule shall be as indicated in technical specification which shall be used for progress monitoring purpose and required course correction, if any.</p> <p>3. The delivery date specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule. The delivery conditions specified are for contractual purposes. However, to meet project requirement, the Buyer may ask for early deliveries without any compensation thereof.</p>
<p>12.2</p>	<p>1. Validity of Contract (PO rates, terms and conditions): Supplier has to make supply of goods/services as per the delivery time mentioned above. However, due to unavoidable circumstances where there is delay in providing inputs/ clearances from the Buyer (inputs, engineering approvals, deputing inspector for inspection, issuance of MDCC and/or any hold put by the Buyer for whatever reasons during execution of contract etc.) delivery time extension is admissible as per point no.3 below. In such situation it shall be obligatory on part of the Supplier to execute the contract at PO rates, terms and conditions provided inputs/ clearances have been accorded within validity of contract. Validity period for various activities shall be as defined below:</p> <p>-</p> <p>1.1 Validity of the contract for main supply including quantity variation:</p> <p>Contract shall be valid for 365 days from the PO date. However, delay at Supplier's end (if any) shall be added to the validity period and contract validity shall get extended by the delay period at Supplier's end.</p> <p>For example: Original Delivery period for main supply: “204” A (in days) Delay at Supplier's end: B (in days beyond “A” days) Contract validity: C (365) +B (in days)</p>

	<p>Supplier to note that B is the Supplier delay days beyond original contractual delivery period for main supply /extended delivery period owing to time taken by BHEL.</p> <p>1.2 Validity of the contract for Supply of Mandatory Spares/ Services (other than PG test) applicable in the contract: Validity of contract for supply of mandatory spares/ services applicable in the contract shall be one year over and above contractual validity period for main supply including quantity variation as specified at point no. 1.1 above.</p> <p>1.3 Validity of contract for Performance Guarantee (PG) test: Validity of contract for PG test shall be till completion of the PG Test.</p> <p>2. Main supply including quantity variation, mandatory spares/ services applicable in the contract released/ cleared for manufacturing within contractual validity period, to be supplied by Supplier at PO rates, terms and conditions.</p> <p>3. Execution of the contract quantities released beyond contract validity period shall be decided on mutual consent basis at PO rates, terms and conditions.</p>
13	TERMS OF DELIVERY AND INSURANCE
	<p>13.1 Terms of delivery shall be F.O.R. dispatch station. All dispatches shall be through Road Carriers on Freight Pre-Paid basis. E-way Bill will be arranged by Supplier as per GST law.</p> <p>13.2 Unloading of items at delivery point shall be in the scope of Buyer.</p> <p>13.3 Transit Insurance shall be in the Supplier's account.</p>
14	DOCUMENTS FOR DISPATCH
	<p>Supplier to submit copy of following documents by e-mail immediately on dispatch:</p> <ul style="list-style-type: none"> i) Tax Invoice/ e-Invoice (as applicable), ii) LR, iii) Packing List, iv) Insurance Intimation, v) E-way bill (as applicable), vi) Copy of BHEL MDCC
15	PAYMENT TERMS
	<p>15.1 Payment of Main Supply including Mandatory Spares (if any): 100% Payment shall be released against Consignee Receipt-cum-Acceptance Certificate (CRAC)/MRC (Material Receipt Certificate) on submission of bills.</p> <p>15.2 Payment of Service(s) Charges: 100% payment shall be released after successful completion of the activity on pro rata basis against CRAC/ certification by Buyer's Site or Engineering (as applicable) on submission of bills.</p>

15.3 Documents for Payment:

a) For Supply including Mandatory Spares (if any):

- i) Original Tax Invoice/e-Invoice (as applicable),
- ii) Packing List,
- iii) LR/Receipted LR,
- iv) CRAC/MRC (issued by project site engineer of Buyer/Owner),
- v) Guarantee Certificate,
- vi) E-way bill (as applicable),
- vii) Copy of valid Insurance document and Intimation,
- viii) Proof for submission of Performance Security (if applicable),
- ix) Copy of BHEL MDCC,
- x) PVC Calculation & copy of all applicable indices (if PVC is applicable)

b) For Services:

- i) Original Tax Invoice/e-Invoice (as applicable) &
- ii) CRAC/certification by Buyer's Site or Engineering (as applicable)

15.4 Payments to Supplier's shall be released only after:

- a) Supplier has declared such invoice in GSTR01 as per the relevant GST Act.
- b) The tax component charged by the Supplier in the invoice matches with the details uploaded by the Supplier in GSTR01 and GST liability is discharged through GSTR 3B.

In case, any GST credit is delayed/denied to the Buyer due to non/delayed receipt of goods and/or tax invoice or expiry to timeline prescribed in the relevant GST Act for availing such ITC, or any other reasons not attributable to the Buyer, tax amount shall be recovered from the Supplier along with interest levied/leviable on the Buyer.

15.5 RXIL is an initiative instituted by Govt. of India for MSMEs. PEM strongly advise all the MSME suppliers to get themselves registered on RXIL(TreDs) for faster payments.

15.6 Time line for Payment: Payment shall be made within timeline as mentioned below from the date of issue of consignee receipt-cum-acceptance certificate (CRAC)/MRC/Completion of Services certified by Buyer's Site/Engineering.

- a) Within 45 days for Supplier qualified and registered as Micro or small enterprises as per MSMED Act
- b) Within 60 days for Supplier qualified and registered as Medium enterprises as per MSMED Act
- c) Within 90 days for suppliers other than (a) & (b) above

The supplier shall ensure submission of complete documents along with the bill. In case of incomplete documents, the bill shall be rejected, and next due date shall start from the date of closure of discrepancy by the Supplier.

	<p style="text-align: center;">Provision of payment outside GeM shall be utilized.</p> <p>15.7 Notwithstanding anything to the contrary contained in any other document comprising the contract, no interest shall be payable by the Buyer to the Supplier on any money or balances including but not limited to the security amount, Performance Security amount, bank guarantee amount, EMD, retention money, any bills or any amount withheld which may become due owing to difference or misunderstanding or any dispute between the Buyer and the Supplier, or any delay on the part of Buyer in making periodical or final payment or any other aspects incidental thereto.</p>
16	PERFORMANCE SECURITY
16.1	<p>a) Performance Security: Not Applicable</p> <p>b) Performance Security: Applicable, Initial e-PBG validity shall be 27 months from PO date for Main supply (Considering delivery period of 07 months + 18 months guarantee period + 2 months claim period)</p> <p>Supplier may opt any of the following for submission of Performance Security: -</p> <p>16.1.1: Initially 10% of the contract value (Total Order value excluding PVC). 5% of the contract value (as above) will be released after completion of guarantee period of Main Supply based on certification by PG.</p> <p style="text-align: center;">Or</p> <p>16.1.2: 5% of the contract value (total Order value excluding PVC). Additional 5% of the contract value will be deducted & retained from first bill & subsequent bill(s) of the same contract (in case the value of first bill is less than 5% of the contract value). The retention amount will be released after completion of guarantee period of Main Supply based on certification by PG.</p> <p>This percentage supersedes the GeM enquiry SD/Performance Security percentage.</p>
16.2	<p>Modes of Deposit: Supplier has to furnish Performance Security in the following forms:</p> <ul style="list-style-type: none"> (i) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL. (ii) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL. (iii) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL). (iv) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL). (v) Insurance Surety Bond.

	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.
16.3	Performance Security is to be furnished within 14 days from the date of PO/LOA and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the supplier, including warranty obligations. Initial validity of Performance Security shall be as per GeM Bid. However, Performance Security validity is to be extended based on the actual delivery of package.
16.4	Performance Security value can be proportionately reduced after completion of Guarantee Period Unit-wise/ Stage-wise/Set-wise/Scope wise (Main Supply/ Mandatory spares /Services excluding PG test) subject to the units/sets/stages/Scope (Main Supply/ Mandatory spares) being explicitly specified in delivery terms in the contract. However, Performance Security for the last unit/set/stage will be released only after completion of all contractual liability or guarantee period, whichever is later.
16.5	<p><u>Forfeiture and Release/Return of Performance Security:</u></p> <p>i) The Performance Security will be forfeited and credited to BHEL's account in the event of a breach of contract by the Supplier.</p> <p>ii) Performance Security shall be refunded to the Supplier without interest, after he duly performs and completes the contract in all respects but not later than 60 (Sixty) days of completion of all such obligations including guarantee/warranty under the contract.</p> <p>iii) If Performance Guarantee (PG)/ Demonstration Test and handing over of the system/ package (if applicable), as per Order/ Contract is not conducted up to 36 months from supply completion for reasons not attributable to the Supplier then Performance Security for total contract shall be released on submission of undertaking by the Supplier that Performance Guarantee (PG)/ Demonstration Test and handing over of the system/ package shall be conducted as and when required by Buyer.</p>
16.6	The Performance Security shall not carry any interest.
17	LIQUIDATED DAMAGES (LD):
	<p>Timely dispatch/delivery and completion of other schedules as stipulated in Order/Contract shall be the essence of Order/Contract. If the Supplier fails to complete the dispatch/delivery and other schedules within the time period stipulated in Order/Contract, or within any extension of time granted by the Buyer, it shall be lawful for Buyer to recover damages for breach of Order/Contract and hereunder.</p> <p>17.1 Buyer reserves the right to recover from the Supplier, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent of the total main supply contract value excluding GST per week or part thereof, subject to a maximum of ten (10) percent of the total of</p>

	<p>main supply contract price excluding GST, if the Supplier fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.</p> <p>17.2 LD on service portion where delivery for services are defined separately in the Order/Contract. LD shall be applicable @ ½ percent, of the total service contract value excluding GST per week or part thereof. However, total LD (main supply and services) shall be limiting to 10% of cumulative total contract value (main supply +services) excluding GST.</p> <p>17.3 LD on mandatory spares portion where delivery for mandatory spares is defined separately in the Order/Contract. LD shall be applicable @ ½ percent, of the total of mandatory spares contract value excluding GST per week or part thereof, limiting to 10% of total contract value of mandatory spares excluding GST.</p> <p>17.4 In case of any amendment/ revision, LD shall be linked to the amended/ revised contract value and delivery date(s).</p> <p>17.5 LR/RR date for indigenous supplies shall be treated as the date of dispatch for levying LD. However, if date of receipt at site for indigenous supply is beyond the maximum validity of E-way bill as per extant govt. GST law then such excess period shall also be considered for LD purpose irrespective of the dispatch date.</p> <p>17.6 If Order/ Contract involves two or more Units/ Sets/ Stages, then Liquidated Damages shall be levied on order/ contract value excluding GST of the delayed Unit/ Set/ Stage, provided delivery stipulated in the Order/ Contract is Unit/ Set/ Stage wise and total LD amount shall be limited to 10% of total Order/ amended Order value excluding GST of delayed Unit/ Set/ Stage.</p> <p>17.7 The sum specified above is not a penalty but a genuine pre-estimate of the loss/ damage which will be incurred by the Buyer directly or indirectly on account of delay in delivery of material/equipment/services on the part of the Supplier and the said amount will be deductible without proof of actual loss or damage caused by such delay.</p>
18	GUARANTEE TERMS
	<p>18.1 Guarantee Period (Unit-wise, Stage-wise, Set-wise, System-wise - as applicable) for Supply package shall be Eighteen (18) months from the date of last dispatch.</p> <p>18.2 All Shortages/damages in sound cases shall be replenished free of cost by the Supplier, as early as possible however, not exceeding more than 45 days from the time of reporting the shortage/damage.</p> <p>18.3 For shortages/damages during transit, Supplier shall supply replacements free of cost as early as possible, within 45 days from the time of reporting the defect/ loss/ rejection etc. by the Buyer/ Owner/ Site.</p>

	<p>18.4 For shortages/damages during handling at site, Supplier shall supply replacements, as early as possible, at the old contractual rates upon intimation to Supplier within 45 days from the time of reporting the defect/ loss/ rejection etc.</p> <p>18.5 All replacements and repairs during the guarantee period shall be delivered and completed promptly and satisfactorily within a period of 45 days from the time of reporting the defect/ loss/ rejection etc. Damaged items/parts can be taken back by Supplier on his own cost with the permission of Owner.</p> <p>18.6 All the replaced and replenished plant/ equipment/ stores shall also be guaranteed as per PO terms.</p>
19	INSPECTION
	<p>19.1 Buyer and/or Buyer's nominated Inspection Agency shall have at all reasonable times access to Supplier's premises or works and shall have the power at all reasonable times to inspect drawings of any portion of the work or examine the materials and workmanship of the plant/ equipment/ stores during their manufacture, and if part of the plant/ equipment/ stores is manufactured at other premises, the Supplier shall arrange for inspection, examination and testing by the Inspection Agency as if the plant/ equipment/ stores is manufactured on the Supplier's premises. Procedure for approval of works shall be as per the procedure given on https://cqir.bhel.in/Cqir/jsp/Masters/Help_File_for_suppliers.pdf</p> <p>Inspection calls should be raised by the Supplier on BHEL - Quality Surveillance System (https://cqir.bhel.in).</p> <p>Such inspection, examination and testing by itself shall not relieve the Supplier from any obligation under the Order/ Contract.</p> <p>19.2 Supplier shall give Inspection Agency reasonable notice of 15 days of any material being ready for testing and the Inspection Agency shall (unless the inspection of tests is voluntarily waived) attend at the Supplier's premises within seven (7) days of the date on which the material is notified as being ready. Tests are to be performed as per Buyer approved QAP (if applicable).</p> <p>19.3 In case of delay in witnessing of inspection beyond stipulated time (i.e. 7 days from the proposed date of inspection as notified by the Supplier through e-mail/call raised on BHEL - Quality Surveillance System (https://cqir.bhel.in) by the Buyer arising due to reasons not attributable to Supplier, Buyer will extend the delivery period for such delay in witnessing inspection. If the Buyer is not able to witness inspection up to 15 days then in addition to delay beyond stipulated period, 7 days' additional time shall also be given to the Supplier to facilitate for arranging fresh inspection.</p>

	<p>19.4 Where the Order/ Contract provides for tests/ inspections at the premises or works of the Supplier or any Sub-Contractor, the Supplier, except specified otherwise, shall provide free of charge such assistance, labour, materials, electricity, fuel, water, stores, apparatus, measuring instruments and test equipment including any other facilities as may be reasonably required to carry out such tests efficiently.</p>
20	<p>MATERIAL DISPATCH CLEARANCE CERTIFICATE (MDCC)</p>
	<p>20.1 When the tests have been satisfactorily completed at Supplier's works, the Inspection Agency shall issue an inspection report that effect within seven (07) days after completion of the tests, but if the tests were not witnessed by the Inspection Agency or his representative, the material acceptance report would be issued within seven (07) days after receipt of the test certificates by the Buyer.</p> <p>20.2 Buyer will issue MDCC to the Supplier within 7 days based on inspection report/ test certificates/Certificate of Conformance as applicable. In case of delay in issuance of MDCC beyond 7 days stipulated time (i.e. from the date of receipt of Inspection Report/Test certificates), by the Buyer due to reasons not attributable to the Supplier, Buyer shall extend the delivery period for such delay in issuing MDCC. If the Buyer is not able to issue MDCC up to 15 days then in addition to delay beyond stipulated period, 7 days' additional time shall also be given to the Supplier to facilitate for arranging logistics arrangements.</p> <p>20.3 Supplier shall not dispatch any material before issue of MDCC by the Buyer.</p>
21	<p>PACKING LIST</p>
	<p>Packing shall be in conformity with specifications and shall be such as to ensure prevention of damages, corrosion, deterioration, shortages, pilferage and loss in transit or storage.</p> <p>Suppliers to submit Packing List along with advance set of documents for claiming payment which must indicate:</p> <ol style="list-style-type: none"> i. No. of boxes ii. Packing size. iii. Gross weight and net weight of each package. iv. Contents of the package with cross reference to BoM item code no. or item serial no. v. Quantity of each item separately. <p>The Packing list must cover all the BoM items and supplier to give the following undertaking in the Packing List: "The Packing List provided herewith is as per the BoM approved under Contract No.-dated-"</p>
22	<p>DELIVERY EXTENSION: EXTENSION OF CONTRACTUAL DELIVERY TIME</p>
	<p>Delivery time mentioned in the NIT includes Engineering completion time (time for drawing/document submission/resubmission by the Supplier and review/approval of the same by the</p>

	<p>Buyer/Owner), manufacturing, inspection, Packing and dispatch time. Due diligence is to be observed by the Supplier to ensure timely completion of engineering and supply.</p> <p>During the execution of the contract, time loss occurred owing to the reason attributable to the Buyer besides force majeure shall be considered for delivery time extension to the Supplier as given below:</p> <ul style="list-style-type: none"> i) Any Delay in providing comments/ approval on Primary drawing/documents beyond the stipulated time as specified in NIT. ii) Time Loss in approval of the drawing/document as a result of increase in the iteration not attributable to the Supplier (i.e. resubmission owing to end customer comments) as certified by Buyer. Time extension equivalent to the resubmission time noted in the tech. spec and consequential increase in the approval time in lieu of increase in iteration shall be applicable. However, for incomplete re- submission time loss shall be in the Supplier's account. iii) Delay in providing engineering input by Buyer. iv) Delay in deputing inspector for inspection and delay in release of MDCC in line with clause no. 20 above. v) Any hold put by Buyer for whatever reasons during execution of contract (within contract validity period), time extension equivalent to hold period shall be admissible. However, in the event hold period continues for more than 30 days then, an additional 15 days for the purposes of mobilization and demobilization of resources shall also be admissible. <p>Supplier to note that Extension in delivery period if any with or without imposition of LD shall be considered after detailed delay analysis based on provisions given above. Supplier to provide dates of drg./doc. submission & re-submission (if any) within 7 days of Cat-I approval. However, no delay analysis will be applicable if supply is completed within delivery schedule as specified in Order/ Contract.</p>
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23	BREACH OF CONTRACT, REMEDIES AND TERMINATION
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	<p>In case of Breach of Contract, BHEL shall recover 10% of the contract value from the Supplier using following instruments:</p> <ul style="list-style-type: none"> (i) encashment of security instruments like EMD, Performance Security with PEM against the said contract. (ii) balance amount (if value of security instruments is less than 10% of the contract value) from other financial remedies i.e. available bills of the Supplier, retention amount etc. with PEM. (iii) balance amount from security instruments like EMD, Performance Security and other financial remedies i.e. available bills of the Supplier, retention amount etc. with other units of BHEL. (iv) Any other mode as deemed fit by the Buyer at its sole discretion. (v) if recovery is not possible then legal remedies shall be pursued. <p>However, Supplier shall continue performance of the Order/ Contract, under all circumstances, to the extent not cancelled.</p>
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24	SUSPENSION OF BUSINESS DEALINGS
	The "Guidelines on Suspension of Business Dealings with Suppliers/ Contractors" is placed at https://www.bhel.com/supplier-registration and, same shall prevail over Incident Management Policy of GeM.
25	SUPPLIER PERFORMANCE MONITORING AND RATING SYSTEM
	Supplier's performance will be evaluated as per Supplier Performance Monitoring and Rating System of BHEL. Please refer BHEL website www.bhel.com for details.
26	CONFIDENTIALITY
	Supplier shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents, etc. belonging to the Buyer and also of systems, procedures, reports, input documents, manuals, results and any other company documents discussed and/ or finalized during the course of execution of Order/ Contract. i.e. Supplier shall in no way share or use such intellectual property of Buyer to promote his own business with others. Buyer reserves the right to claim damages from the Supplier, or take appropriate penal action as deemed fit against the Supplier, for any infringement of the provisions contained herein.
27	INTELLECTUAL PROPERTY & LICENSES
	<p>If any patent, design, trademark, trade secret or any other intellectual property rights apply to the delivery or accompanying documentation/drawings, Buyer or its customer shall be entitled to the legal use thereof free of charge by means of a non-exclusive, assignable, transferrable, sub-licensable, worldwide, perpetual license. All intellectual property rights that arise due to the execution of the delivery by the Supplier and by its employees or third parties involved by the Supplier for the performance of the contract shall be promptly notified by the Supplier to the Buyer and shall be deemed to belong to the Buyer. The Supplier shall be obligated to cooperate with the Buyer and do everything necessary to obtain or perfect the above-mentioned rights in favour of the Buyer.</p> <p>The Supplier represents and guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. In the event a third party makes a claim, the Supplier shall also be obligated to do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by third parties.</p> <p>The Supplier agrees to indemnify, defend and hold harmless the Buyer, its officers, employees, agents, representatives, successors, assignees or any of the Buyer's customers buying or using the goods or services specified herein, against any actual or alleged infringement of such intellectual property interests, claims by third parties in this regard and shall pay to the Buyer merely on demand without demur and without requiring the Buyer to furnish any proof of such claim, such sum as indicated in the demand towards any liabilities, damages, penalties, injuries, claims, demands, actions, cost and expenses etc. suffered as a result thereof.</p> <p>The Supplier agrees that its liability under this clause shall be unlimited.</p>

28	<p>Bid reserved for Make in India products: - Bidders have to note, “For this procurement, the local content to categorize a supplier as a Class I Local Supplier / Class II Local Supplier / Non Local supplier and Purchase preference to Class I local supplier, is as defined in Public Procurement (Preference to Make in India), (PPP-MII) Order 2017 dt. 16/09/2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT.”</p> <p>Following may also pls. be noted by the bidders:</p> <p>Eligibility of Suppliers : Class I Local Suppliers & Class II Local Suppliers, (as per para no. 3(b) of Public Procurement (Preference to Make in India), (PPP-MII) Order 2017 dt. 16/09/2020 issued by DPIIT and subsequent amendments).</p> <p>In accordance with para 9 (a) of DPIIT’s PP-MII order 2017 revision dated 04/06/2020, Class-I local suppliers” / “Class-II local suppliers” at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for the Class-I local supplier” / “Class-II local supplier” as the case may be. They shall also give details of the location(s) at which the local value addition is made.</p> <p>Regarding verification of local content, the local supplier at the time of tender, bidding or solicitation shall be required to provide certification w.r.t minimum local content (as per enclosed annexure-IV) as per para 9 of PP-MII order revision dated 16.09.2020.</p> <p>The package is non-divisible in nature.</p>
29	<p>Bidders to ensure the following: -</p> <ul style="list-style-type: none"> • Ensure compliance to Ministry of Power (MoP) Order No. 11/05/2018 Coord. dt. 28/07/2020, if applicable. • Ensure compliance of Ministry of Finance (MoF) Order (Public Procurement No. 1 & 2) F. No. 6/18/2019/PPD dt. 23/07/2020. • to submit “Model Certificate for Tenders” as per Annexure-III of Ministry of Finance (MoF) Order (Public Procurement No. 1 & 2) F. No. 6/18/2019/PPD dt. 23/07/2020. Bidder to submit the following undertaking on their letter head duly signed from the highest competent authority at your end (i.e Owner, partner, CMD, Director etc.) <p>“I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such a country and is eligible to be considered”</p> <p>Note: - This bidder is to be replaced with bidders’ organizational name. Subsequent orders/circulars to be checked and to be complied.</p>
30	<p>All Bidders shall be required to submit applicable Freight % & GST % included in their prices during clarification stage of Tender.</p>
31	<p>Evaluation shall be on the basis of total all inclusive, landed price at consignee destination (Refer cl. No. 6 of GTC on GEM). Incomplete offer or part offer of NIT BOM/BOQ shall be summarily rejected.</p>

32	Quantity Variation: - Qty Variation shall be 0%.
33	Being non- divisible package, MSE preference shall not be given.
34	PVC is not applicable.
35	All other terms & conditions shall be as per GeM bid, above GeM Additional Terms & Condition and GTC on GeM 4.0 (version 1.14 dated 31.01.24).

Project: - 5 X 800 MW YADADRI TPS
Package: - WORKSHOP EQUIPMENT
GeM BID No....., Dtd.

ANNEXURE -I

An undertaking regarding Model Clauses (To be provided alongwith bid)

Refer,

PROJECT	:- 5 X 800 MW YADADRI TPS
PACKAGE	:- WORKSHOP EQUIPMENT
Primary product category on GeM	:-.....
BID No. (Through GeM)	:-, Dtd.

M/s

Reference:

TO WHOM SO IT MAY CONCERN

This is with reference to Ministry of Finance circular dated 23.07.20 reg. restriction under rule 144 (xi) of GFR.

“I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. I hereby certify that M/s is not from such a country and is eligible to be considered against GeM enquiry no:, **Dtd.**”

Sign & Signature

Date:

Project: - 5 X 800 MW YADADRI TPS
Package: - WORKSHOP EQUIPMENT
GeM BID No....., Dtd.

ANNEXURE II

Letter head of Company

Ref.....

Date.....

To,
Bharat Heavy Electricals Limited
PEM, PPEI Building, Plot No 25,
Sector 16A, Noida (U.P) 201301

Subject: Certification regarding local content

Reference: Tender Enquiry No....., **Dtd.**

Name of Package: **WORKSHOP EQUIPMENT.**

Dear Sir,

We hereby certify that items offered by us of **WORKSHOP EQUIPMENT** for **5 X 800 MW YADADRI TPS**, M/s meets the requirement of minimum local content as a Class – I/ CLASS-II local supplier in line with clause of NIT (GeM NIT) and the Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017, 28.05.2018 & 29.05.2019, 04.06.20 & 16.09.20.

We hereby certify that items offered by us for **WORKSHOP EQUIPMENTS** for **5 X 800 MW YADADRI TPS** has local content of %

We further confirm that details of location at which the local value addition is made will be our registered works at

.....
...(address of the works)

Yours very truly

..... (authorized signatory of company)

..... (firm name)

authorized signatory
of company

Delivery Term

1. Delivery Schedule

- a. **Main Supply** : Delivery completion for Main supply shall be 204 days from the PO date.
- b. Supervision of E&C:- Vendor to depute its service engineer for Supervision of E&C within 15 days from BHEL's intimation (for deputing service engineer).
For delay in deputing service engineer, LD on Supervision of E&C portion shall be applicable @ ½% of the total Supervision of E&C portion contract value (excluding element of taxes) per week or part thereof, with applicable GST. However, total LD (supply + Supervision of E&C) shall be limited to 10% of cumulative total contract value excluding taxes and freight (supply + Supervision of E&C).

Notes:

- a. Supplier to start manufacturing/supply only after getting the applicable engineering Drgs. /docs approved from BHEL/End Customer.
- b. Drawings /documents submission/re-submission schedule shall be as indicated in revised Annexure A on next page) shall be used for progress monitoring purpose and required course correction, if any.
- c. The delivery date specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.
- d. The delivery conditions specified are for contractual purposes. However, to meet project requirement, BHEL may ask for early deliveries without any compensation thereof.

- 2. **Validity of contract (PO rates, terms and conditions):** Vendor has to make supply of goods/services as per the delivery time mentioned above. However, due to unavoidable circumstances if delay happens in providing inputs/ clearances (inputs, Engineering approvals, deputing inspector for inspection, issuance of MDCC and any hold imposed owing to site issues etc.) for which delivery time extension is admissible as per point no.3, in such situation it shall be obligatory at vendor part to execute the contract at PO rates, terms and conditions where inputs/ clearances has been accorded within validity of contract. Validity period for various activities shall be as defined below or as mentioned in the NIT.

2.1. Validity of the contract for main supply including quantity variation.

- Contract shall be valid for 365 days from the PO date. However, delay at vendor's end (if any) shall be added to the validity period and contract validity shall get extended by the delay period at vendor's end.

For example: Original Delivery period for main supply: "204" A (in days)

if Delay at vendor's end: B (in days beyond "A" days)

Contract validity: C (365) + B (in days)

Notes:

- a. B is the Vendor delay days beyond original contractual delivery period for main supply /extended delivery period owing to time taken by BHEL at point no. 2 above.
- b. Main supply including quantity variation, **O&M Spares (Recommended Spares)** applicable in the contract released/ cleared for manufacturing within contractual validity period, to be supplied by vendor/supplier at PO rates, terms and conditions.

- c. Execution of the contract quantities released beyond contract validity period shall be decided on mutual consent basis at PO rates, terms and conditions.

3. Delivery Extension: Extension of contractual delivery time:

Delivery time mentioned in the NIT includes Engineering completion time (time for drawing/document submission/resubmission by the vendor and review/approval of the same by the BHEL/End customer), manufacturing, inspection, Packing and dispatch time. Due diligence is to be observed by the vendor to ensure timely completion of engineering and supply.

During the execution of the contract, time loss occurred owing to the reason attributable to BHEL besides force majeure shall be considered for delivery time extension to the vendor as given below: -

- i. Any Delay in providing comments/ approval on Primary drawing/documents beyond the stipulated time as specified in NIT.
- ii. Time Loss in approval of the drawing/document as a result of increase in the iteration not attributable to the vendor (i.e. resubmission owing to end customer comments) as certified by BHEL. Time extension equivalent to the resubmission time noted in the tech. spec and consequential increase in the approval time in lieu of increase in iteration shall be applicable. However, for incomplete re- submission time loss shall be in vendor account.
- iii. Delay in providing engineering input/material by BHEL.
- iv. Delay in deputing inspector for inspection and delay in release of MDCC in line with GCC/GEM ATC terms.
- v. Any hold put by BHEL for whatever reasons during execution of contract (within contract validity period), time extension equivalent to hold period shall be admissible. However, in the event hold period continues for more than 30 days then, an additional fifteen days for the purposes of mobilization and demobilization of resources shall also be admissible.

Note: Extension in delivery period if any with or without imposition of LD shall be considered after detailed delay analysis based on provisions given above. However, no delay analysis will be applicable if supply is completed within delivery schedule as specified in Purchase order.



TITLE: 5X800 MW TSGENCO YADADRI TPS

**SPECIFIC TECHNICAL REQUIREMENT FOR
WORKSHOP EQUIPMENT**

SPECIFICATION NO. PE – TS – 417 - 568 – A001

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ANNEXURE-II

DRAWINGS, DATA / DOCUMENTS TO BE FURNISHED BY THE SUCCESSFUL BIDDER

The successful bidder shall submit the following drawings / documents during detail engineering for approval / information:

LIST OF PRIMARY DRAWING / DOCUMENTS:

SI. No.	BHEL DRG.NO	DRAWING TITLE	REMARKS	SUBMISSION SCHEDULE - WEEK NUMBER FROM DATE OF LOI
1.	PE-V0-417-568-A001	Inspection Check List / Manufacturing Quality Plan of machine/equipment	APPROVAL	**
2.	PE-V0-417-568-A002	Data sheet of machine/equipment with detailed BOM WORKSHOP EQUIPMENT	APPROVAL	
3.	PE-V0-417-568-A003	GA, Foundation Detail (as required) of Machine / Equipment	APPROVAL	

****REV-0 WITHIN 30 DAYS FROM PO. BHEL WILL COMMENT ON R0 WITHIN 14 DAYS FROM RECEIPT. REV-1 TO BE SUBMITTED BY VENDOR WITHIN 7 DAYS. BHEL WILL FURNISH APPROVAL IN 3 DAYS FROM RECEIPT.**

List of Secondary dwg. /doc for each machine / equipment (as applicable) after approval of basic dwg. / doc:

SI. No.	BHEL DRG.NO	DRAWING TITLE	REMARKS	SUBMISSION SCHEDULE - WEEK NUMBER FROM DATE OF LOI
4.	PE-V0-417-568-A004	O & M Manual for EQUIPMENT	INFORMATION	2 weeks after approval of primary dwg/doc.
5.	PE-V0-417-568-A006	Erection Procedure for WORKSHOP EQUIPMENT	INFORMATION	2 weeks after approval of primary dwg/doc.

2. Drawings shall be prepared in Auto-Cad latest edition. Required no. of hard and soft copies (editable) of the drawings shall be furnished as per requirement specified elsewhere in the specification.
3. All the drawings and documents including general arrangement drawing, data sheet, calculation etc. to be furnished to the customer during detailed engineering stage shall include / indicate the following details for clarity w.r.t. Inspection, construction, erection and maintenance etc.:-
 - a) All drawings and documents shall indicate the list of all reference drawings including general arrangement.
 - b) All drawings shall include / show plan, elevation, side view, cross - section, skin section, blow - up view; all major self-manufactured and bought out items shall be labeled and included in BOQ / BOM in tabular form. Page 14 of 45



TITLE: 5X800 MW TSGENCO YADADRI TPS

**SPECIFIC TECHNICAL REQUIREMNT FOR
WORKSHOP EQUIPMENT**

SPECIFICATION NO. PE – TS – 417 - 568 – A001

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- c) Painting schedule shall also be made as a part of general arrangement drawing of each equipment / items indicating at least 3 trade names.
- d) All the drawings required to be furnished to customer during detailed engineering stage shall include technical parameters, details of paints and lubrication, hardness and BOQ / BOM in tabular form indicating all major components including bought out items and their quantity, material of construction indicating its applicable code / standard, weight, make etc.

CUSTOMER/ BHEL LOGO	Annexure - C
VENDOR CREDENTIALS SUMMARY SHEET (TO BE FILLED BY BIDDER AND SUBMITTED WITH BID)	

i.	Item/Scope				
ii.	Address of the registered office	Details of Contact Person (Name, Designation, Mobile, Email)			
iii.	Name and Address of the proposed vendor's works where item is being manufactured	Details of Contact Person: (Name, Designation, Mobile, Email)			
iv.	Annual Production Capacity for proposed item				
v.	Annual production for last 3 years for proposed item				
vi.	Details of proposed works				
1.	Year of establishment				
2.	Factory Registration Certificate	Details attached at Annexure – F2.1 (Page No....)			
3.	Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc.)	Details attached at Annexure – F2.2 (Page No....)			
4.	After sales service set up in India, in case of foreign sub-vendor (Location, Contact Person, Contact details etc.)	Applicable / Not applicable Details attached at Annexure – F2.3 (Page No....)			
5.	Sources of Raw Material/Major Bought Out Item	Details attached at Annexure – F2.4 (Page No....)			
6.	Quality Control exercised during receipt of raw material/BOI, in-process, Final Testing, packing	Details attached at Annexure – F2.5 (Page No....)			
7.	Manufacturing facilities (List of machines, special process facilities, material handling etc.)	Details attached at Annexure – F2.6 (Page No....)			
8.	Testing facilities (List of testing equipment)	Details attached at Annexure – F2.7 (Page No....)			
9.	Supply reference list including recent supplies (Preferably of reputed, well known clients to whom the vendor has supplied the material and are of quantum of item/scope at point (i) above)	Reputed client name (s)..... Details attached at Annexure – F2.8 (as per format given below) (Page No....)			
Project/ package	Customer Name	Supplied Item (Type/Rating/Model /Capacity/Size etc)	PO ref no/date	Supplied Quantity	Date of Supply

CUSTOMER/ BHEL LOGO	VENDOR CREDENTIALS SUMMARY SHEET (TO BE FILLED BY BIDDER AND SUBMITTED WITH BID)
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10.	Product satisfactory performance feedback letter/certificates/End User Feedback	Attached at annexure - F2.9 (Page No....)			
11.	Average annual turnover for last three years with documentary proof.				
12.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) Note:- Reports need not to be submitted	Applicable / Not applicable Details attached at Annexure – F2.10 (if applicable) (Page No....)			
13.	Copy of ISO 9001 certificate (if available)	Attached at Annexure – F2.11 (Page No....)			
14.	Product technical catalogues for proposed item (if available)	Details attached at Annexure – F2.12 (Page No....)			
Name		Desig		Sign:	
					Date :

Company's Seal/Stamp:-

SUGGESTED PRICE FORMAT (MAIN)	Doc No:	PE-PF-417-568-A001
	Rev No:	0
	Date of issue	15-04-2024

NAME OF PROJECT: 5X800 MW YADADRI TPS

NAME OF PACKAGE:WORKSHOP EQUIPMENT

TECHNICAL SPECIFICATION: PE-TS-417-568-A001

S.No.	DESCRIPTION OF EQUIPMENT / ITEM	UNIT	QTY	AMOUNT (Ex-Works)
1	2	3	4	5
1.0	Total lump sum firm price of Workshop Equipment inclusive of all prevailing taxes, duties and other levies for SUPPLY PART & SERVICE PART. SUPPLY PART comprises of design (i.e. preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, cutting tools and cutting tool mounting accessories (as applicable), maintenance tools & tackles (as applicable), fill of lubricants & consumables, alongwith spares for erection, startup and commissioning as required, foundation bolts, nuts, lock nuts, washers, levelling pads, forwarding, proper packing, shipment and delivery at site (as per NIT conditions) and SERVICE PART comprises of Supervision of Erection and Commissioning (for Workshop Equipment) trial run of the system/ equipment at site, training of customer/client O&M staff & final handing over to end customer in flawless condition for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	Lot	1	
2.0	MAJOR BREAK-UP OF PRICES GIVEN IN 1.0 ABOVE.			
2.1	Total lump sum firm price of Workshop Equipment (List of items as per Annexure II) inclusive of all prevailing taxes, duties and other levies for SUPPLY PART comprises of design (i.e. preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, cutting tools and cutting tool mounting accessories (as applicable), maintenance tools & tackles (as applicable), fill of lubricants & consumables, alongwith spares for erection, startup and commissioning as required, foundation bolts, nuts, lock nuts, washers, levelling pads, forwarding, proper packing, shipment and delivery at site (as per NIT conditions) for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	Lot	1	
2.2	Total lump sum firm price of Workshop Equipment inclusive of all prevailing taxes, duties and other levies for SERVICE PART comprises of Supervision of Erection and Commissioning (for Workshop Equipment) trial run of the system/ equipment at site, carrying out performance tests at site, training of customer/client O&M staff & final handing over to end customer in flawless condition for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order. Price breakup to be furnished as per enclosed at Annexure-I.	Lot	1	

Note:
1) Bidder to note that bidder has to quote all the items listed at 'Scope of Supply' in Technical Specification. Bid is liable for rejection in case of quoting part scope.
2) PG to consider and suitably incorporate taxes, duties and other commercial aspects.
2) Bidder to quote the Prices in 'figures' along with corresponding 'words'.

Particulars of bidder / authorised representative					
Name/ Designation	Signature			Date	Company Seal

SUGGESTED PRICE FORMAT ANNEXURE I: PRICE BREAKUP FOR SERVICES	Doc No:	PE-PF-417-568-A001
	Rev No:	0
	Date of issue	15-04-2024

NAME OF PROJECT:	5X800 MW YADADRI TPS
NAME OF PACKAGE:	WORKSHOP EQUIPMENT
TECHNICAL SPECIFICATION:	PE-TS-417-568-A001

S. No.	DESCRIPTION	UNIT	QTY	Unit Rate	Total price (Excluding taxes)
2.1	Total lump sum firm price of Workshop Equipment inclusive of all prevailing taxes, duties and other levies for SERVICE PART comprises of Supervision of Erection and Commissioning (for Workshop Equipment) trial run of the system/ equipment at site, carrying out performance tests at site, training of customer/client O&M staff & final handing over to end customer in flawless condition for project and package specified above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	Nos.	1		
MAJOR BREAK-UP OF PRICES OF 2.1 ARE MENTIONED BELOW					
2.1.1	Total lump sum prices for visits (should include travel expenses to/ fro site, intermediary stay) for Supervision of assembly, erection and commissioning, trial run at site & training to O&M staffs.	Nos.	1		
2.1.2	Total lump sum prices for Supervision of assembly, erection and commissioning, trial run at site & taining to O&M staffs (in days) for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.	days	20		
GRAND TOTAL					
Note:					
1	No. of days at site defined at S.N. 2.1.2 above shall be calculated on the basis of presence at site (travel time is excluded).				
2	No. of Visits and days as mentioned at 2.1.1 & 2.1.2 above may vary, depending upon site requirement. Any variation in no. of visits & no. of days shall be exercised based on unit rate arrived from S.N. 2.1.1 & 2.1.2 above respectively.				
3	Bidder to quote the Prices in 'figures' along with corresponding 'words'.				
Note to PG ordering group					
1	PG to consider and suitably incorporate taxes, duties and other commercial aspects.				

Note:

Particulars of bidder / authorised representative

Name	Designation	Signature	Date	Company Seal
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**SUGGESTED PRICE FORMAT
ANNEXURE II: BOQ FOR SUPPLY ITEMS**

Doc No:	PE-PF-417-568-A001
Rev No:	0
Date of issue	15-04-2024

NAME OF PROJECT:		5X800 MW YADADRI TPS	
NAME OF PACKAGE:		WORKSHOP EQUIPMENT	
TECHNICAL SPECIFICATION:		PE-TS-417-568-A001	
S.N.	Equipment Name	Unit	Quantity
1	Heavy duty lathe	Nos	1
2	Precision lathe	Nos	1
3	Shaper	Nos	1
4	Slotting machine	Nos	1
5	Universal milling machine	Nos	1
6	Radial drilling machine	Nos	1
7	Pipe bending machine	Nos	1
8	Tube bending machine	Nos	1
9	Hydraulic plate shearing machine	Nos	1
10	Power hacksaw	Nos	1
11	Hydraulic press	Nos	1
12	Cylindrical grinder	Nos	1
13	Surface grinder	Nos	1
14	A/C welding machine	Nos	1
15	Motor Generator Set	Nos	1
16	Balancing machine	Nos	1
17	Tool and cutter grinder	Nos	1
18	Column type drill	Nos	1
19	Works Benches with vice	Nos	4
20	Set of general tools	Set	2
21	Set of measuring tools	Set	2
22	Wheel Barrow	Nos	8

NOTE:-

Bidder to note that bidder has to quote for all the items listed above at S.N. 1 to 22 in the main sheet of price schedule at S. No. 2.1. For details description of above items bidder to refer technical specification. Successful bidder has to provide price breakup of above items before placement of order.

BHEL-PEM-MAUX
PRE-QUALIFICATION CRITERIA



PACKAGE: WORKSHOP
PROJECT: 5X800 MW YADADRI TPS
PRE-QUALIFICATION REQUIREMENT- WORKSHOP

PE-PQ-417-568-A001

DATE 15.04.2024

REV NO 00

1.0	<p>Supplier should have capability of manufacturing and having in-house facility for testing of at least one of the following Machines: -</p> <ul style="list-style-type: none">➤ Lathe Machine SOB-575 mm, DBC-1500 mm.➤ Shaper Machine Stroke-600 mm.➤ Slotter Stroke-300 mm➤ Universal Milling Machine- Table Size-1000mm X225mm➤ Radial Drilling Machine -Drilling capacity in mild steel-50 mm and radius of drilling arm-950 mm➤ Hydraulic Plate Shearing Machine-Shearing Capacity 8 mm X 1000 mm in MS➤ Hydraulic Press 60 MT capacity, table size-900 mm X 1000 mm➤ Cylindrical Grinder- SOB-280 mm, DBC-400 mm➤ Surface Grinder-250 mm wheel diameter, table size - 250 X 1000 mm➤ Balancing Machine- Job diameter-1 meter, job weight-2 tonnes
2.0	<p>The supplier has to submit either of following supporting documents meeting above mentioned pre-qualifying requirement</p> <p>a. Copy of minimum one (1) performance certificate in English from end user along with copy of related Purchase Order (PO) or letter of intent (LOI) or letter of award (LOA) or work order (WO) specifying that the product/ equipment is running successfully for one (1) year from date of commissioning meeting the minimum pre-qualifying requirement. OR</p> <p>b. Minimum two PO/ LOI /LOA/ WO placed with a minimum gap of six (6) months from same purchaser meeting the minimum pre-qualifying requirement. OR</p> <p>c. Minimum one PO/ LOI /LOA/ WO after commissioning of first order from same purchaser meeting the minimum pre-qualifying requirement. OR</p> <p>d. Minimum three customer's/ third party's inspection reports/ test certificates/commissioning certificates meeting the minimum pre-qualifying requirement.</p>
3.0	<p>Indian stockiest/ trader/ distributor/ dealer/ authorized agent/ channel partner/ Indian sales office or subsidiary of principal - with aftersales service agreement with OEM/principal are also acceptable provided OEM/principal meets the minimum pre-qualification criteria stipulated above at S.no 1.</p>
4.0	<p>Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.</p>
5.0	<p>Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.</p>
6.0	<p>Consideration of offer shall be subject to customer's approval of bidders, if applicable.</p>
7.0	<p>After satisfactory fulfilment of all the above criteria / requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.</p>

Prepared by

Reviewed by

Approved by

**TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA (INDIA)**

5 X 800 MW TSGENCO YADADRI TPS NALGONDA, TELANGANA

**TECHNICAL SPECIFICATION
FOR
WORKSHOP EQUIPMENT**

SPECIFICATION NO.: PE-TS-417-568-A001



BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

POWER SECTOR

PROJECT ENGINEERING MANAGEMENT

NOIDA, U.P

INDIA



TITLE: 5X800 MW TSGENCO YADADRI TPS
 TECHNICAL SPECIFICATION FOR
 WORKSHOP EQUIPMENT

SPECIFICATION NO. PE – TS – 417 - 568 – A001

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SECTION – I

SPECIFIC TECHNICAL REQUIREMENTS

SUB-SECTION IA – Specific Technical Requirement (Mechanical)

SUB-SECTION IB – Specific Technical Requirement (Electrical)



TITLE 5X800 MW TSGENCO YADADRI TPS
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1.0 SCOPE OF ENQUIRY/ INTENT OF SPECIFICATION

- 1.1 This specification includes, but not limited to SUPPLY PART comprising of design (i.e. preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as applicable), fill of lubricants & consumables, along with spares for erection, start up and commissioning as required, initial spares (as applicable), foundation bolts, nuts, lock nuts, washers, levelling pads, forwarding, packing, shipment and delivery (at site, as per NIT conditions) and Supervision of Erection and Commissioning (as per applicable item), training of Customer's O & M staff, demonstration testing at site, lodging, boarding etc, travelling expenses for specified items of Workshop Equipments package for **5X800 MW YADADRI TPS** specified as above complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification, amendment & agreements till placement of order.
- 1.2 The contractor shall be responsible for providing all material, equipment & services, which are required to fulfil the intent of ensuring operability, maintainability, reliability and complete safety of the complete work covered under this specification, irrespective of whether it has been specifically listed herein or not. Omission of specific reference to any component / accessory necessary for proper performance of the equipment shall not relieve the vendor from the responsibility of providing such facilities to complete the supply of **WORKSHOP EQUIPMENTS**.
- 1.3 It is not the intent to specify herein all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgement is not in full accordance herewith.
- 1.4 The extent of supply under the contract includes all items shown in the drawings, notwithstanding the fact that such items may have been omitted from the specification or schedules. Similarly, the extent of supply also includes all items mentioned in the specification and /or schedules, notwithstanding the fact that such items may have been omitted in the drawing.
- 1.5 The general term and conditions, instructions to tenderer and other attachment referred to elsewhere are made part of the tender specification. The equipment materials and works covered by this specification is subject to compliance to all attachments referred to in the specification. The bidder shall be responsible for and governed by all requirements stipulated herein.
- 1.6 While all efforts have been made to make the specification requirement complete & unambiguous, it shall be bidders' responsibility to ask for missing information, ensure completeness of specification, to bring out any contradictory / conflicting requirement in different sections of the specification and within a section itself to the notice of BHEL and to seek any clarification on specification requirement in the format enclosed under Vol-III of the specification. In absence of any such clarifications, in case of any contradictory requirement,



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the more stringent requirement as per interpretation of Purchaser/Customer shall prevail and shall be complied by the bidder without any commercial implication on account of the same. Further in case of any missing information in the specification not brought out by the prospective bidders as part of pre-bid clarification, the same shall be furnished by Purchaser/ Customer as and when brought to their notice either by the bidder or by purchaser/ customer themselves. However, such requirements shall be binding on the successful bidder without any commercial & delivery implication.

- 1.7 The bidder's offer shall not carry any sections like clarification, interpretations and /or assumptions.
- 1.8 Deviations, if any, should be very clearly brought out clause by clause in the enclosed deviation schedule along with cost of withdrawal; otherwise, it will be presumed that the bidder's offer is strictly in line with NIT specification. If no cost of withdrawal is given against the deviation, it will be presumed that deviation can be withdrawn without any cost to BHEL/its customer.
- 1.9 In the event of any conflict between the requirements of two clauses of this specification documents or requirements of different codes and standards specified, more stringent requirement as per the interpretation of the owner shall apply.
- 1.10 In case all above requirements are not complied with, the offer may be considered as incomplete and would become liable for rejection.
- 1.11 Unless specified otherwise, all through the specification, the word contractor shall have same meaning as successful bidder /vendor and Customer/ Purchaser/Employer will mean BHEL and /or customer including their consultant as interpreted by BHEL in the relevant context. For details refer the relevant clause in GCC.



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1.0 SYSTEM DESCRIPTION AND SCOPE OF WORK

Various types of equipment / machines which are included in bidder's scope of work and required for the maintenance and repair workshop of the power station equipment are given under: -

S.N.	Machine name	Brief specification	Accessories	Qty
1	Heavy duty lathe	Swing over bed 900 mm X Distance between centres 2000 mm, Swing over cross slide 600 mm, no. of spindle speed 12 (min.)	Geared machine, Complete cooling equipment including pump, motor, pipings etc. 4 – jaw chuck, splash guard (rear splash guard on wheels moving on floor), one set cutting tool and other accessories required for proper functioning of machine.	1
2	Precision lathe	Swing over bed 575 mm X Distance between centres 1500 mm, Swing over cross slide 350 mm, no. of spindle speed 12 (min.)	Geared machine, Work light without bulb, 3 jaw self-centering chuck of diameter 250 mm with back plate, chip tray, complete coolant equipment, splash guard, longitudinal stop, one set cutting tool and other accessories required for proper functioning of machine.	1
3	Shaper	Stroke – 36 inch	Geared machine, Electric motor, starter, automotive lubricating pump, machine lamp, tool holder attachment, machine vice, one set cutting tool and other accessories required for proper functioning of machine.	1
4	Slotting machine	Stroke - 450 mm, cutting speed of RAM 50 to 80 stroke / min.	Geared machine, Complete coolant system / equipment, lighting equipment, 3 jaw self-centering chuck with back plate (steel body), one set cutting tool and other accessories required for proper functioning of machine.	1
5	Universal milling machine	Table - 1600 mm X 300 mm	Geared machine, Complete coolant equipment, work-light without bulb, indexing head, milling arbor and other accessories required for proper functioning of machine.	1
6	Radial drilling machine	Capacity drilling in steel 50 mm diameter, Radius of drilling arm: 1500 mm, Drilling depth 325 mm, no of spindle speed 9 (min.), no of spindle feed 3 (min.)	Geared machine, Box table (500 mm X 500 mm X 500 mm), complete coolant equipment with pump, motor, pipings etc., work light without bulb one set cutting tool, and other accessories required for proper functioning of machine.	1
7	Pipe bending machine	Hydraulic Hand operated Size 25 mm - 150 mm NB	Dolly blocks with pins, Other accessories required for proper functioning of machine.	1



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8	Tube bending machine	Hydraulic Hand operated Size 1/2" to 4" NB	Dolly blocks with pins, Other accessories required for proper functioning of machine.	1
9	Hydraulic plate shearing machine	12 mm X 1000 mm in MS, 8 mm X 1000 mm in stainless steel	Top blade and bottom blade, Machine lamp without bulb and other accessories required for proper functioning of machine.	1
10	Power hacksaw	Job diameter - 225 mm	Work light without bulb, cutting blade and other accessories required for proper functioning of machine.	1
11	Hydraulic press	60 MT capacity, table size - 900 mm X 1000 mm, travel of ram min 300 mm,	V-block, Pressure Gauge, Other accessories required for proper functioning of machine.	1
12	Cylindrical grinder	Swing over bed - 280 mm X Distance between centres 400 mm	Geared machine, 3 jaw self-centering chuck with adapter and flange of diameter 150 / 160 mm, work light without bulb, wheel balancing stand, additional standard wheel flanges with balancing blocks, diamond dresser and other accessories required for proper functioning of machine.	1
13	Surface grinder	250 mm wheel diameter, table size - 250 X 1000 mm	Geared machine, Electro - magnetic chuck suitable for the table, complete coolant system / equipment including pump, motor, piping, reservoir etc., machine lamp, wheel balancing stand and other accessories required for proper functioning of machine.	1
14	A/C welding machine	Current range - 60 to 400 Amps., Welding current at @ 60 % duty cycle 300-amp, Welding current at @ 100 % duty cycle 230-amp, air cooled, open circuit voltage 66 volt, class of insulation A	Welding cable with electrode holder (5 metres length), Earthing cable assembly (5 metres), Protective helmet with glass, pair of hand gloves, chisel, wire brush, Ammeter - voltmeter attachment and other accessories required for proper functioning of machine.	1
15	Motor Generator Set	MG set, current range: 35 – 320 Amps., Welding current at @ 60 % duty cycle 320-amp, Welding current at @ 100 % duty cycle 250-amp, air cooled, open circuit voltage 100 volt, class of insulation H	Welding cable with electrode holder (5 metres length), Earthing cable assembly (5 metres), Protective helmet with glass, pair of hand gloves, chisel, wire brush. and other accessories required for proper functioning of machine.	1
16	Balancing machine	Diameter - 1 m, job weight - 2 tonnes	Calibration rotor, Electricals including motor and controls, calibrated weights (30, 150, 750 gm each) and other accessories required for proper	1



TITLE: 5X800 MW TSGENCO YADADRI TPS

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			functioning of machine.	
17	Tool and cutter grinder	Swing over bed 280 mm X Distance between tailstock 750 mm, wheel dia 150 mm	Indexing unit, machine lamp, complete cooling system / device with tank, pump, piping etc. universal voice, cutting tool	1
18	Column type drill	Drill size - 30 mm, table - 300 X 300 mm, distance between spindle and table min. 600 mm, pillar dia min. 120 mm	Work-light without bulb, drill chuck with arbor and key and other accessories required for proper functioning of machine.	1
19	Works Benches with vice	Carpenter type work bench (made of wood), size -750 mm x 500 mm x 1000 mm height with vice 150 mm at two corner and drawer	Nil	4
20	Set of general tools	<p>1) Ball pin Hammers: a) Size 500 gms - 1 no. b) Size 800 gms - 1 no.</p> <p>2) Screw Drivers: - a) Plain type - 1 no. b) Cross type - 1 no.</p> <p>3) Flat FILES: a) size 100 mm (10 nos) b) size 150 mm (10nos.) c) size 200 mm (10 nos.) d)size 250 mm (10nos.) e) size 100 mm (10nos.) f) Round file size 150 mm (10nos.) g) Half Round file size 200mm (10nos.) h) Half Round file size 250mm (10nos.)</p> <p>4)Pipe wrenches (1 no. each): a) Size 0-3/4" b) Size 0-1½" c)Size 0-2½"</p> <p>5)Pipe Cutter (1 no.) size ½" – 2"</p>	Nil	2 set
21	Set of measuring tools	(a) Vernier caliper: 0 – 300 mm, least count - 0.02 mm, (b) Inside micrometer: 0 – 25	Nil	2 no. each



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		mm, least count 0.02 mm, (c) Dial Gauge: least count 0.01 mm, (d) V-block: size 100 mm x 45 mm x 60 mm.,	
22	Wheel Barrow	Capacity min. 6.0 cu. ft., Double wheel (Wheel size 12"X 2" Nylon Rubber) with two handles, MOC-Mild steel	8

3.0 PAINTING SCHEDULE

Painting of workshop equipment: Following painting specification shall be followed for above workshop equipment except item no. 7,8,14,15,20 & 21. For these machines, manufacture's standard painting specification shall be followed.

At Works

Pre-treatment: - Degreasing and surface preparation to SA 2 1/2.

Prime coat: - One (1) coat of Epoxy based polyamide cured (2) pack HB zinc phosphate primer. Dry-film thickness 75 microns per coat.

Intermediate coat: - One (1) coat of Epoxy based MIO pigmented polyamide cured paint. Dry-film thickness 50 microns per coat.

Finish coat: - Two (2) coat of Aliphatic Acrylic (2) pack glossy polyurethane paint. Dry-film thickness 30 microns per coat.

Total system: - Dry film thickness 185 microns.

Final shade of paint shall be as per manufacturer's standard only.

NOTES: -

- 1) Maintenance tools and tackles as required for the various machines, commissioning spares for various machines as applicable, first fill lubricant /coolant for each equipment is included in Bidder's scope of work. The tools shall be supplied in steel tool box & shall be of the best quality & specially protected against rusting in tropical climate.
- 2) Machines shall be supplied with the manufacturer's standard accessories & other accessories as indicated above. Bidder shall submit list of all other special accessories in their bid & furnish item wise price in the price bid.

2.0 The followings shall also be included in bidder's scope of work: -

- 2.1 Required numbers of machines in new / unused condition along with standard accessories and special accessories as listed above in the specification.



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- 2.2 First fill of lubricants, oil, coolants etc. for all machines.
- 2.3 Painting of equipment shall be done by the bidder before despatch as per the attached painting schedule. Bidder shall also supply adequate quantity of loose touch up paint along with the equipment so that damage in transition, if any, can be taken care.
- 2.4 Base plates, Support plates, anchor bolts, foundation bolts and nuts, lifting lugs, eye bolts etc. if any. All commissioning spares shall be included in the scope of work of each equipment / item.
- 2.5 Terminal points for electrical shall be the power supply terminals in respective machines and power cable glands and lugs shall be in bidder's scope.
- 2.6 The electrical equipment supplied as a part of machine shall include isolating switch for power supply isolation incorporating mechanical safety as required.
- 2.7 Commissioning spares shall be included in the scope of work of the bidder.
- 2.8 Five (5) metres of power cable (spare) shall be supplied along with each machine / item.
- 2.9 Supervision of Erection and Commissioning .
- 2.10 Any other works not covered above but required for the safe operation of the machines.

3.0 CODES & STANDARD

The machines covered under the scope of work shall be new, of streamlined construction, rugged and vibration free in line with the Indian / international standard and practices.

4.0 General Technical Requirement

- 4.01 Design of Equipment's shall be such that no cooling water, air from external source are required for cooling of any part of Equipment. Necessary cooling arrangement, if required, shall be provided by the bidder in their Equipment's.
- 4.02 Noise level for each Equipment at a horizontal distance of 1.0 metre from the edge of the Equipment and at a height of 1.5 metres from the ground shall be limited to 85 dbA.
- 4.03 Guards, covers, devices, tools & other means that will effectively protect all personnel from any accidental or injury shall be provided and shown in the drawings to be submitted during detail engineering.
- 4.04 Hand wheels shall be polished / Nickel - Chrome plated.
- 4.05 Equipment's shall be suitable for the electrical conditions like voltages, frequencies, variations etc. as indicated in Electrical specification.
- 4.06 BHEL, will provide one (1) no. feeder for each Equipment. Terminal points shall be the panels in respective Equipment's at which BHEL shall terminate it's power cable. However suitable cable glands and lugs shall be in bidder's scope. Bidder will distribute the power requirement of various motors from their Equipment's panel.
- 4.07 Earthing studs with cables / strips for the Equipment shall be provided by the bidder.
- 4.08 All Equipment's shall be provided with DOL starter.



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4.09 Cable Glands shall be double compression tinned brass type and the cable glands shall be supplied as a part of each Equipment.

4.10 All cable lugs shall be heavy-duty tin-plated crimping type the cable lugs.

4.11 The electrical equipment supplied as a part of Equipment shall include isolating switch for power supply isolation incorporating mechanical safety as required.

5.0 INSPECTION & TESTING

5.1 The Equipment offered shall conform to the latest relevant Indian / international Codes / Standards, their electrical drives shall conform to the latest Indian Electricity Rules and shall comply for the currently applicable statutory regulations and safety codes for the locality where the equipment shall be installed.

5.2 Each Equipment before despatch shall be shop assembled & tested for its performance in the presence of purchaser's representative. Vendor to ensure the proper quality checks during manufacturing & assembly of Equipment, including identification, correlation & verification of material test certificates for critical components like gears, shafts, spindles, sleeves etc. and radiographic tests for welds and ultrasonic tests on forging/castings to ensure defects free components and furnish test procedure, reports & test certificates on shop tests.

6.0 EXCLUSION

6.1 Draining arrangement of liquid coolant from source to the nearest drain.

6.2 Construction of Workshop building.

6.3 Pipe trench & cable trenches, doors / windows, rolling shutter, ramp and glass partition wall, if any.

6.4 Power supply feeders, Cable termination.

6.5 One no. EOT crane of 10 tonnes capacity, however bidder to ensure that the heaviest part of individual Equipment shall not exceed 10 Tonnes.

6.6 Erection and commissioning.

7.0 Drawing / document distribution schedule is attached in the NIT specification. Bidder shall follow the same during detail engineering stage.



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ANNEXURE - I**MAKES OF SUB VENDORS ITEMS OF WORKSHOP EQUIPMENT**

S. NO.	ITEM	SUPLIERS	PLACE	REMARKS
1.	BEARINGS	SKF	-	
		FAG	-	
		TATA	-	
		NBC	-	
2.	V- BELT	FENNER	-	
		DUNLOP	-	
3.	HYDRAULIC POWER PACK	VICKERS-PERRY	-	
		REXROTH	-	
4.	PVC POWER CABLES	APAR INDUSTRIES LTD.	MUMBAI	
		CORDS CABLE INDUSTRIES LTD.	NEW DELHI	
		DIAMOND POWER INFRASTRUCTURE LTD	VADODARA	
		GOYOLENE FIBRES (INDIA) PVT.LTD	MUMBAI	
		GOVIND CABLE INDUSTRIES	KOLKATA	
		GUPTA POWER INFRASTRUCTURE LIMITED	BHUBNESWAR	
		HAVELLS INDIA LIMITED	NOIDA	
		KEI INDUSTRIES LTD.	NEW DELHI	
		KRISHNA ELECTRICAL INDUSTRIES LTD	GWALIOR	
		KEC INTERNATIONAL LIMITED	MUMBAI	
		MANSFIELD CABLES COMPANY LTD.	NOIDA	
		NICCO CORPORATION LTD.	KOLKATA	
		PARAMOUNT COMMUNICATIONS LTD.	NEW DELHI	
		POLYCAB WIRES PVT. LTD.	MUMBAI	
		RADIANT CORPORATION PRIVATE LIMITED	HYDERABAD	
		RAVIN CABLES LIMITED	MUMBAI	
		SUYOG ELECTRICALS LTD.	VADODARA	
		SRIRAM CABLES PVT. LTD.	NEW DELHI	
SCOT INNOVATION WIRES AND CABLES PVT. LTD.	SOLAN			
SAM CABLES & CONDUCTORS (P) LTD	UDHAM SINGH NAGAR			
THERMO CABLES LTD	HYDERABAD			
5.	PVC CONTROL CABLES	ADVANCE CABLE TECHNOLOGIES (P) LTD	BANGALORE	
		APAR INDUSTRIES LTD., CMI LTD	MUMBAI	
		CMI LIMITED	FARIDABAD	



TITLE: 5X800 MW TSGENCO YADADRI TPS

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S. NO.	ITEM	SUPPLIERS	PLACE	REMARKS
		CORDS CABLE INDUSTRIES LTD	NEW DELHI	
		CRYSTAL CABLE INDUSTRIES LTD	KOLKATA	
		DELTON CABLES LTD	NEW DELHI	
		DIAMOND POWER INFRASTRUCTURE LTD	VADODARA	
		ELKAY TELELINKS LTD	NEW DELHI	
		GEMSCAB INDUSTRIES LTD	NEW DELHI	
		GOVIND CABLE INDUSTRIES	KOLKATA	
		GUPTA POWER INFRASTRUCTURE LIMITED	BHUBNESWAR	
		HAVELLS INDIA LIMITED	NOIDA	
		INCOM CABLES (P) LTD	NEW DELHI	
		KEI INDUSTRIES LTD	NEW DELHI	
		KRISHNA ELECTRICAL INDUSTRIES LTD	GWALIOR	
		KEC INTERNATIONAL LIMITED	MUMBAI	
		MANSFIELD CABLES COMPANY LTD	NOIDA	
		NICCO CORPORATION LTD	KOLKATA	
		PARAMOUNT COMMUNICATIONS LTD	NEW DELHI	
		POLYCAB WIRES PVT. LTD	MUMBAI	
		RAVIN CABLES LIMITED	MUMBAI	
		SUYOG ELECTRICALS LTD	VADODARA	
		SPECIAL CABLES PVT. LTD	NEW DELHI	
		SCOT INNOVATION WIRES AND CABLES PVT. LTD	SOLAN	
		SAM CABLES & CONDUCTORS (P) LTD	UDHAM SINGH NAGAR	
		SPM POWER & TELECOM PVT. LTD	HYDERABAD	
		TORRENT CABLES LTD	AHMEDABAD	
		THERMO CABLES LTD	HYDERABAD	
		TIRUPATI PLASTOMATICS PVT. LTD	JAIPUR	
		UNIVERSAL CABLES LTD	SATNA	
6.	XLPE POWER CABLES	APAR INDUSTRIES LTD	MUMBAI	
		CORDS CABLE INDUSTRIES LTD	NEW DELHI	
		CRYSTAL CABLE INDUSTRIES LTD	KOLKATA	
		DIAMOND POWER INFRASTRUCTURE LTD	VADODARA	
		GEMSCAB INDUSTRIES LTD	NEW DELHI	
		GOVIND CABLE INDUSTRIES	KOLKATA	



TITLE: 5X800 MW TSGENCO YADADRI TPS

SPECIFICATION NO. PE – TS – 417 - 568 – A001

SPECIFIC TECHNICAL REQUIREMENT FOR
WORKSHOP EQUIPMENT

VOLUME II B

SECTION IA

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S. NO.	ITEM	SUPPLIERS	PLACE	REMARKS
		GUPTA POWER INFRASTRUCTURE LIMITED	BHUBNESWAR	
		HAVELLS INDIA LIMITED	NOIDA	
		KEI INDUSTRIES LTD	NEW DELHI	
		KRISHNA ELECTRICAL INDUSTRIES LTD	GWALIOR	
		KEC INTERNATIONAL LIMITED	MUMBAI	
		MANSFIELD CABLES COMPANY LTD	NOIDA	
		PARAMOUNT COMMUNICATIONS LTD	NEW DELHI	
		POLYCAB WIRES PVT. LTD	MUMBAI	
		RAVIN CABLES LIMITED	MUMBAI	
		SUYOG ELECTRICALS LTD	VADODARA	
		SPECIAL CABLES PVT. LTD	NEW DELHI	
		SCOT INNOVATION WIRES AND CABLES PVT. LTD	SOLAN	
		SRIRAM CABLES PVT. LTD	NEW DELHI	
		TORRENT CABLES LTD	AHMEDABAD	
		THERMO CABLES LTD	HYDERABAD	
		TIRUPATI PLASTOMATICS PVT. LTD	JAIPUR	
		APAR INDUSTRIES LTD	MUMBAI	
		CABLE CORPORATION OF INDIA LTD	MUMBAI	
		CRYSTAL CABLE INDUSTRIES LTD	KOLKATA	
		DIAMOND POWER INFRASTRUCTURE LTD	VADODARA	
		GEMSCAB INDUSTRIES LTD	NEW DELHI	
		HAVELLS INDIA LIMITED	NOIDA	
		KEI INDUSTRIES LTD	NEW DELHI	
		KRISHNA ELECTRICAL INDUSTRIES LTD	GWALIOR	
		KEC INTERNATIONAL LIMITED	MUMBAI	
		PARAMOUNT COMMUNICATIONS LTD	NEW DELHI	
		POLYCAB WIRES PVT. LTD	MUMBAI	
		RADIANT CORPORATION PRIVATE LIMITED	HYDERABAD	
		RAVIN CABLES LIMITED	MUMBAI	
		SUYOG ELECTRICALS LTD	VADODARA	
		SRIRAM CABLES PVT. LTD	NEW DELHI	
		TORRENT CABLES LTD	AHMEDABAD	
		UNIVERSAL CABLES LTD	SATNA	
8.	PUMP FOR COOLANT	PHULSONS		
		RAJPURA / RAJAMANE	BANGLORE	



TITLE: 5X800 MW TSGENCO YADADRI TPS
SPECIFIC TECHNICAL REQUIREMENT FOR
WORKSHOP EQUIPMENT

SPECIFICATION NO. PE – TS – 417 - 568 – A001

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REV 0

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S. NO.	ITEM	SUPPLIERS	PLACE	REMARKS
		INDUSTRIES PVT. LTD.		
9.	LT MOTORS	SIEMENS	-	
		NGEF (up to 15KW)	-	
		CROMPTON	-	
		KIRLOSKAR	-	
		BHARAT BIJLI	-	
		ALSTOM	-	
		ABB	-	
10.	PAINT	ASIAN PAINTS (I) LTD.	-	
		BERGER PAINTS INDIA LTD	-	
		GOODLASS NEROLAC	-	
		JENSON & NICHOLSON (I) LTD	-	
		CDC CARBOLINE (I) LTD.	-	
		SHALIMAR PAINTS LTD.	-	
		ADDISON PAINTS LTD	-	
		GRAND POLYCOAT	-	
		BOMBAY PAINTS	-	
		HEMPLE PAINTS (SINGAPORE)	-	
		JOTUN PAINTS	-	

NOTE:

1. THE SUB VENDOR LIST ABOVE IS INDICATIVE ONLY AND IS SUBJECT TO BHEL AND CUSTOMER APPROVAL DURING DETAILED ENGINEERING STAGE WITHOUT ANY COMMERCIAL & DELIVERY IMPLICATION TO BHEL.

BIDDER TO PROPOSE SUB VENDOR WITHIN 4 WEEKS OF PLACEMENT OF LOI. THEREAFTER NO REQUEST FOR ADDITIONAL SUB-VENDOR SHALL BE ENTERTAINED.

2. DEALERS ARE NOT ACCEPTABLE FOR ANY ITEM OF THE PACKAGE. BIDDER SHALL PROCURE ALL ITEMS INCLUDING PLATES, STRUCTURAL, FLANGES; COUNTER FLANGES ETC. FROM APPROVED SUB VENDOR ONLY.
3. THE INSPECTION CATEGORY WILL BE INTIMATED AFTER AWARD OF CONTRACT BY BHEL/CUSTOMER. HOWEVER, THE SAME WILL BE ADHERED BY THE BIDDER WITHOUT ANY COMMERCIAL AND DELIVERY IMPLICATION TO BHEL/ CUSTOMER.



TITLE: 5X800 MW TSGENCO YADADRI TPS

**SPECIFIC TECHNICAL REQUIREMENT FOR
WORKSHOP EQUIPMENT**

SPECIFICATION NO. PE – TS – 417 - 568 – A001

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ANNEXURE-II

DRAWINGS, DATA / DOCUMENTS TO BE FURNISHED BY THE SUCCESSFUL BIDDER

The successful bidder shall submit the following drawings / documents during detail engineering for approval / information:

LIST OF PRIMARY DRAWING / DOCUMENTS:

SI. No.	BHEL DRG.NO	DRAWING TITLE	REMARKS	SUBMISSION SCHEDULE - WEEK NUMBER FROM DATE OF LOI
1.	PE-V0-417-568-A001	Inspection Check List / Manufacturing Quality Plan of machine/equipment	APPROVAL	**
2.	PE-V0-417-568-A002	Data sheet of machine/equipment with detailed BOM WORKSHOP EQUIPMENT	APPROVAL	
3.	PE-V0-417-568-A003	GA, Foundation Detail (as required) of Machine / Equipment	APPROVAL	

****REV-0 WITHIN 30 DAYS FROM PO. BHEL WILL COMMENT ON R0 WITHIN 14 DAYS FROM RECEIPT. REV-1 TO BE SUBMITTED BY VENDOR WITHIN 7 DAYS. BHEL WILL FURNISH APPROVAL IN 3 DAYS FROM RECEIPT.**

List of Secondary dwg. /doc for each machine / equipment (as applicable) after approval of basic dwg. / doc:

SI. No.	BHEL DRG.NO	DRAWING TITLE	REMARKS	SUBMISSION SCHEDULE - WEEK NUMBER FROM DATE OF LOI
4.	PE-V0-417-568-A004	O & M Manual for EQUIPMENT	INFORMATION	2 weeks after approval of primary dwg/doc.
5.	PE-V0-417-568-A006	Erection Procedure for WORKSHOP EQUIPMENT	INFORMATION	2 weeks after approval of primary dwg/doc.

2. Drawings shall be prepared in Auto-Cad latest edition. Required no. of hard and soft copies (editable) of the drawings shall be furnished as per requirement specified elsewhere in the specification.
3. All the drawings and documents including general arrangement drawing, data sheet, calculation etc. to be furnished to the customer during detailed engineering stage shall include / indicate the following details for clarity w.r.t. Inspection, construction, erection and maintenance etc.:-
 - a) All drawings and documents shall indicate the list of all reference drawings including general arrangement.
 - b) All drawings shall include / show plan, elevation, side view, cross - section, skin section, blow - up view; all major self-manufactured and bought out items shall be labeled and included in BOQ / BOM in tabular form. Page 14 of 45



TITLE: 5X800 MW TSGENCO YADADRI TPS

**SPECIFIC TECHNICAL REQUIREMNT FOR
WORKSHOP EQUIPMENT**

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- c) Painting schedule shall also be made as a part of general arrangement drawing of each equipment / items indicating at least 3 trade names.
- d) All the drawings required to be furnished to customer during detailed engineering stage shall include technical parameters, details of paints and lubrication, hardness and BOQ / BOM in tabular form indicating all major components including bought out items and their quantity, material of construction indicating its applicable code / standard, weight, make etc.



TITLE: 5X800 MW TSGENCO YADADRI TPS

**SPECIFIC TECHNICAL REQUIREMENT FOR
WORKSHOP EQUIPMENT**

SPECIFICATION NO. PE – TS – 417 - 568 – A001

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ANNEXURE - III

Drawings / documents distribution schedule

S.N.	DESCRIPTION	CUSTOMER / CONSULTANT	BHEL / Customer SITE	PEM (ENGINEERING)
1)	Drawings / documents during approval stage	10	Nil	6 – hard copy and 1 – soft copy (CD)
2)	Finally approved drawings / documents	10	9	6 – hard copy and 6 - softcopy (CD)
3)	As built drawings / documents	10	9	6 – hard copy and 6 - softcopy (CD)
4)	Approved erection / installation manual	10	9	6 – hard copy and 6 - softcopy (CD)
5)	Approved O & M manuals	10	9	6 – hard copy and 6 - softcopy (CD)

Note: The above requirement is minimum. However, exact quantities of drawings / documents requirement shall be informed to the successful bidder during detailed engineering stage for which no commercial implication shall be entertained by BHEL.

All drawings & documents shall be prepared in Autocad and submitted for review / approval in soft copies also. Catalogues shall be scanned for soft copy.

Note:- Manually prepared drawings are not acceptable.

Soft copy in CD Rom and Reproducible Tracings of all drawings / documents shall be submitted along with Final / As-Built submission.

“Bidder to note that BHEL reserve the right for drg/doc submission through web based Document Management System. Bidder would be provided access to the DMS for drg/doc approval and adequate training for the same. Detailed methodology would be finalized during the kick-off meeting. Bidder to ensure following at their end.

- Internet explorer version – Minimum Internet Explorer 7
- Internet speed – 2 mbps (Minimum preferred)
- Pop ups from our external DMS IP (124.124.36.198) should not be blocked
- Vendor’s Internal proxy setting should not block DMS application’s link (<http://124.124.36.198/wrenchwebaccess/login.aspx>)”



TITLE 5X800 MW TSGENCO YADADRI TPS
TECHNICAL SPECIFICATION FOR
WORKSHOP EQUIPMENT

SPECIFICATION NO. PE – TS - 417 - 568 – A001

SECTION I

REV 0

SHEET OF

SECTION – IB

Specific Technical Requirement (Electrical)

**TELANGANA STATE POWER GENERATION
CORPORATION LTD
TELANGANA STATE, INDIA**

5 X 800 MW YADADRI TPS

**WORKSHOP EQUIPMENT
TECHNICAL SPECIFICATION
(ELECTRICAL PORTION)**



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT,
NOIDA, U.P., INDIA**



TITLE:
**ELECTRICAL EQUIPMENT SPECIFICATION
FOR
WORKSHOP**


5X800 MW YADADRI TPS

SPECIFICATION NO.
VOLUME NO. : **II-B**
SECTION : **I**
REV NO. : **00** DATE: 15/12/2022
SHEET: 2 OF 31

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SECTION	TITLE	NO OF SHEETS
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I	ELECTRICAL LOAD DATA FORMAT (ANNEXURE II)	1
I	CABLE SCHEDULE FORMAT (ANNEXURE III)	1
I	TECHNICAL SPECIFICATION/FEATURE (MOTORS)	7
I	MOTOR DATA SHEET A	1
I	MOTOR DATA SHEET-C	2
I	CABLE ROUTING PROGRAM WINPATH	2
II	QUALITY PLAN (FOR MOTORS BELOW 55 KW)	2
II	QUALITY PLAN (FOR MOTORS ABOVE & 55 KW)	9


The requirements mentioned in Section-I shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-II.

	TECHNICAL SPECIFICATION FOR CONDENSATE POLISHING UNIT 5X800 MW YADADRI TPS (ELECTRICAL PORTION)	SPECIFICATION NO. VOLUME NO. : SECTION : I REV NO. : 00 DATE: 15/12/2022 SHEET : 3 OF 31
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SPECIFIC TECHNICAL REQUIREMENTS

FOR LV MOTORS (ELECTRICAL)

SECTION-I

	TECHNICAL SPECIFICATION FOR CONDENSATE POLISHING UNIT 5X800 MW YADADRI TPS	SPECIFICATION NO.
	(ELECTRICAL PORTION)	VOLUME NO. : SECTION :
		I
		REV NO. : 00 DATE: 15/12/2022
		SHEET : 4 OF 31

SPECIFIC TECHNICAL REQUIREMENTS: ELECTRICAL

1.0 EQUIPMENT & SERVICES TO BE PROVIDED BY BIDDER:


- a) Services and equipment as per “Electrical Scope between BHEL and Vendor”.
- b) Any item/work either supply of equipment or erection material which have not been specifically mentioned but are necessary to complete the work for trouble free and efficient operation of the plant shall be deemed to be included within the scope of this specification. The same shall be provided by the bidder without any extra charge.
- c) Supply of mandatory spares as specified in the specifications of mechanical equipment’s.
- d) Electrical load requirement for CONDENSATE PLOSHING UNIT.
- e) All equipment shall be suitable for the power supply fault levels and other climatic conditions mentioned in the enclosed project information.
- f) Bidder to furnish list of makes for each equipment at contract stage, which shall be subject to customer/BHEL approval without any commercial and delivery implications to BHEL
- g) Various drawings, data sheets as per required format, Quality plans, calculations, test reports, test certificates, operation and maintenance manuals etc. shall be furnished as specified at contract stage. All documents shall be subject to customer/BHEL approval without any commercial implication to BHEL.
- h) Motor shall meet minimum requirement of motor specification.
- i) Vendor to clearly indicate equipment locations and local routing lengths in their cable listing furnished to BHEL.
- j) Cable BOQ worked out based on routing of cable listing provided by the vendor for “both end equipment in vendor’s scope” shall be binding to the vendor with +10 % margin to take care of slight variation in routing length & wastages.

2.0 EQUIPMENT & SERVICES TO BE PROVIDED BY PURCHASER FOR ELECTRICAL & TERMINAL POINTS:

Refer “Electrical Scope between BHEL and Vendor” Annexure - I.

3.0 DOCUMENTS TO BE SUBMITTED ALONG WITH BID

- 3.1 The electrical specification without any deviation from the technical/quality assurance requirements stipulated shall be deemed to be complied by the bidder in case bidder furnishes the overall compliance of package technical specification in the form of compliance certificate/No deviation certificate.
- 3.2 No technical submittal such as copies of data sheets, drawings, write-up, quality plans, type test certificates, technical literature, etc., is required during tender stage. Any such submission even if made, shall not be considered as part of offer.

	TECHNICAL SPECIFICATION FOR CONDENSATE POLISHING UNIT 5X800 MW YADADRI TPS (ELECTRICAL PORTION)	SPECIFICATION NO. VOLUME NO. : SECTION : I REV NO. : 00 DATE: 15/12/2022 SHEET : 5 OF 31
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4.0 List of enclosures :

- a) Electrical scope between BHEL & vendor (Annexure –I)
- b) Technical specification for motors.
- c) Datasheets for motors.
- d) Electrical Load data format (Annexure –II)
- e) BHEL cable listing format (Annexure –III)
- f) Quality plan for motors.

STANDARD ELECTRICAL SCOPE BETWEEN BHEL AND VENDOR (FOR EPC PROJECTS)

PACKAGE : WORKSHOP EQUIPMENT

SCOPE OF VENDOR: SUPPLY

PROJECT : 5X800MW YADADRI TPS







S.NO	DETAILS	SCOPE SUPPLY	SCOPE E&C	REMARKS
1	415V MCC	BHEL	BHEL	240 V AC (supply feeder)/415 V AC (3 PHASE 4 WIRE) supply shall be provided by BHEL based on load data provided by vendor at contract stage for all equipment supplied by vendor as part of contract. Any other voltage level (AC/DC) required will be derived by the vendor.
2	Power cables	BHEL	BHEL	Cable size shall be derived by BHEL based on Electrical load data & shall be informed to vendor at contract stage. Vendor shall provide lugs & glands accordingly.
3	Any other/special type of cable like control, screened control, compensating, co-axial, prefab, MICC, fibre Optic cables etc.	Vendor	BHEL	
4	Cabling material (Cable trays, accessories ,cable tray supporting system, conduits etc.)	BHEL	BHEL	
5	Cable glands ,lugs, and bimetallic strip for equipment supplied by Vendor	Vendor	BHEL	1. Double compression Ni-Cr plated brass cable glands 2. Solder less crimping type heavy duty tinned copper lugs for power and control cables.
6	Motors alongwith fixing accessories	Vendor	-	Makes shall be subject to customer/ BHEL approval at contract stage.
7	Mandatory spares	Vendor	-	Vendor to quote as per specification.
8	Recommended O & M spares	Vendor	-	As per specification

NOTES:

1. Make of all electrical equipment/ items supplied shall be reputed make & shall be subject to approval of BHEL/customer after award of contract without any commercial implication.
2. All QPs shall be subject to approval of BHEL/customer after award of contract without any commercial implication.
3. Any other Equipment/material/service required for completeness of system based on system offered by the vendor(to ensure trouble free & efficient operation of the system).
4. Cable Schedules
5. Electrical Equipment & Cable tray layout

TECHNICAL SPECIFICATION

BASIC TECHNICAL FEATURES FOR LT MOTORS (FOR BHEL-PEM SCOPE PACKAGES)

	CUSTOMER: TELANGANA STATE POWER GENERATION CORPORATION LTD TELANGANA, INDIA 5 x 800 MW YADADRI TPS, NALGONDA																				
	OWNER'S CONSULTANT: TATA CONSULTING ENGINEERS LTD BANGLORE INDIA																				
	ENGINEER: BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA																				
<p>COPY RIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED it must not be used directly or indirectly in any way detrimental to the interest of the company.</p>	<table border="1"> <thead> <tr> <th>DEPT</th> <th>NAME</th> <th>SIGN</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRN</td> <td>HC</td> <td>s.d.</td> <td>07.12.17</td> </tr> <tr> <td>DESN</td> <td>HC</td> <td>s.d.</td> <td>07.12.17</td> </tr> <tr> <td>CHD</td> <td>AS</td> <td>s.d.</td> <td>07.12.17</td> </tr> <tr> <td>APPD</td> <td>PD</td> <td>s.d.</td> <td>07.12.17</td> </tr> </tbody> </table>	DEPT	NAME	SIGN	DATE	DRN	HC	s.d.	07.12.17	DESN	HC	s.d.	07.12.17	CHD	AS	s.d.	07.12.17	APPD	PD	s.d.	07.12.17
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TITLE BASIC TECHNICAL FEATURES FOR LT MOTORS																					
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DEPT	SCALE																				
SIGN																					



**5 x 800 MW YADRADRI TPS
BASIC TECHNICAL FEATURES
FOR LT MOTORS
(FOR BHEL-PEM SCOPE PACKAGES)**

Doc. No.	PE-DC-417-565-E003
Rev. No.	02
Dated	16-08-2018
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1.0 This document covers the basic technical features of low tension (LT) squirrel cage induction AC motors employed for driving auxiliaries of BHEL-PEM scope packages in **5 x 800 MW YADRADRI TPS**.

2.0 **CODES AND STANDARDS**

All motors shall conform to the latest applicable standards as listed below;

- 1) Three phase induction motors: IS: 12615, IEC: 60034
- 2) Single phase AC motors: IS: 996, IEC: 60034
- 3) Crane duty motors: IS: 3177, IEC: 60034
- 4) Energy Efficient motors: IS 12615 or IEC: 60034-30 with Efficiency class IE3

3.0 **DESIGN REQUIREMENTS**

3.1 **Service Conditions**

The motors will be installed in hot, humid and tropical atmosphere highly polluted at places with coal dust and/or fly ash. For motor installed outdoor and exposed to direct sunrays, the effect of solar heat shall be considered in the determination of the design ambient temperature.

The design ambient temperature shall be 50 deg C.

3.2 **Supply system and rated voltage of motors**

KW rating	Supply system	Rated voltage of motor
Upto 0.2 kW	240V/415 V	240V/415 V
Above 0.2 kW & up to 175kW	415 V	415 V

3.2.1 **Supply voltage & variations shall be as follows:-**

Voltage variation (AC Supply): (+/-) 10%
Frequency variation : (+) 3% to (-) 5%
Combined V & F variation : 10% (sum of absolute values)

During starting of large motor, the voltage may drop to 80% of the rated voltage for a period of 60 seconds. All electrical equipment while running shall successfully ride over such period without affecting system performance.

3.2.2 **Motors shall be capable of running continuously at rated output for each of the conditions specified.**

3.3 **Motor Rating**

All motors shall be rated for continuous duty. They shall also be suitable for long period of inactivity. LT motor rating at 50 degree C shall have at least 15% margin over the input power requirement of the driven equipment at rated duty point unless stated otherwise in driven equipment specification. The motor characteristics shall match the requirements of the driven equipment so that adequate starting, accelerating, pull up, break down and full load torques are available for the intended service.

3.4 **Starting Requirements**

3.4.1 **Motor shall start smoothly and rapidly. Motor characteristics such as speed, starting torque, break away torque and starting time shall be properly co-ordinated with the requirements of driven equipment. The**



**5 x 800 MW YADRADRI TPS
BASIC TECHNICAL FEATURES
FOR LT MOTORS
(FOR BHEL-PEM SCOPE PACKAGES)**

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accelerating torque at any speed with the minimum starting voltage shall be at least 10% higher than that of the driven equipment.

- 3.4.2 Motors shall be capable of starting and accelerating the load with direct on line starting without exceeding acceptable winding temperature.

The limiting value of voltage at rated frequency under which a motor will successfully start and accelerate to rated speed with load shall be taken to be a constant value of 85 (eighty five) percent rated voltage.

- 3.4.3 Continuous duty LT motors up to 175 KW Output rating (at 50 deg. C ambient temperature), shall be Premium efficiency (IE3) as per IEC: 60034-30/ IS: 12615 and the locked rotor current of motors shall as per IS 12615.
However, as per system requirement drives rated in the range of 160-210 KW may be considered in either 415V or 3.3 KV

- 3.4.4 Pump motor subject to reverse rotation shall be designed to withstand the stresses encountered when starting with shaft rotating at 125% rated speed in reverse direction. The motors shall be designed to withstand 120% of rated speed for 2 minutes without any mechanical damage.

- 3.4.5 The following frequency of starts shall apply

- i) Three cold starts in succession with the motor being initially at a temperature not exceeding the ambient temperature.
- ii) Two hot starts in succession with the motor being initially at a temperature not exceeding the rated load temperature.
- iii) Three equally spread starts in an hour the motor being initially at a temperature not exceeding the rated load operating temperature (not to be repeated in the second successive hour)

- 3.4.6 Locked motor withstand time of hot motors at 110% rated voltage shall be as follows:

- a) For motors with starting time upto 20 sec.
- at least 3 sec. more than starting time.
- b) For motor with starting time above 20 secs but not exceeding 45 secs.
- at least 5.0 sec. more than starting time.
- c) For motors with starting time above 45 secs.
- at least 10%. more than starting time.

The starting time of the motor referred above is at minimum permissible voltage. Wherever the above requirements are not complied with, speed switches of approved make & type shall be provided to bypass the locked rotor protection for a pre-selected time during starting of motors. The speed switches shall have one NO & one NC contacts having maximum interrupting capacity of 5 Amps at 240V AC and 0.25 amps at 220 V DC.

Hot thermal withstand curve shall have a margin of at least 10% over the full load current of the motor to permit relay setting utilising motor rated capacity.



**5 x 800 MW YADRADRI TPS
BASIC TECHNICAL FEATURES
FOR LT MOTORS
(FOR BHEL-PEM SCOPE PACKAGES)**

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3.5 Running Requirements

- 3.5.1 Motor shall run continuously at rated output over the entire range of voltage and frequency variations as given above.
- 3.5.2 The motor shall be capable of operating satisfactorily at full load for 5 minutes without injurious heating with 75% rated voltage at motor terminals.
- 3.5.3 The motor shall be designed to withstand momentary overload of 60% of full load torque for 15 second without any damage.

3.6 Stress during bus Transfer

- 3.6.1 The motor may be subjected to sudden application of 150% rated voltage during bus transfer, due to the phase difference between the incoming voltage and motor residual voltage.
- 3.6.2 The motor shall be designed to withstand any torsional and/or high current stresses, which may result, without experiencing any deterioration in the normal life and performance characteristics.

4.0 SPECIFIC REQUIREMENTS

4.1 Enclosure

All motor enclosures for outdoor, semi-outdoor & indoor application shall conform to the degree of protection IP-55 unless otherwise specified. Motor for outdoor or semi-outdoor service shall be of weather-proof construction with canopy. For hazardous area approved type of increased safety enclosure shall be furnished.

4.2 Cooling

- 4.2.1 The motor shall be self-ventilated type, either totally enclosed fan cooled IC 411(TEFC), totally enclosed tube ventilated IC 511(TETV) or closed air circuit air- cooled IC 611(CACA).

4.3 Winding and Insulation

All insulated winding shall be of copper. All motors shall have class F insulation but limited to class B temperature rise. Windings shall be impregnated to make them non-hygroscopic and oil resistant.

Tropical Protection

All motors shall have fungus protection involving special treatment of insulation and metal against fungus, insects and corrosion.

All fittings and hardware shall be corrosion resistant.

4.4 Bearings

- 4.4.1 Motor shall be provided with antifriction bearings, unless sleeve bearings are required by the motor application. Bearings shall be rated for minimum service life of 40,000Hrs.
- 4.4.2 Vertical shaft motors shall be provided with thrust and guide bearings. Thrust bearing of tilting pad type is preferred.



**5 x 800 MW YADRADRI TPS
BASIC TECHNICAL FEATURES
FOR LT MOTORS
(FOR BHEL-PEM SCOPE PACKAGES)**

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- 4.4.3 Bearings shall be provided with seals to prevent leakage of lubricant or entrance of foreign matters like dirt, water etc. into the bearing area.
- 4.4.4 Sleeve bearings shall be split type, ring oiled, with permanently aligned, close running shaft sleeves.
- 4.4.5 Grease lubricated bearings shall be pre-lubricated and shall have provisions for in-service positive lubrication with drains to guard against over lubrication. LT motors 15kW and above shall be provided with external greasing arrangement.
- 4.4.6 Oiled bearing shall have an integral self-cooled oil reservoir with oil ring inspection ports, oil sight glass with oil level marked for standstill and running conditions and oil fill and drain plugs.
- 4.4.7 Forced lubricated or water cooled bearing shall be used as per requirement.
- 4.4.8 Lubricant shall not deteriorate under all service conditions. The lubricant shall be limited to normally available types with IOC equivalent.
- 4.4.9 Bearings shall be insulated as required to prevent shaft current and resultant bearing damage.

4.5 Noise & Vibration

- 4.5.1 For 415V motors, maximum double amplitude vibrations upto 1500 rpm shall be 40 microns and 15 microns upto 3000 rpm.
- 4.5.2 The noise level shall not exceed 85db (A) at 1.5 meters from the motor.

4.6 Motor Terminal Box

- 4.6.1 Motor terminal box shall be detachable type and located in accordance with Indian Standards clearing the motor base- plate/ foundation
- 4.6.2 Terminal box shall be capable of being turned 360 deg in steps of 90 Deg. for LT motors unless otherwise approved.
- 4.6.3 The terminal box shall be split type with removable cover with access to connections and shall have the same degree of protection as motor.
- 4.6.4 The terminal box shall have sufficient space inside for termination/connection of XLPE insulated armoured aluminium cables.
- 4.6.5 Terminals shall be stud or lead wire type, substantially constructed and thoroughly insulated from the frame.
- 4.6.6 The terminals shall be clearly identified by phase markings, with corresponding direction of rotation marked on the non-driving end of the motor.
- 4.6.7 The terminal box shall be capable of withstanding maximum system fault current for a duration of 0.25 sec.
- 4.6.8 Motor terminal box shall be furnished with suitable cable lugs and double compression brass glands to match with cable used.
- 4.6.9 The gland plate for single core cable shall be non-magnetic type. A suitable cable adopter box shall be provided if the cable size does not allow the direct termination in the main TB.



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4.6.10 Minimum clearances to be provided between phase to phase and phase to earth shall be as under-

Voltage Rating of Motor Minimum Ph-Ph & Ph-Earth clearance
0.415 kV : 25 mm

Note: In case it is not possible to maintain these clearances, the live parts shall be totally insulated from earth and other Phases. Adequate clearances shall be provided for cable connections.

4.7 Grounding

The frame of each motor shall be provided with two separate and distinct grounding pads complete with tapped hole, GI bolts and washer.

The cable terminal box shall have a separate grounding pad.

4.8 Rating Plate

In addition to the minimum information required by IS, the following information shall be shown on motor rating plate:

- Temperature rise in Deg.C under rated condition and method of measurement.
- Degree of protection.
- Bearing identification no. and Type of lubrication, Quantity and frequency/ time interval
- Location of insulated bearings.

5.0 ACCESSORIES

5.1 SPACE HEATERS

Motor of rating 30 kW and above shall be provided with space heaters, suitably located for easy removal or replacement. The space heater shall be rated 240 V, 1 Phase, 50Hz and sized to maintain the motor internal temperature above dew point when the motor is idle. The minimum cable size for space heater shall be 2.5 sq.mm copper cable.

5.2 DELETED

5.3 INDICATOR/ SWITCH

5.3.1 Dial type local indicator with alarm contacts shall be provided for the following:

Hot and cold air temperature of the closed air circuit for CACA motor.

5.3.2 Alarm switch contact rating shall be minimum 2.0 A at 220V D.C. and 10A at 240V A.C.

5.4 ACCESSORY TERMINAL BOX

5.4.1 All accessory equipment such as space heater, temperature detector, current transformers etc., shall be wired to and terminated in terminal boxes, separate from and independent of motor (power) terminal box.

5.4.2 Accessory terminal box shall be complete with double compression brass glands and pressure type terminals to suit owner's cable connections.

DRAIN PLUG



**5 x 800 MW YADRADRI TPS
BASIC TECHNICAL FEATURES
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Motor shall have drain plugs so located that they will drain the water, resulting from the condensation or other causes from all pockets of the motor casing.

5.5 LIFTING PROVISIONS

Motor weighing 25 Kg. or more shall be provided with eyebolt or other adequate provision of lifting.

5.6 DOWEL PINS

The motor shall be designed to permit easy access for drilling holes through motor feet or mounting flange for installation of dowel pins after assembling the motor and driven equipment.

7.0 PAINTING

Colour scheme for motors shall be shade 631 of IS-5.

8.0 TESTING

8.1 Type Tests

For LT Motors, type test reports for type tests as per IS: 12615/ IEC: 60034 conducted on equipment similar to those proposed to be supplied shall be submitted. The type Test should have been conducted within last 5 years from enquiry date.

8.2 Routine Tests

All motors shall be subjected to routine tests as per IS: 12615/ IEC: 60034 in the presence of customer or customer representative.

9.0 Variable Frequency Drive motor details:

- i) The motor shall be suitable for operation with a solid-state power supply consisting of an adjustable frequency inverter for speed control.
- ii) The motor shall be suitable for the current waveforms produced by the power supply including the harmonics generated by the drive.
- iii) The Motor shall be designed to operate continuously at any speed over the range 20-100 % of rated speed.
- iv) The permitted voltage variation should take into account the steady state voltage drop across the AC drive and all other system components upstream of the motor.
- v) Motors required to be transferred to DOL, by-pass mode shall be rated for specified variations in system line voltage and frequency. Starting current of motor in DOL, bypass mode shall be limited to value in motor specifications.
- vi) The motor shall be constructed to withstand torque pulsations resulting from harmonics generated by the solid-state power supply.
- vii) The motor insulation shall be designed to accept the applied voltage waveform, within the V_{peak} and dv/dt limits as per IEC-61800-4.
- viii) The drive manufacturer shall be solely responsible for proper selection of the motor for the given load application and the output characteristics of the drive.

TITLE LV MOTORS <u>DATA SHEET-A</u>	SPECIFICATION NO.	
	VOLUME	II B
	SECTION	I
	REV NO. 00	DATE 15/12/2022
	SHEET	16 OF 31

- | | | | |
|------|--|---|---|
| 1.0 | Design ambient temperature | : | 50 °C |
| 2.0 | Maximum acceptable kW rating of LV motor | : | ≤175KW |
| 3.0 | Installation (Indoors/ Outdoors) | : | As required |
| 4.0 | Degree Of Protection (Indoor/Outdoor) | : | IP55 |
| 5.0 | Type of Cooling | : | TEFC/CACA/TETV |
| 6.0 | Details of supply system | | |
| | a) Rated voltage (with variation) | : | 415V ± 10% |
| | b) Rated frequency (with variation) | : | 50 Hz (Variation: +3% TO -5%) |
| | c) Combined voltage & freq. variation | : | 10% |
| | d) System fault level at rated voltage | : | 50 kA for 1 sec |
| | e) Short time rating for terminal boxes | | |
| | o 110kW & Above
(Breaker controlled) | : | 50 kA for 0.25 sec |
| | o Below 110kW (SFU+
Contactor controlled) | : | 50 KA for 0.25 sec. |
| | f) LV System grounding | : | Solidly |
| 7.0 | Class of insulation | : | Class 'F', with temp rise limited to class B. |
| 8.0 | Minimum voltage for starting
(As percentage of rated voltage) | : | 80% of rated voltage |
| 9.0 | Power cables data | : | Shall be given during Detailed engg. |
| 10.0 | Earth Conductor Size & Material | : | Shall be given during Detailed engg. |
| 11.0 | Space heater supply | : | 240 V, 1Φ , 50 Hz |
| 12.0 | Rating up to which Single phase motor | : | Acceptable below 0.20 kW |
| 13.0 | Tests | : | As per Customer motor spec. (enclosed) |
| 14.0 | Energy efficient/ Flame proof motor | : | As per Customer spec. requirement |

- **Also detail spec. for Motors to be referred as enclosed with spec.**

	TITLE	SPECIFICATION NO.
	MOTOR DATA SHEET - C	VOLUME
		SECTION I
		REV NO. 00 DATE
		SHEET 17 OF 31

S. No.	Description	Data to be filled by successful bidder
A.	General	
1	Manufacturer & country of origin	
2	Motor type	
3	Type of starting	
4	Name of the equipment driven by motor & Quantity	
5	Maximum Power requirement of driven equipment	
6	Rated speed of Driven Equipment	
7	Design ambient temperature	
B.	Design and Performance Data	
1	Frame size & type designation	
2	Type of duty	
3	Rated Voltage	
4	Permissible variation for	
5	a) Voltage	
6	b) Frequency	
7	c) Combined voltage & frequency	
8	Rated output at design ambient temp (by resistance method)	
9	Synchronous speed & Rated slip	
10	Minimum permissible starting voltage	
11	Starting time in sec with mechanism coupled	
12	a) At rated voltage	
13	b) At min starting voltage	
14	Locked rotor current as percentage of FLC (including IS tolerance)	
15	Torque	
	a) Starting	
	b) Maximum	
16	Permissible temp rise at rated output over ambient temp & method	
17	Noise level at 1.0 m (dB)	
18	Amplitude of vibration	
19	Efficiency & P.F. at rated voltage & frequency	
	a) At 100% load	
	c) At 75% load	

NAME OF VENDOR			SEAL	REV.	
NAME	SIGNATURE	DATE			

	TITLE	SPECIFICATION NO.
	MOTOR DATA SHEET - C	VOLUME
		SECTION I
		REV NO.00 DATE
		SHEET 18 OF 31

S. No.	Description	Data to be filled by successful bidder
	c) At starting	
C.	Constructional Features	
1	Method of connection of motor driven equipment	
2	Applicable Standard	
3	DOP of Enclosure	
4	Method of cooling	
5	Class of insulation	
6	Main terminal box	
	a) Type	
	b) Power Cable details (Conductor, size, armour/unarmour)	
	c) Cable Gland & lugs details (Size, type & material)	
	d) Permissible Fault level (kArms & duration in sec)	
7	Space heater details (Voltage & watts)	
8	Flame proof motor details (if applicable)	
	a) Enclosure	
	b) suitability for hazardous area	
	i Zone	O / I / II
	ii Group	IIA / IIB / IIC
9	No. of Stator winding	
10	Winding connection	
11	Kind of rotor winding	
12	Kind of bearings	
13	Direction of rotation when viewed from NDE	
14	Paint Shade & type	
15	Net weight of motor	
16	Outline mounting drawing No (To be enclosed as annexure)	
D.	Characteristic curves/ drawings (To be enclosed for motors of rating \geq 55KW)	
	a) Torque speed characteristic	
	b) Thermal withstand characteristic	
	c) Current vs time	
	d) Speed vs time	

NAME OF VENDOR			SEAL	REV.	
NAME	SIGNATURE	DATE			

Explanatory notes for filling up cable list for routing through WinPath, the cable routing program (developed by Corporate R&D) being used in PEM.

1. For the purpose of clarity, it may please be noted that the information given in regard to the cables to be routed through WinPath as per the system elaborated below is called "Cable List", while the term "Cable Schedule" applies to the cable list with routing information added after routing has been carried out.
2. The cable list shall be entered as an MS Excel file in the format as per enclosed template EXT_CAB_SCH_FORMAT.XLS. No blank lines, special characters, header, footer, lines, etc. shall be introduced in the file. No changes shall be made in the title line (first line) of the template.
3. The field properties shall be as under:
 - a. UNITCABLENO: A/N, up to sixteen (16) characters; each cable shall have its own unique, unduplicated cable number. In case this rule is violated, the cable cannot be taken up for routing.
 - b. FROM: A/N, up to sixty (60) characters; the "From" end equipment/ device description and location to be specified here. Information in excess of 60 characters will be truncated after 60 characters.
 - c. TO: A/N, up to sixty (60) characters; the "To" end equipment/ device description and location to be specified here. Information in excess of 60 characters will be truncated after 60 characters.
 - d. PURPOSE: A/N, up to sixty (60) characters; the purpose (i.e. power cable/ indication/ measurement, etc.) to be specified here. Information in excess of 60 characters will be truncated after 60 characters.
 - e. REMARKS: A/N, up to forty (40) characters; Any information pertinent to routing to be specified here (e.g., cable number of the cable redundant to the cable number being entered). Information in excess of 40 characters will be truncated after 40 characters.
 - f. CABLESIZE: A/N, 7 characters exactly as per the codes indicated below shall be specified here. The program cannot route cables described in any other way/ format.
 - g. PATHCABLENO: Field reserved for utilization by the program. User shall not enter any information here.
4. One list shall be prepared for each system/ equipment (i.e., separate and unique cable lists shall be prepared for each system).
5. The cables shall be described as per the scheme listed below:

A	NN	A	NNN
Cable	No. of cores	Cable code	Cable size
Voltage	(e.g. 01,03,3H, 07)	(See C below)	(e.g. 035,185,2.5, 0.5)
Code (see B below)			

(A) SYSTEM VOLTAGE CODES:

(ac) A = 11KV, B = 6.6KV, C = 3.3KV, D = 415V, E = 240V, F = 110V

(dc) G = 220V, H = 110V, J = 48V, K = +24V, L = -24V

(B) CABLE VOLTAGE CODES:

A = 11KV (Power cables)

Explanatory notes for filling up cable list for routing through WinPath, the cable routing program (developed by Corporate R&D) being used in PEM.

- B = 6.6KV (Power cables)
- C = 3.3KV (Power cables)
- D = 1.1KV (LV & DC system power & control cables)
- E = 0.6KV (0.5 sq. mm. Control cables)

(C) CABLE CODES

PVC Copper

- A = Armoured FRLS
- B = Armoured Non-FRLS
- C = unarmoured FRLS
- D = Unarmoured Non-FRLS

PVC Aluminium

- E = Armoured FRLS
- F = Armoured Non-FRLS
- G = unarmoured FRLS
- H = Unarmoured Non-FRLS

XLPE Copper

- J = Armoured FRLS
- K = Armoured Non-FRLS
- L = unarmoured FRLS
- M = Unarmoured Non-FRLS

XLPE Aluminium


- N = Armoured FRLS
- P = Armoured Non-FRLS
- Q = unarmoured FRLS
- R = Unarmoured Non-FRLS

- S = FIRE SURVIVAL CABLES
- T = TOUGH RUBBER SHEATH
- U = OVERALL SCREENED
- V = PAIRED OVERALL SCREENED
- W = PAIRED INDIVIDUAL SCREENED
- Y = COMPENSATING CABLES
- I = PRE-FABRICATED CABLES
- Z = JELLY FILLED CABLES

6. Once a cable list has been given to PEM for routing, any subsequent changes required in the cable list (which may be in the form of addition of cables, deletion of cables, change of type or size of cable, etc.) must be informed as specific changes (as a separate file MS Excel of the same format as the original file) to the cable list given earlier if the cable list has been routed and cable schedule generated. The routing status of the cable list shall be got confirmed from PEM by the agency that has prepared the cable list before the changes are intimated. In case PEM confirms that the cable list in question has not been taken up for routing, and the revised cable list is acceptable, the same may be sent. Since cable routing through the program involves adding each cable list to the project cable schedule database, the original cable schedule shall not be furnished to PEM with revisions incorporated within.

QUALITY PLAN FOR MOTORS BELOW 55 KW (LV)

SHEET 21 OF 31

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN			SPEC. NO :	DATE:
		CUSTOMER :			QP NO.: PE-QP-999-Q-006, REV-02	DATE: 17.04.2020
		PROJECT:			PO NO.:	DATE:
		ITEM: AC ELECT. MOTORS UPTO 55KW (LV (415V))	SYSTEM:	SECTION: II	SHEET 1 of 2	

S. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
					M	C/ N					
1	2	3	4	5	6		7	8	9	* D	** M C N
1.0	ASSEMBLY	1.WORKMANSHIP	MA	VISUAL	100%	-	MFG. SPEC.	MFG. SPEC.	LOG BOOK		P - -
		2.DIMENSIONS	MA	VISUAL	100%	-	MFG. DRG./ MFG. SPEC.	MFG. DRG./ MFG. SPEC.	LOG BOOK		P - -
		3.CORRECTNESS COMPLETENESS TERMINATIONS/ MARKING/ COLOUR CODE	MA	VISUAL	100%	-	MFG.SPEC./	MFG.SPEC.	LOG BOOK		P - -
2.0	PAINTING	1.SHADE	MA	VISUAL	SAMPLE	-	MFG. SPEC/ APPROVED DATASHEET	MFG. SPEC/ APPROVED DATASHEET	LOG BOOK	✓ P V -	
3.0	TESTS	1.ROUTINE TEST INCLUDING SPECIAL TEST	MA	VISUAL	100%	-	IS-325 / IS-12615/ APPROVED DATA SHEET	IS-325 / IS-12615/ APPROVED DATA SHEET	TEST/ INSPN. REPORT	✓ P V * -	* NOTE -1
		2.OVERALL DIMENSIONS & ORIENTATION	MA	MEASUREMENT & VISUAL	100%	-	APPROVED DRG/ DATA SHEET	APPROVED DRG/ DATA SHEET	TEST/ INSPN. REPORT	✓ P V * -	* NOTE -1 & NOTE-2


BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		HEMA KHUSHWAHA	Checked by:		KUNAL GANDHI
Reviewed by:		PRAVEEN DUTTA	Reviewed by:		RITESH KUMAR JAISWAL

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

QUALITY PLAN FOR MOTORS BELOW 55 KW (LV)

SHEET 22 OF 31

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN				SPEC. NO :			DATE:		
	CUSTOMER :				QP NO.: PE-QP-999-Q-006, REV-02			DATE: 17.04.2020			
	PROJECT:				PO NO.:			DATE:			
	ITEM: AC ELECT. MOTORS UPTO 55KW (LV (415V))		SYSTEM:		SECTION: II			SHEET 2 of 2			

		3.NAMEPLATE DETAILS	MA	VISUAL	100%	-	IS-325 / IS-12615 / APPROVED DATA SHEET	SAME AS COL. 7	TEST/ INSPN. REPORT	✓	P	V	-		
4.0	PACKING	SURFACE FINISH & COMPLETENESS	MA	VISUAL	100%	100%	AS PER MFG. STANDARD / (#)	AS PER MFG. STANDARD / (#).	INSPC. REPORT	✓	P	W	-	(#)	REFER NOTE-8

NOTES:

1. Routine tests on 100% motors shall be done by the vendor. However, BHEL/ Customer shall witness routine tests on random samples. The sampling plan shall be mutually agreed upon.
2. For exhaust/ventilation fan motors of rating up to 1.5 KW, only routine test certificates shall be furnished for scrutiny.
3. In case test certificates for these tests on similar type, size and design of motor from independent laboratory are available, the same is valid for 5 years.
4. BHEL reserves the right to perform repeat test, if required.
5. After packing and prior to issue MDCC, photographs of items to be despatched shall be sent to BHEL for review.
6. In case of any changes in QP commented by customer at contract stage, same shall be carried out by bidder without any implication to BHEL/ Customer.
7. Project specific QP to be developed based on customer requirement.
8. For export job, BHEL technical specification for seaworthy packing to be followed.
9. Packing shall be suitable for storage at site in tropical climate conditions.
10. Latest revision/ year of issue of all the standards (IS/ ASME/ IEC etc.) indicated in QP shall be referred.

LEGENDS:

*RECORDS, IDENTIFIED WITH "TICK"(✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION,
 ** **M**: SUPPLIER/ MANUFACTURER/ SUB-SUPPLIER, **B**: MAIN SUPPLIER/ BHEL/ THIRD PARTY INSPECTION AGENCY, **C**: CUSTOMER,
P: PERFORM, **W**: WITNESS, **V**: VERIFICATION, AS APPROPRIATE
MA: MAJOR, **MI**: MINOR, **CR**: CRITICAL
D: DOCUMENTATION

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Sign & Date	Name		Sign & Date	Name			Sign & Date	Name	Seal	
Prepared by:		HEMA KHUSHWAHA	Checked by:		KUNAL GANDHI	Seal					
Reviewed by:		PRAVEEN DUTTA	Reviewed by:		RITESH KUMAR JAISWAL						



TITLE 5X800 MW TSGENCO YADADRI TPS
TECHNICAL SPECIFICATION FOR
WORKSHOP EQUIPMENT

SPECIFICATION NO. PE – TS - 417 - 568 – A001

SECTION I

SUB SECTION IA

REV 0

SHEET OF

SECTION-III

DOCUMENTS TO BE SUBMITTED ALONG WITH BID

SUB-SECTION IIIA – Documents Furnished along with offer

SUB-SECTION IIIB – Compliance cum confirmation certificate

SUB-SECTION IIIC – Electrical Load Data

SUB-SECTION IIID – Pre Bid Clarification



TITLE: 5X800 MW TSGENCO YADADRI TPS

**TECHNICAL SPECIFICATION FOR
WORKSHOP EQUIPMENT**

SPECIFICATION NO. PE – TS - 417 - 568 – A001

SECTION III

SUB SECTION

REV 0

SHEET OF

DOCUMENTS TO BE FURNISHED WITH OFFER FOR TECHNICAL EVALUATION

- 1) SCHEDULE OF TECHNICAL DEVIATION (IF ANY)
OR

'NO DEVIATION CERTIFICATE' – Clearly mentioning that bidder has considered 'No - Deviation' from the technical specification provided by BHEL.

- 2) SIGNED AND STAMPED COPY OF COMPLIANCE CUM CONFIRMATION CERTIFICATE.
- 3) Compliance to Electrical load list (Not to Exceed), duly signed and stamped
- 4) Un priced copy of price format indicating quoted/ not applicable against each row/column

NOTE:

i) NO OTHER DOCUMENTS OTHER THAN THOSE LISTED ABOVE ARE REQUIRED TO BE SUBMITTED FOR TECHNICAL EVALUATION. IN CASE ANY OTHER DOCUMENT IS FURNISHED, THE SAME WILL NOT BE TAKEN INTO CONSIDERATION FOR TECHNICAL EVALUATION.



**TITLE: 5X800 MW TSGENCO YADADRI TPS
TECHNICAL SPECIFICATION FOR
WORKSHOP EQUIPMENT
COMPLIANCE CUM CONFIRMATION
CERTIFICATE**

SPEC. NO.: PE-TS-417-568-A001
VOLUME: III
SECTION: III
REV. NO. 0
Date:

COMPLIANCE CUM CONFIRMATION CERTIFICATE

The bidder shall confirm compliance with following by signing/ stamping this compliance certificate (every sheet) and furnish same with the offer.

- a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions other than those mentioned under "exclusion" in section C and those resolved as per 'Schedule of Deviations', if applicable, with regard to same.
- b) There are no other deviations w.r.t. specifications other than those furnished in the 'Schedule of Deviations'. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the 'Schedule of Deviations'.
- c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL/ CUSTOMER approval & customer hold points for inspection/ testing shall be marked in the QP at the contract stage. Inspection/ testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc. This shall be within the contracted price with no extra implications to BHEL after award of the contract.
- d) All drawings/ data-sheets/ calculations etc. submitted along with the offer shall be considered for reference only, same shall be subject to BHEL/ CUSTOMER approval in the event of order.
- e) The offered materials shall be either equivalent or superior to those specified in the specification & shall meet the specified/ intended duty requirements. In case the material specified in the specifications is not compatible for intended duty requirements then same shall be resolved by the bidder with BHEL during the pre - bid discussions, otherwise BHEL/ Customer's decision shall be binding on the bidder whenever the deficiency is pointed out.

For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.
- f) The commissioning spares shall be supplied on 'As Required Basis' & prices for same included in the base price itself.
- g) All sub vendors shall be subject to BHEL/ CUSTOMER approval in the event of order.
- h) Guarantee for plant /equipment shall be as per relevant clause of GCC /SCC /Other Commercial Terms & Conditions.
- i) In the event of order, all the material required for completing the job at site shall be supplied by the bidder within the ordered price and within purview of the tender specification even if the same are additional to approved billing break up, approved drawing or approved Bill of quantities.
- j) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL's/ Customer's/ Consultant's office for across the table resolution of issues and to get documents approved in the stipulated time.



**TITLE: 5X800 MW TSGENCO YADADRI TPS
TECHNICAL SPECIFICATION FOR
WORKSHOP EQUIPMENT
COMPLIANCE CUM CONFIRMATION
CERTIFICATE**

SPEC. NO.: PE-TS-417-568-A001

VOLUME: III

SECTION: III

REV. NO. 0

Date:

- k) As built drawings shall be submitted as and when required during the project execution.
- l) The bidder has not tempered with this compliance cum confirmation certificate and if at any stage any tempering in the signed copy of this document is noticed then same shall be treated as breach of contract and suitable actions shall be taken against the bidder.

LOAD TITLE	RATING (KW / A)		UNIT (U)/STN (S)	Nos.		VOLTAGE CODE*	FEEDER CODE**	EMER. LOAD (Y)	CONT.(C)/ INTT.(I)	STARTING TIME >5 SEC (Y)	LOCATION	BOARD NO.	CABLE		BLOCK CABLE DRG. No.	CONT ROL CODE	REMA RKS	LOAD No.	VERIFICATI ON FROM MOTOR DATASHEE T (Y/N)	KKS NO	
	NAME PLATE (Range of Load)	MAX. CONT. DEMAND (MCR)		RUNNING	STANDBY								SIZE CODE	NOs							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Heavy duty lathe	10		S	1		D	S														
Precision lathe	5		S	1		D	S														
Shaper	4		S	1		D	S														
Slotter	3		S	1		D	S														
Universal milling machine	10		S	1		D	S														
Radial drilling machine	5		S	1		D	S														
Hydraulic plate shering machine	10		S	1		D	S														
Power hacksaw	2		S	1		D	S														
Hydraulic press	5		S	1		D	S														
Cylindrical grinder	7.5		S	1		D	S														
Surface grinder	5.5		S	1		D	S														
Balancing machine	10		S	1		D	S														
Tool and cutter grinder	2		S	1		D	S														
Column type drill	3		S	1		D	S														
<p>NOTES: 1. COLUMN 1 TO 12 & 18 SHALL BE FILLED BY THE REQUISITIONER (ORIGINATING AGENCY); REMAINING COLUMNS ARE TO BE FILLED UP BY PEM (ELECTRICAL)/ CUSTOMER 2. ABBREVIATIONS : * VOLTAGE CODE (7):- (ac) A=11 KV, B=6.6 KV, C=3.3 KV, D=415 V, E=240 V (1 PH), F=110 V (cc): G=220 V, H=110 V, J=48 V, K=+24V, L=-24 V :** FEEDER CODE (8):- U=UNIDIRECTIONAL STARTER, B=BI-DIRECTIONAL STARTER, S=SUPPLY FEEDER, D=SUPPLY FEEDER (CONTACTER CONTROLLED)</p>																					
LOAD DATA (ELECTRICAL)	JOB NO.		417		ORIGINATING AGENCY				PEM (ELECTRICAL)												
	PROJECT TITLE		5X800 MW YADADRI TPS				NAME		DATA FILLED UP ON												
	SYSTEM						SIGN.		DATA ENTERED ON												
	DEPTT. / SECTION		MAX Page 44 of 45				SHEET 1 OF 1		REV. 00		DE'S SIGN. & DATE										

