Bid Number/बोली क्रमांक (बिड संख्या):
GEM/2023/B/3350894
Dated/दिनांक : 13-04-2023

Bid Document/ बिड दस्तावेज़

Bid Details/बिड विवरण	
Bid End Date/Time/बिड बंद होने की तारीख/समय	24-04-2023 14:00:00
Bid Opening Date/Time/बिड खुलने की तारीख/समय	24-04-2023 14:30:00
Bid Offer Validity (From End Date)/बिड पेशकश वैधता (बंद होने की तारीख से)	80 (Days)
Ministry/State Name/मंत्रालय/राज्य का नाम	Ministry Of Heavy Industries And Public Enterprises
Department Name/विभाग का नाम	Department Of Heavy Industry
Organisation Name/संगठन का नाम	Bharat Heavy Electricals Limited (bhel)
Office Name/कार्यालय का नाम	10250020-pem, Noida
Total Quantity/कुल मात्रा	20
Item Category/मद केटेगरी	Portable HV Decade Resistance Box. , Portable HV ac Test Set , Automatic Capacitance and Tan-Delta Test Set with oil resistivity test cell , 3-phase Portable Transformer Turns Ratio and Vector Group Meter , Portable Primary and Secondary Current Injection Test Kit with Separate Control and Loading Units , Portable Three Phase Universal Protective Relay Test Set , Cable Fault Locator , Testing Kit for calibrating the Digital Energy Meter , Portable Hand held SF6 Gas Leakage Detector , Portable Hand held Hydrogen Gas Leakage Detector , Portable Circuit Breaker Motion Analyser , Portable, Hand-held Thermal Imaging Camera , DC Leakage Analyser , HV Discharge Rod and Portable Earthing Equipment , Storage type digital oscilloscope , Hot Sticks -Live-Dead Line Tester
BOQ Title/बीओक्यू शीर्षक	Electrical Lab Equipment for Panki Project
Years of Past Experience Required for same/similar service/उन्हीं/समान सेवाओं के लिए अपेक्षित विगत अनुभव के वर्ष	1 Year (s)
MSE Exemption for Years of Experience and Turnover/ अनुभव के वर्षों से एमएसई छूट	No
Startup Exemption for Years of Experience and Turnover/ अनुभव के वर्षों से स्टार्टअप छूट	No

Bid Details/बिड विवरण	
Document required from seller/विक्रेता से मांगे गए दस्तावेज़	Experience Criteria,Past Performance,Certificate (Requested in ATC),Compliance of BoQ specification and supporting document *In case any bidder is seeking exemption from Experience / Turnover Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer
Past Performance/विगत प्रदर्शन	10 %
Bid to RA enabled/बिड से रिवर्स नीलामी सक्रिय किया	No
Type of Bid/बिड का प्रकार	Two Packet Bid
Primary product category	Portable HV Decade Resistance Box.
Time allowed for Technical Clarifications during technical evaluation/तकनीकी मूल्यांकन के दौरान तकनीकी स्पष्टीकरण हेतु अनुमत समय	7 Days
Payment Timelines	Payments shall be made to the Seller within **90** days of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills (This is in supersession of 10 days time as provided in clause 12 of GeM GTC)
Evaluation Method/मूल्यांकन पद्धति	Item wise evaluation/

EMD Detail/ईएमडी विवरण

Required/आवश्यकता	No

ePBG Detail/ईपीबीजी विवरण

Advisory Bank/एडवाइजरी बैंक	State Bank of India
ePBG Percentage(%)/ईपीबीजी प्रतिशत (%)	5.00
Duration of ePBG required (Months)/ईपीबीजी की अपेक्षित अवधि (महीने).	24

(a). EMD & Performance security should be in favour of Beneficiary, wherever it is applicable./ईएमडी और संपादन जमानत राशि, जहां यह लागू होती है, लाभार्थी के पक्ष में होनी चाहिए।

Beneficiary/लाभार्थी :

Branch CAG II New Delhi
10250020-PEM, Noida, Department of Heavy Industry, Bharat Heavy Electricals Limited (BHEL), Ministry of Heavy Industries and Public Enterprises
(A/c No. 39922687394 Ifsc Sbin0017313)

Splitting/विभाजन

Bid splitting not applied/बोली विभाजन लागू नहीं किया गया.

MSE Purchase Preference/एमएसई खरीद वरीयता

MSE Purchase Preference/एमएसई खरीद वरीयता	No

Details of the Competent Authority for MSE

Name of Competent Authority	SANJAY KUAMR DUBEY
Designation of Competent Authority	SDGM
Office / Department / Division of Competent Authority	BHEL
CA Approval Number	vide e office
Competent Authority Approval Date	11-04-2023
Brief Description of the Approval Granted by Competent Authority	Due to non divisible nature of package at item wise level, MSE preference is not feasible.

Competent Authority Approval for not opting Micro and Small Enterprises Preference : View Document

MII Purchase Preference/एमआईआई खरीद वरीयता

MII Purchase Preference/एमआईआई खरीद वरीयता	Yes

1. Experience Criteria: In respect of the filter applied for experience criteria, the Bidder or its OEM {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU / Public Listed Company for number of Financial years as indicated above in the bid document before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied some quantity during each of the Financial year. In case of bunch bids, the category of primary product having highest value should meet this criterion.
2. Preference to Make In India products (For bids < 200 Crore):Preference shall be given to Class 1 local supplier as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. The minimum local content to qualify as a Class 1 local supplier is denoted in the bid document. If the bidder wants to avail the Purchase preference, the bidder must upload a certificate from the OEM regarding the percentage of the local content and the details of locations at which the local value addition is made along with their bid, failing which no purchase preference shall be granted. In case the bid value is more than Rs 10 Crore, the declaration relating to percentage of local content shall be certified by the statutory auditor or cost auditor, if the OEM is a company and by a practicing cost accountant or a chartered accountant for OEMs other than companies as per the Public Procurement (preference to Make-in -India) order 2017 dated 04.06.2020. Only Class-I and Class-II Local suppliers as per MII order dated 4.6.2020 will be eligible to bid. Non - Local suppliers as per MII order dated 04.06.2020 are not eligible to participate. However, eligible micro and small enterprises will be allowed to participate .In case Buyer has selected Purchase preference to Micro and Small Enterprises clause in the bid, the same will get precedence over this clause.
3. Estimated Bid Value indicated above is being declared solely for the purpose of guidance on EMD amount and for determining the Eligibility Criteria related to Turn Over, Past Performance and Project / Past Experience etc. This has no relevance or bearing on the price to be quoted by the bidders and is also not going to have any impact on bid participation. Also this is not going to be used as a criteria in determining reasonableness of quoted prices which would be determined by the buyer based on its own assessment of reasonableness and based on competitive prices received in Bid / RA process.
4. Past Performance: The Bidder or its OEM {themselves or through re-seller(s)} should have supplied same or similar Category Products for 10% of bid quantity, in at least one of the last three Financial years before the bid

opening date to any Central / State Govt Organization / PSU / Public Listed Company. Copies of relevant contracts (proving supply of cumulative order quantity in any one financial year) to be submitted along with bid in support of quantity supplied in the relevant Financial year. In case of bunch bids, the category related to primary product having highest bid value should meet this criterion.

Evaluation Method (Item Wise Evaluation Method)

Contract will be awarded schedulewise and the determination of L1 will be done separately for each schedule. The details of item-consignee combination covered under each schedule are as under:

Evaluation Schedules	**Item/Category**	**Quantity**
Schedule 1	Portable Hv Decade Resistance Box.	1
Schedule 2	Portable Hv Ac Test Set	2
Schedule 3	Automatic Capacitance And Tan-delta Test Set With Oil Resistivity Test Cell	1
Schedule 4	3-phase Portable Transformer Turns Ratio And Vector Group Meter	1
Schedule 5	Portable Primary And Secondary Current Injection Test Kit With Separate Control And Loading Units	1
Schedule 6	Portable Three Phase Universal Protective Relay Test Set	1
Schedule 7	Cable Fault Locator	1
Schedule 8	Testing Kit For Calibrating The Digital Energy Meter	1
Schedule 9	Portable Hand Held Sf6 Gas Leakage Detector	2
Schedule 10	Portable Hand Held Hydrogen Gas Leakage Detector	1
Schedule 11	Portable Circuit Breaker Motion Analyser	1
Schedule 12	Portable, Hand-held Thermal Imaging Camera	1
Schedule 13	Dc Leakage Analyser	1
Schedule 14	Hv Discharge Rod And Portable Earthing Equipment	2
Schedule 15	Storage Type Digital Oscilloscope	1
Schedule 16	Hot Sticks -live-dead Line Tester	2

Portable HV Decade Resistance Box.

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Brand Type/ब्रांड का प्रकार	Unbranded

Technical Specifications/तकनीकी विशिष्टियाँ

Specification Document	View File
BOQ Detail Document	View File

Advisory-Please refer attached BOQ document for detailed consignee list and delivery period.

Consignees/Reporting Officer/परेषिती/रिपोर्टिंग अधिकारी and/ तथा Quantity/मात्रा

S.No./क्र. सं.	Consignee Reporting/Officer/ परेषिती/रिपोर्टिंग अधिकारी	Address/पता	Quantity/मात्रा	Delivery Days/डिलीवरी के दिन
1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

Portable HV Ac Test Set

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	2	999

Automatic Capacitance And Tan-Delta Test Set With Oil Resistivity Test Cell

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Brand Type/ब्रांड का प्रकार	Unbranded

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

3-phase Portable Transformer Turns Ratio And Vector Group Meter

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Brand Type/ब्रांड का प्रकार	Unbranded

Technical Specifications/तकनीकी विशिष्टियाँ

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

Portable Primary And Secondary Current Injection Test Kit With Separate Control And Loading Units

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

Portable Three Phase Universal Protective Relay Test Set

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

Cable Fault Locator

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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Testing Kit For Calibrating The Digital Energy Meter

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

Portable Hand Held SF6 Gas Leakage Detector

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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Portable Hand Held Hydrogen Gas Leakage Detector

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Brand Type/ब्रांड का प्रकार	Unbranded

Technical Specifications/तकनीकी विशिष्टियाँ

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Consignees/Reporting Officer/परेषिती/रिपोर्टिंग अधिकारी and/ तथा Quantity/मात्रा

S.No./क्र. सं.	Consignee Reporting/Officer/ परेषिती/रिपोर्टिंग अधिकारी	Address/पता	Quantity/मात्रा	Delivery Days/डिलीवरी के दिन
1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

Portable Circuit Breaker Motion Analyser

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Brand Type/ब्रांड का प्रकार	Unbranded

Technical Specifications/तकनीकी विशिष्टियाँ

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Consignees/Reporting Officer/परेषिती/रिपोर्टिंग अधिकारी and/ तथा Quantity/मात्रा

S.No./क्र. सं.	Consignee Reporting/Officer/ परेषिती/रिपोर्टिंग अधिकारी	Address/पता	Quantity/मात्रा	Delivery Days/डिलीवरी के दिन
1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

Portable, Hand-held Thermal Imaging Camera

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Brand Type/ब्रांड का प्रकार	Unbranded

Technical Specifications/तकनीकी विशिष्टियाँ

Specification Document	View File
BOQ Detail Document	View File

Advisory-Please refer attached BOQ document for detailed consignee list and delivery period.

Consignees/Reporting Officer/परेषिती/रिपोर्टिंग अधिकारी and/ तथा Quantity/मात्रा

S.No./क्र. सं.	Consignee Reporting/Officer/ परेषिती/रिपोर्टिंग अधिकारी	Address/पता	Quantity/मात्रा	Delivery Days/डिलीवरी के दिन
1	Dinesh Kumar Vaishy	208020,Construction Manager, Bharat Heavy Electricals Limited c/o Chief Engineer (Projects), UPRVUNL PANKI TPS EXTENSION Panki , Dist. Kanpur (U.P) Pin-208020 (Uttar Prades)h	1	999

DC Leakage Analyser

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

Brand Type/ब्रांड का प्रकार	Unbranded

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HV Discharge Rod And Portable Earthing Equipment

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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Storage Type Digital Oscilloscope

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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Hot Sticks -Live-Dead Line Tester

(Minimum 50% and 20% Local Content required for qualifying as Class 1 and Class 2 Local Supplier respectively/क्रमशः श्रेणी 1 और श्रेणी 2 के स्थानीय आपूर्तिकर्ता के रूप में अर्हता प्राप्त करने के लिए आवश्यक)

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Buyer Added Bid Specific Terms and Conditions/क्रेता द्वारा जोड़ी गई बिड की विशेष शर्तें

1. **Generic**

   OPTION CLAUSE: The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent of bid quantity at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity by up to 25% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.

2. **Inspection**

   Nominated Inspection Agency: On behalf of the Buyer organization, any one of the following Inspection Agency would be conducting inspection of stores before acceptance:
   Pre-dispatch Inspection at Seller Premises (applicable only if pre-dispatch inspection clause has been selected in ATC):

   At Vendors works

   Post Receipt Inspection at consignee site before acceptance of stores:
   Na

3. **Certificates**

   Bidder's offer is liable to be rejected if they don't upload any of the certificates / documents sought in the Bid document, ATC and Corrigendum if any.

4. **Certificates**

   The bidder is required to upload, along with the bid, all relevant certificates such as BIS licence, type test certificate, approval certificates and other certificates as prescribed in the Product Specification given in the bid document.

5. **Generic**

   Bidders are advised to check applicable GST on their own before quoting. Buyer will not take any responsibility in this regards. GST reimbursement will be as per actuals or as per applicable rates (whichever is lower), subject to the maximum of quoted GST %.

6. **Generic**

   Data Sheet of the product(s) offered in the bid, are to be uploaded along with the bid documents. Buyers can match and verify the Data Sheet with the product specifications offered. In case of any unexplained mismatch of technical parameters, the bid is liable for rejection.

7. **Generic**

While generating invoice in GeM portal, the seller must upload scanned copy of GST invoice and the screenshot of GST portal confirming payment of GST.

8. **Buyer Added Bid Specific ATC**

   Buyer uploaded ATC document Click here to view the file.

Disclaimer/अस्वीकरण

The additional terms and conditions have been incorporated by the Buyer after approval of the Competent Authority in Buyer Organization, whereby Buyer organization is solely responsible for the impact of these clauses on the bidding process, its outcome, and consequences thereof including any eccentricity / restriction arising in the bidding process due to these ATCs and due to modification of technical specifications and / or terms and conditions governing the bid. Any clause(s) incorporated by the Buyer regarding following shall be treated as null and void and would not be considered as part of bid:-

1. Definition of Class I and Class II suppliers in the bid not in line with the extant Order / Office Memorandum issued by DPIIT in this regard.
2. Seeking EMD submission from bidder(s), including via Additional Terms & Conditions, in contravention to exemption provided to such sellers under GeM GTC.
3. Publishing Custom / BOQ bids for items for which regular GeM categories are available without any Category item bunched with it.
4. Creating BoQ bid for single item.
5. Mentioning specific Brand or Make or Model or Manufacturer or Dealer name.
6. Mandating submission of documents in physical form as a pre-requisite to qualify bidders.
7. Floating / creation of work contracts as Custom Bids in Services.
8. Seeking sample with bid or approval of samples during bid evaluation process.
9. Mandating foreign / international certifications even in case of existence of Indian Standards without specifying equivalent Indian Certification / standards.
10. Seeking experience from specific organization / department / institute only or from foreign / export experience.
11. Creating bid for items from irrelevant categories.
12. Incorporating any clause against the MSME policy and Preference to Make in India Policy.
13. Reference of conditions published on any external site or reference to external documents/clauses.
14. Asking for any Tender fee / Bid Participation fee / Auction fee in case of Bids / Forward Auction, as the case may be.

Further, if any seller has any objection/grievance against these additional clauses or otherwise on any aspect of this bid, they can raise their representation against the same by using the Representation window provided in the bid details field in Seller dashboard after logging in as a seller within 4 days of bid publication on GeM. Buyer is duty bound to reply to all such representations and would not be allowed to open bids if he fails to reply to such representations.

This Bid is also governed by the General Terms and Conditions/ यह बिड सामान्य शर्तों के अंतर्गत भी शासित है

In terms of GeM GTC clause 26 regarding Restrictions on procurement from a bidder of a country which shares a land border with India, any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. While participating in bid, Bidder has to undertake compliance of this and any false declaration and non-compliance of this would be a ground for immediate termination of the contract and further legal action in accordance with the laws./जेम की सामान्य शर्तों के खंड 26 के संदर्भ में भारत के साथ भूमि सीमा साझा करने वाले देश के बिडर से खरीद पर प्रतिबंध के संबंध में भारत के साथ भूमि सीमा साझा करने वाले देश का कोई भी बिडर इस निविदा में बिड देने के लिए तभी पात्र होगा जब वह बिड देने वाला सक्षम प्राधिकारी के पास पंजीकृत हो।बिड में भाग लेते समय बिडर को इसका अनुपालन करना होगा और कोई भी गलत घोषणा किए जाने व इसका अनुपालन न करने पर अनुबंध को तत्काल समाप्त करने और कानून के अनुसार आगे की कानूनी कार्रवाई का आधार होगा।

---Thank You/धन्यवाद---

Index of Annexures

GeM Tender Enquiry for Electrical Lab Equipment (Calibration and Diagnostics) for 1x 660 MW Panki Project

Sl. No.	Description	Annexures
1.	Additional terms and conditions (ATC)	Annexure I
2.	BOQ	Annexure II
3.	Delivery Schedule	Annexure III
4.	Land border certificate	Annexure IV
5.	Certificate for local Content	Annexure V
6.	Technical PQR	-
7.	Technical Specification	-
8.	Integrity Pact (IP)	-

ANNEXURE –I (Electrical Lab Equipment (Calibration and Diagnostics)

Additional Terms and Conditions (ATC)

Additional Terms and Conditions for subject Tender Enquiry to be complied by Bidders for Consideration in this tender:

1. **Dispatch Markings: -**

   Each box shall be marked with Capital Letters in "Red" indicating the PEM supply (Main Supply/ Commissioning spare/ Mandatory Spare) for 1x 660 MW Panki Thermal Power Station Project. Each package delivered under the Contract shall be marked by Supplier and such marking must be distinct and in English Language (all previous irrelevant markings being carefully obliterated). Such marking shall show the description and quantity of contents, the name and address of consignee, the Gross weight and Net weight of the package, the name of the Supplier, PEM P.O. reference number, with a distinctive number of mark sufficient for purposes of identification. Besides above necessary, packing shall bear a special marking `TOP', `BOTTOM', 'DO NOT TURN OVER", "KEEP DRY", "HANDLE WITH CARE", etc.

   IMPORTANT

   - Two copies of respective standard manufacturer's erection instruction/operation instruction manual shall be kept in each package / container for immediate reference by BHEL site and same shall be reflected in packing slip also
   - The Packing list details for the consignment must be put inside the Box/Boxes.

2. **Liquidated Damages: -**

   a) **Main Supply:-** Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent excluding GST, of the total main supply & commissioning spares contract price excluding GST per week or part thereof, subject to a maximum of ten (10) percent of the total main supply & commissioning Spares contract price excluding GST, if the Seller/ Contractor fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

   b) For Demonstration charges: LD shall be applicable @ ½ percent excluding GST, of the total **demonstration charges** portion contract value excluding GST per week or part thereof, limiting to 10% of total contract value of **demonstration charges** excluding GST.

   NOTE:

   i. LR/RR date for indigenous supplies (Bill of Lading/AWB for Foreign supplies) shall be treated as the date of dispatch for levying LD. However, if receipted LR date for indigenous supply is beyond 30 days for FTL/ 45 days for PTL from the date of LR (PTL to be clearly mentioned in LR), such excess period shall be considered for LD purpose irrespective of dispatch date. Import General Manifest (IGM)/Bill of entry date (whichever is earlier), for foreign supplies, is beyond 90 days from the date of Bill of Lading/AWB, such excess period shall be considered for LD purpose irrespective of dispatch date.

   ii. In case of any amendment/ revision, LD shall be linked to the amended/ revised contract value and delivery date(s).

   iii. If Order/ Contract involves two or more Units/ Sets/ Lots/ Stages, then Liquidated Damages shall be levied on order/ contract value excluding GST of the delayed Unit/ Set/ Lot/ Stage, provided delivery stipulated in the Order/ Contract is Unit/ Set/ Lot/Stage wise, however total LD amount shall be limited

to 10% of total order/ amended order value excluding GST of delayed Unit/ Set/ Lot/Stage. Any subsequent lot released (not envisaged in original contract) due to increase in quantity within permissible quantity variation shall be treated as separate lot for the purpose of LD.

iv. The sum specified above is not a penalty but a genuine pre-estimate of the loss/ damage which will be suffered by purchaser on account of delay on the part of the Contractor/Seller and the said amount will be deductible without proof of actual loss or damage caused by such delay.

3. Risk & Cost Purchase

BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor after due notice of a period of 14 days' by BHEL in any of the following cases:

i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-à-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;

ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;

iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;

iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;

v) Termination of Contract on account of any other reason (s) attributable to Seller.

vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;

viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;

ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;

x) Non-compliance to any contractual condition or any other default attributable to Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

3.1 **Risk & Cost Amount against Balance Work:**

Risk & Cost amount against balance work shall be calculated as follows:

Risk & Cost Amount= [(A-B) + (A x H/100)]

Where,

A= Value of Balance scope of Work (*) as per rates of new contract

B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

3.2 *** Balance scope of work (in case of termination of contract):**

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract

quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

3.3 **LD against delay in executed work in case of Termination of Contract:**

LD against delay in executed work shall be calculated in line with above LD clause, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

ANNEXURE –I (Electrical Lab Equipment (Calibration and Diagnostics)

Additional Terms and Conditions (ATC)

Method for calculation of LD against delay in executed work in case of termination of contract" is given below.

i. Let the time period from scheduled date of start of work till termination of contract excluding the period of

Hold (if any) not attributable to contractor = T1

ii. Let the value of executed work till the time of termination of contract = X

iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were

planned for execution till termination of contract = Y

iv. Delay in executed work attributable to contractor i.e. T2 = [1-(X/Y)] x T1

v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to

contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

3.4 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk & cost has been invoked shall be made from the following:

a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.

b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.

c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

4. For recognition of dispatch, vendor to submit following documents to BHEL by e-mail/ fax immediately on dispatch: - GST compliant invoice, LR (indicating Invoice No., no. of boxes, PTL (if applicable) etc.), Packing List (Must be indicating No. of boxes, Packing size, Gross weight and net weight of each package, Contents of the package with cross reference to BoM item code no. or item serial no. and Quantity of each item separately), Insurance Intimation to underwriter through email/fax, Dispatch Clearance.

B. Following ATC available in GEM shall also be made part of NIT: -

i. Bidder's offer is liable to be rejected if they don't upload any of the certificates / documents sought in the Bid document, ATC and Corrigendum if any.

ii. Bidders are advised to check applicable GST on their own before quoting. Buyer will not take any responsibility in this regards. GST reimbursement will be as per actuals or as per applicable rates (whichever is lower), subject to the maximum of quoted GST %.

iii. Data Sheet of the product(s) offered in the bid, are to be uploaded along with the bid documents. Buyers can match and verify the Data Sheet with the product specifications offered. In case of any unexplained mismatch of technical parameters, the bid is liable for rejection.

ANNEXURE –I (Electrical Lab Equipment (Calibration and Diagnostics)

Additional Terms and Conditions (ATC)

iv. The bidder is required to upload, along with the bid, all relevant certificates such as BIS license, type test certificate, approval certificates and other certificates as prescribed in the Product Specification given in the bid document.

v. While generating invoice in GeM portal, the seller must upload scanned copy of GST invoice and the screenshot of GST portal confirming payment of GST.

ANNEXURE –I (Electrical Lab Equipment (Calibration and Diagnostics)

Additional Terms and Conditions (ATC)

Additional Terms and Conditions for subject Tender Enquiry to be complied by bidders for consideration in this tender:

A. Bidders to ensure that Third party/Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and E-mail Id. In case the same is found not available, BHEL has the right to reject such document from evaluation.

B. "This item /package/system falls under the list of items defined in para 3 of ministry of finance guideline date 20.09.16 (procurement of items related to public safety, health, critical security operations and Equipment's etc.) & hence criteria of prior experience /turnover shall be same for all bidders including start up /MSME".

C. **Guarantee & Warrantee** shall be as per Cl. No. 10 of GTC on GeM for the bid. However, Guarantee & Warrantee time period shall be 18 months from the date of last supply in the contract.

D. Evaluation shall be on item wise basis (only bid), landed price at consignee destination (Refer Cl. No. 6 of GTC on GEM). Bidders to quote suitably.

E. **Terms of Delivery**: FOR Dispatch Station Basis. However, Transit insurance shall be in the scope of seller and unloading of items (at delivery point) shall be in buyer scope. Further, w.r.t. Transit Insurance supplier has to inform the details of dispatches (such as Policy No., Consignee Name, Consignment Packing details, Project Name, Purchase Order No., LR No. & date, Invoice No. & date, Dispatch Origin & destination details etc.) to policy underwriter under intimation to BHEL.

F. PQR criteria uploaded with Buyer uploaded Bid Specific document shall prevail value of Experience criteria and Past performance parameter mentioned in GeM bid.

G. "Due to COVID-19 pandemic condition prevailing in the country BHEL/PEM may go for Remote Inspection of Offered items if required. Vendors are requested to be equipped with the facilities/gadgets as indicated in the guidelines available at : https://pem.bhel.com/Documents/VendorSection/Vendor/Guidelines.pdf to take up the inspection remotely.

H. **Inspection call to be raised by bidder on BHEL CQIR portal** (details shall be shared at the of execution of order) and Inspection agency shall attend at the inspection within seven (07) days of the date on which the material is notified as being ready. In case of delay in witnessing of inspection beyond stipulated time (i.e. 7 days from the date on which the material is notified as being ready), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in carrying out inspection. If BHEL is not able to witness inspection up to 15 days then in addition to delay beyond stipulated period, extension in delivery time of 07 days for arranging fresh inspection will be given.

When the tests have been satisfactorily completed at Seller/ Contractor'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 Purchaser.

Purchaser will issue MDCC to the Seller/ Contractor 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 successful inspection report), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in issuing

MDCC. If BHEL is not able to issue MDCC up to 15 days then in addition to delay beyond stipulated period, 7 days' additional time shall be given to vendor to facilitate the vendor for arranging logistics arrangements.

I. All Bidders shall be required to submit applicable Freight % & GST % included in their prices during clarification stage of Tender.

J. Performance Bank Guarantee: shall be as per Cl. No. 7 of GTC of GeM. Performance Security amount shall be @5% of the value of contract value.

K. **Payment Terms:** For Main Supply- As per clause no. 12 (i) of GTC on GeM. Payments shall be made to the Seller within 90 days (45 days for seller qualified and registered as Micro or small and 60 days for Medium enterprises as per MSMED Act.) of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills (This is in supersession of 10 days' time as provided in clause 12 of GeM GTC). Supplier has to provide original+1 copy of Tax invoice, Packing List, LR/RR or AWB, CRAC, Insurance intimation, Guarantee Certificate, E-way bill (as applicable) for payment. However, 5% payment of main supply shall be released after successful completion of demonstration at site. In case, demonstration at site is not conducted upto 36 months from the supply completion for reason not attributable to the vendor, then last 5% payment shall be released on submission of all final documents (12 no.s of hard copies and 04 no.s of CD) (O &M Manual, final drgs. and Inspection documents) for the package duly certified by Engineering department of the purchaser. However, PBG for contract shall be released only after completion of contractual obligation. Offline payment mode shall be selected.

For Demonstration charges: - 100% payment along with taxes shall be released after successful completion of the activity on pro rata basis on site certification/certification by Engineering as applicable.

L. **Bid reserved for Make in India products: -** For subject tender, only Class I and class II local suppliers are eligible to bid as per para no. 5 of PPP-MII circular no P-45021/2/2017-PP (BE-II) Dtd-16-09-2020. In case of subsequent orders issued by 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".

Purchase Preference -As per of Public Procurement (Preference to Make in India), (PPP-MII) Order 2017 dt. 16/09/2020 issued by DPIIT.

The local supplier at the time of tender, bidding, solicitation, shall be required to provide self-certification that as per the offered item, they meet the requirements of Class I/Class II local supplier as per the provisions of PPP-MII Order of Govt. of India and relevant circulars issued by nodal ministry w.r.t. above mentioned orders and shall give details of location(s) at which the local value addition is made in annexure V.

Subject package is not divisible at item level (i.e. each item can't be divided between two vendors, however different items can be ordered on different vendors and total qty. of a particular item can go to single vendor only) in nature. Margin of Purchase preference is 20%.

M. **This is conditional tender enquiry. Financial bid opening (Part-II) of a bidder shall be subjected to following: -**

(i) Techno-Commercial evaluation/recommendation by BHEL (BHEL approved make/model)

ANNEXURE –I (Electrical Lab Equipment (Calibration and Diagnostics)

Additional Terms and Conditions (ATC)

(ii) Qualification of Technical PQR

(iii) Offered item should mandatorily conform to PP-MII order provisions.

N. **Consignee Details** (for PRC - Provisional Receipt Certificate & CRAC - Consignee's Receipt cum Acceptance Certificate, as applicable) shall be as per Project Site official details.

O. The Bidder has to declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/guidelines.

P. **Bidders to ensure the following: -**

• 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-IV** of Ministry of Finance (MoF) Order (Public Procurement No. 1 & 2) F. No. 6/18/2019/PPD dt. 23/07/2020, 08/02/21, 06/09/22 & 23.02.23. 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.)

Q. **Delivery Period**: As per attached Annexure-III. Delivery period for sake of GeM bid shall be chosen as 999 days from PO date. However, this period shall not be considered for delivery and delay analysis purpose.

R. For registration in BHEL PEM- Online registration portal is operational, Non-registered Vendors who wish to apply for registration in BHEL-PEM can apply through Online 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 on the website and submit the application for registration. However, registration of suppliers is not mandatory in case of open tender.

S. Quantity Variation shall be limited to 0%.

T. CIF is not applicable for subject tender.

U. PVC shall not be applicable for subject package

V. Integrity pact applicable as per below details: -

Integrity Pact (IP)

(a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	iem1@bhel.in
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
3.	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

ANNEXURE –I (Electrical Lab Equipment (Calibration and Diagnostics)

Additional Terms and Conditions (ATC)

(b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders 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.

(c) 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 any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

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's officials whose contact details are provided below:-

Details of contact person(s):

(1)	(2)
Name: Shri Prakash Yadav/MGR	Name: Manish Kumar Sinha/Sr. Mgr
Deptt: PG II-2	Deptt: PG II-2
Address: PS-PEM, BHEL	Address: PS-PEM, BHEL
Sector16 A, Noida 201301	Sector16 A, Noida 201301
Phone: 0120-4213635/8800377855	Phone: 0120-4368695/9873414263
Email: spyadav@bhel.in	Email: manish.sinha@bhel.in

W. MSE Preference: - Subject package is not divisible at item level (i.e. each item can't be divided between two vendors, however different items can be ordered on different vendors and total qty. of a particular item can go to single vendor only) in nature. As such, MSE preference shall not be applicable.

X. Bidder to note the following: -

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

- they have controlling partner (s) in common;' or
- they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
- they have the same legal representative/agent for purposes of this bid; or
- 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 Bidder; or
- Bidder participates in more than one bid in this bidding process. Participation by a Bidder 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
- 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 authorize only one agent/dealer. There can be only one bid from the following:

  1. The principal manufacturer directly or through one Indian agent on his behalf; and
  2. Indian/foreign agent on behalf of only one principal,'

  or

ANNEXURE –I (Electrical Lab Equipment (Calibration and Diagnostics)

Additional Terms and Conditions (ATC)

- A Bidder 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
- 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. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business. "

Y. Demonstration & Handing over charges shall be as per ANNEXURE-I TO SECTION-II of technical Specification No. PE-TS-426-556-E002 Rev-00. These are fixed charges and the same will not be part of evaluation. Separate PO's as applicable (vendor/item wise) for Demonstration & Handing over charges shall be placed separately outside GeM.

Z. All other terms & conditions shall be as per GeM bid, selected Additional Terms & Conditions from GeM library and GTC on GeM 4.0 (version 1.19) available on GeM Portal on enquiry floating date shall be applicable.

PROJECT:- 1X 660 MW PANKI TPS
PACKAGE- ELECTRICAL LABORATORY EQUIPMENTS
(CALLIBRATION & DIAGNOSTIC EQUIPMENTS)
ANNEXURE - II TO BOQ

SL. NO.	ITEM DESCRIPTION	QUANTITY	UNITS	MAKE	MODEL NO.
1	Portable HV Decade Resistance Box.	1	Nos.		
2	Portable HV ac Test Set	2	Nos.		
3	Automatic Capacitance and Tan-Delta Test Set with oil resistivity test cell.	1	Nos.		
4	3-phase Portable Transformer Turns Ratio & Vector Group Meter	1	Nos.		
5	Portable Primary & Secondary Current Injection Test Kit with Separate Control &	1	Nos.		
6	Portable Three Phase Universal Protective Relay Test Set	1	Nos.		
7	Cable Fault Locator	1	Nos.		
8	Testing Kit for calibrating the Digital Energy Meter	1	Nos.		
9	Portable Hand held SF6 Gas Leakage Detector	2	Nos.		
10	Portable Hand held Hydrogen Gas Leakage Detector	1	Nos.		
11	Portable Circuit Breaker Motion Analyser	1	Nos.		
12	Portable, Hand-held Thermal Imaging Camera	1	Nos.		
13	DC Leakage Analyser	1	Nos.		
14	HV Discharge Rod & Portable Earthing Equipment	2	Nos.		
15	Storage type digital oscilloscope	1	Nos.		
16	Hot Sticks (Live/Dead Line Tester)	2	Nos.		

NOTE :-

1) FOR TECHNICAL DETAILS OF THE AFORESAID ITEMS, PLEASE REFER THE ATTACHED TECHNICAL SPECIFICATION.

2) EQUIPMENT TO BE SUPPLIED ALONG WITH ESSSNTIAL ACCESSORIES FOR SUCCESSFUL OPERATION OF EQUIPMENT AT SITE .i.e. CLAMPS, CLIPS,LEADS ,CARRYING CASE etc.

3) ALL EQUIPMENTS SHALL BE SUPPLIED WITH VALID CALIBRATION CERTIFICATE, WHEREVER APPLICABLE.

4) ALL EQUIPMENT SHALL BE PROPERLY PACKED IN GALVANIZED SHEET STEEL TRUNK/ BOX WITH PROPER LOCK & KEY ARRANGEMENT EXCEPT FOR EQUIPMENT WHICH ARE TROLLEY MOUNTED OR ARE ALREADY AVAILABLE IN RUGGED STEEL/WOODEN BOX PACKING. FURTHER, ANY DAMAGE (READING ERROR/CALIBRATION ERROR/BROKEN PARTS/MISSING PARTS ETC) FOUND ON RECEIPT AT SITE, LEADING TO REPLACEMENT OF PARTS/WHOLE ITEM, SHALL BE TO BIDDER'S ACCOUNT.

5) Demonstration and handing over charges shall be as per Annexure - I of Section-II of technical specification. Separate PO's (vendor/item wise) as applicable shall be placed outside GeM . These charges are fixed and not part of evaluation.

Project:- 1x 660 MW Panki TPS
Pacakge:- Electrical Lab Equipment (Calibration and Diagnostics)
Annexure III to NIT- Delivery Schedule

Sl. No.	Package name	DEPTT	BHEL Drawing No	Drawing Title	Primary/Secondary	BHEL Inputs	Drg Sch for Vendors	Standard Delivery Terms for Supply Portion	Scope of Services-(Demonstration at site)
1	**ELECTRICAL LAB (CALIBRATION & DIAGNOSTICS)**	**ELECT**	PE-V0-426-556-A001	Data sheet/GA of equipment with detailed BOM	**Primary**		R-0 within 21 days from PO & subsequent revisions within 10 days of comments received from BHEL.	Within Four (04) months from date of CAT-1 approval of Primary drawing/documents or BHEL manufacturing clearance whichever is later. In case date of CAT-1 approval of Primary drawing/documents is later than the date of BHEL manufacturing clearance then for delay analysis, any delay in submission/re-submission of Primary drawing/documents shall be reduced from the given delivery period of 04 months. In case BHEL manufacturing clearance date is later than the date of Cat-1 approval of Primary drawing/documents, then the contractual delivery period will be calculated by setting off the time gap between Cat-1 approval date of Primary drawing/documents and the manufacturing clearance date, from any delay by vendor in submission/re-submission of Primary drawing/documents.	Demonstration at site: Vendor to depute its service engineer for respective site activity within 15 days from BHEL's intimation (for deputing service engineer) for such site activity. For delay in deputing service engineer, LD on site activities portion shall be applicable @ ½% of the total site activities portion contract value (excluding element of taxes) per week or part thereof, with applicable GST. However, total LD (supply + site activities) shall be limited to 10% of cumulative total contract value excluding taxes and freight (supply + site activities).
2			PE-V0-426-556-A002	CATALOGUE of equipment	**Primary**				
3			PE-V0-426-556-A004	O & M Manual (IF APPLICABLE)	**Secondary**		within 30 days of issuance of MDCC		
4			PE-V0-426-556-A003	CALIBRATION/TC	**Secondary**		Submission for issuance of MDCC		

Notes:-

(i) The end period specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.

(ii) The delivery conditions specified are for contractual LD purposes, however BHEL may ask for early deliveries without any compensation thereof.

(iii) Non-applicable drawings shall be decided during bid evaluation of the package.

(iv) Wherever schedule of drawings/documents submission / re-submission is stipulated in the Technical Specifications, same shall be superseded by delivery specified in NIT.

(v) Vendor to start manufacturing activities only after obtaining specific manufacturing clearance from BHEL Purchase group.

Annexure IV

An undertaking regarding Model Clauses on company letter head only

(To be provided along with bid)

Reference: NIT No.-

Package: - Electrical Lab Equipment (Calibration and Diagnostics)

Project: 1x 660 MW PANKI TPS

TO WHOM SO IT MAY CONCERN

This is with reference to Ministry of Finance circular dated 23.07.20, 08.02.21, 06.09.22 & 23.02.23 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 …….. …… (bidder name) is not from such a country and is eligible to be considered/participate in tender enquiry for against aforesaid tender enquiry.

Sign & Signature (Not below Director/owner of the company)

Date:

Place:

ANNEXURE V
1x 660 MW PANKI TPS
Electrical Lab Equipment (Calibration and Diagnostics)

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-……

Name of Package: Electrical Lab Equipment (Calibration and Diagnostics)

Dear Sir,

We hereby certify that items offered by us of Electrical Lab Equipment (Calibration and Diagnostics) for 1x 660 MW Panki Project ……..(minimum % of local content) meets the requirement of minimum local content in line with applicable clause of Make In India 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 and subsequent order dated 16.11.21.

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

1396122/2023/PS-PEM-EL

BHEL	1 X 660MW PANKI TPS PRE-QUALIFICATION REQUIRMENTS FOR ELECTRICAL LAB (DIAGNOSTICS & CALIBRATING) EQUIPMENT	DOC. NO. PE-PQ-426-556-E002 REVISION NO. 0 DATE 26.08.2022 SHEET NO. 1 OF 1

ITEMS : Electrical Lab Equipment For Diagnostics and Calibrating **SCOPE:** Supply : YES: Erection & Commissioning : NO;	
1	Vendor can be either OEM (Original Equipment Manufacturer) or Supplier of Electrical Lab (Diagnostics and Calibrating) equipment.
2	Vendor should have supplied Electrical Lab (Diagnostics and Calibrating) equipment to process plant/ refinery/ power plant/ nuclear plant / testing Lab.
3	Vendor should be in business of supplying electrical lab (Diagnostics and Calibrating) equipment for at least last two (2) years from the date of techno commercial bid opening.
4	Minimum two nos. purchase orders for electrical lab (Diagnostics and Calibrating) equipment shall be submitted which should not be more than 5 years old from the date of techno-commercial bid opening for establishing continuity in business.
5	Vendor should have in-house capability to carry out testing of equipment. In case testing facility is not available with the vendor, testing can be conducted at Govt. lab/Govt. approved independent Lab.

NOTES-

1. Consideration of offer shall be subject to customer's approval of bidders, if applicable.
2. 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.
3. 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.
4. 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.
5. Typical list of Electrical Lab (Diagnostics & Calibrating) equipment is attached as Annexure-I.

PREPARED BY	REVIEWED BY	APPROVED BY	APPROVED BY
Manmohan Mahapatra	HEMA KUSHWAHA	PRAVEEN DUTTA	
NAME:MANMOHAN MAHAPATRA DESIGNATION: MANAGER	NAME: HEMA KUSHWAHA DESIGNATION:SR MANAGER	NAME: PRAVEEN DUTTA DESIGNATION:AGM	NAME: DEBASISA RATH DESIGNATION:DH-ELECT (AGM)

1396122/2023/PS-PEM-EL

ANNEXURE-I - ELECTRICAL LAB (CALIBRATION & DIAGNOSTICS) EQUIPMENT

S. No.	Item Name
1	PORTABLE 3 PHASE SUBSTANDARD WATTMETER
2	PORTABLE CALLIBTAROR FOR RTDS
3	PORTABLE MULLICURRENT CALIBRATOR
4	TABLE MOUNTED MA CALIBRATOR
5	PORTABLE MILLIVOLT CALIBRATOR
6	MULTIFUNCTION INSTRUMENT CALIBRATOR
7	REFERENCE METER
8	PORTABLE REF MTR & PHANTOM LOAD TEST SET
9	DIGITAL POWER & ENERGY METER CALIBRATOR
10	DC POWER SUPPLY EQUIPMENT
11	AC VOLTAGE/CURRENT SOURCE
12	DIGITAL VARIABLE FREQ SOURCE (OSC)
13	STANDARD CURRENT TRANSFORMER
14	STANDARD CURRENT TRANSFORMER (50-1500A)
15	STANDARD CURRENT TRANSFORMER (10-100A)
16	AUTO-TRANSFORMER (VARIAC) SINGLE PHASE
17	1 PH AUTO TRANSFORMER (VARIAC) 10AMP
18	1 PH AUTO TRANSFORMER (VARIAC) 30AMP
19	AUTO-TRANSFORMER (VARIAC) THREE PHASE
20	3 PH AUTOTRANSFORMER (VARIAC) 10AMP
21	3 PH AUTOTRANSFORMER (VARIAC) 30AMP
22	STANDARD POTENTIAL TRANSFORMER
23	SUBSTANDARD FREQUENCY METER
24	PRECISION DIGITAL FREQUENCY METER
25	TRUE RMS DIGITAL CLAMP METER
26	UNIVERSAL BRIDGE (LCRQ)
27	KELVIN DOUBLE BRIDGE
28	LCR METER BRIDGE
29	ANTISTATIC LAB TEST BENCH
30	COMPUTERIZED RELAY TEST BENCH
31	DECADE RESISTANCE BOX
32	THREE PHASE SHIFTER
33	EARTH FAULT LOCATOR
34	DUAL TRACE PORTABLE STORAGE OSCILLOSCOPE
35	CATHODE RAY OSCILLOSCOPE (PORTABLE)
36	DISTURBANCE RECORDER
37	PARTIAL DISCHARGE MEAS KIT
38	PHANTOM LOAD TEST SET
39	DUCTOR OHM METER
40	MICRO OHM METER
41	PORTABLE CIRCUIT BREAKER MOTION ANALYSER
42	CKT BREAKER CAPACITANCE MEAS. METER
43	CONTACT RESISTANCE MEAS KIT
44	PORTABLE HAND HELD INFRARED TEMP SCANNER
45	THERMAL IMAGING CAMERA

02/06/17 02/6/17 2/6/17

1396122/2023/PS-PEM-EL

ANNEXURE-II - ELECTRICAL LAB (CALIBRATION & DIAGNOSTICS) EQUIPMENT

46	PORTABLE KARL-FISCHER TEST SET
47	RELAY TEST SET
48	BUCHHOLZ RELAY TESTING KIT
49	POWER ANALYSER METER
50	HARMONIC ANALYSER
51	FREQUENCY RESPONSE ANALYSER
52	VIBRATION METER CUM ANALYSER
53	PORTABLE SECONDARY INJECTION TEST KIT
54	SECONDARY INJECTION KIT (0-100A)
55	SECONDARY INJECTION KIT (0-30A)
56	PORTABLE SING PH PRIMARY INJ TEST SET
57	PRIMARY INJECTION KIT
58	PORT. PRIM. & SEC. CURR. INJECTION TEST
59	INSTRUMENT TRANSFORMER TEST SET
60	CT ANALYSER TEST SET (PORTABLE)
61	PRECISION MANUAL SCANNING RADIO METER
62	SF6 / HYDROGEN / HALOGEN GAS DETECTOR
63	SF6 GAS LEAK DETECTOR
64	HYDROGEN GAS LEAK DETECTOR
65	FUEL GAS LEAK DETECTORS
66	TRF BUCHHOLZ GAS ANALYSER
67	DISSOLVED GAS ANALYSER FOR TRF OIL
68	COMPUTERIZED COMBUSTIBLE GAS ANALYSER
69	GAS CHROMATOGRAPH AND DATA STATION
70	UHV TYPE OIL PURIFYING EQUIPMENT
71	AUTOMATIC OIL TEST SET
72	OIL RESISTIVITY TEST KIT
73	TRANSFORMER OIL BREAKDOWN TEST SET
74	SIGNAL GENERATOR
75	FUNCTION GENERATOR
76	SP EQPT. FOR TESTING LIGHTNING ARRESTORS
77	TAN DELTA CAPACITANCE MEAS TEST SET
78	TRF TURNS RATIO TESTER
79	TURN RATIO MTR WITH VEC GP TESTING FAC
80	WDG RESISTANCE MTR FOR TRF, GEN & MOTORS
81	TELESCOPIC EARTHING ROD
82	HV DISCH ROD & PORT. EARTHING EQUIPM.
83	HV DISCHARGE RODS UP TO 39.5 KV
84	HV DISCHARGE RODS FROM 132 KV TO 420 KV
85	HOT STICK (UPTO 11 KV)
86	HOT STICK (UPTO 21 KV)
87	HOT STICK (UPTO 220 KV)
88	HOT STICK (UPTO 400 KV)
89	HIGH VOLTAGE DETECTOR
90	LIVE LINE DETECTOR 33KV
91	LIVE LINE DETECTOR 400KV
92	BATTERY CAPACITY TEST KIT

02/06/17 02/6/17 2/6/17

1 X 660 MW PANKI TPS

VOLUME II B

TECHNICAL SPECIFICATION
FOR
ELECTRICAL LAB EQUIPMENT
(CALIBRATION & DIAGONOSTIC)

SPECIFICATION NO. : PE–TS–426–556–E002, REV. 00

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR PROJECT ENGINEERING MANAGEMENT
NOIDA, 201301

CONTENTS

S. NO.	DESCRIPTION	NO. OF SHEETS
01	SECTION – I	
a)	COMPLIANCE CERTIFICATE	01
b)	SPECIFIC TECHNICAL REQUIREMENTS	01
c)	ANNEXURE-I OF SECTION-I (DETAILED TECHNICAL PARAMETERS)	04
02	SECTION – II	
a)	STANDARD TECHNICAL SPECIFICATION	03
b)	ANNEXURE- I TO SECTION-II (DEMONSTRATION & HANDING OVER CHARGES)	01
c)	ANNEXURE-II OF SECTION-II (DATA SHEET-B FORMAT)	05
	TOTAL NO. OF SHEETS= (INCLUDING COVER/ SEPARATOR SHEETS)	15

COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same.

2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'

3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.

4. Any comments/ clarifications on technical/ Inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.

5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in Annexure-A [BOQ-Cum-Price schedule] of the specification shall not be considered (i.e., technical description & quantities as per specification shall prevail).

6. All essential accessories for each electrical laboratory equipment required for testing various electrical equipment /devices during Commissioning, Operation and Maintenance of power plant to be ensured by bidder in their offer.

BIDDER'S STAMP & SIGNATURE

बीएचईएल BHEL	1 X 660 MW PANKI TPS TECHNICAL SPECIFICATION FOR ELECTRICAL LABORATORY EQUIPMENTS (CALIBRATION & DIAGNOSTIC)	Doc. No. PE-TS-426-556-E002 Volume: II B Section: I
	SPECIFIC TECHNICAL REQUIREMENTS	Rev. : 00 DATE-23.03.2022

1.0 SCOPE

1.1 Design, manufacture, inspection and testing at manufacturer's work, proper packing and delivery to site of Electrical Laboratory Equipment as mentioned in different sections of this specification.

1.2 General technical requirements of the Electrical Laboratory Equipment are indicated in Section – II. Project specific technical requirements/changes are listed in section-I.

1.3 Electrical Laboratory Equipment shall be supplied along with all essential accessories required for the successful operation of the equipment.

1.4 Detailed technical parameters of Electrical laboratory equipment are listed in Annexure – I of Section-I.

1.5 The requirement of section-1 shall prevail and govern in case of conflict between the corresponding requirements of Section-I and section-II.

2.0 BILL OF QUANTITIES

Quantity requirement shall be as per 'BOQ cum price schedule' enclosed in NIT.

3.0 SPECIFIC TECHNICAL REQUIREMENT

S.No.	Reference Clause No. of Section-II (if any)	Specific Requirement/Change

4.0 DRAWING & DOCUMENTS TO BE SUBMITTED

4.1 Following documents/drawings for each Electrical Laboratory Equipment shall be submitted after placement of order for BHEL & customer's approval in addition to the documents/drawings listed in clause No. 8.2 of section-II:

Sl. No.	Drawings/Document description	Drawings/Document Number
1	Technical Data Sheet	PE-V0-426-556-E001
2	Catalogue	PE-V0-426-556-E002

1. Portable HV Decade Resistance Box: 1 Nos

In Polystyrene case with lid and carrying handle

Overall range : 1 K ohms to 1 Terra Ohms

Resolution : 1K Ohms

Accuracy : 0.1% - 2%

Connection : Shielded Plugs with 1 Metre Cable

2. Portable HV ac Test Set comprising : 1 No

An epoxy cast, single phase, 0-100KV, 1.2 kVA to 10kVA rated low discharge transformer with maximum discharge level of 1 PC mounted in a steel tank fitted with swivel cast or wheels, HV bushing. A control unit with microprocessor based automatic control, programming key pad LCD display analog ammeter & voltmeter with ±2% accuracy trip push button, safety protections etc.

A zero interlock circuit shall be provided to prevent energization of HV output on less voltage control is set to zero.

Necessary power & metering cables, removable earth link fuses etc. shall be provided.

For Higher Capacity Capacitive current : 0- 4.5A

Capacity : 0-100kV, 1.2 kVA to 10kVA

3. Automatic Capacitance and Tan-Delta Test Set (Schering Bridge) with oil resistivity test cell : 1 No

Automatic Capacitance and Tan-Delta Test Set (Schering Bridge) with oil resistivity test cell.

Fully automatic, microprocessor-based, accurate ac voltage bridge.

Input : 240V, 50 Hz

Output : 0-12KV, 100 mA (Cont.), 200mA (15 min)

Extendible to 4A with resonating inductor Capacitance : 1.6 pF to 8 pF (with 100pF Std. Capacitor)

Measurement with ±0.02% to ±0.05% accuracy and 0.0001 pF resolution

Tan-delta : 1 x 10-6 to 100% with acc. ±0.5% and 1 x 10-6 resolution

Capacitive current : 0-5A

Oil Test Cell : 2.5 KV(RMS), 150°C, 100 cm3, 50 pF when empty & 100 pF when filled

Display : Large graphic TFT (4-5 digit) Test voltage, frequency, capacitance, Tan-delta

Data storage facility : Minimum 120 readings.

Interface : RS232 for Printer 1 PC

Accessories : Mains cable.

4. 3-phase Portable Transformer Turns Ratio & Vector Group Meter: 1 No

Fully automatic, microprocessor based having automatic tap changer control with internal chip card reader and built-in keyboard. In a robust mobile case having following features :

Measuring method : ANSI/IEEE C57.12.90

Ratio Range : 0.75 to 20000

Ratio accuracy : ±0.1% to ±0.3% ±1 digit
Measuring voltage : 8, 40, 80, 160, 230V Selectable (or 8V....240V externally)
Test voltage : At least 2 selectable set
Frequency range : 45-65 Hz
Phase angle range : ±90
Phase angle : ±0.1 deg. ±2 digit accuracy
Magnetising current : <1 mA - >1000mA
Magnetising Current: Better than ±2% accuracy
Measuring time : 5-20 sec.
Data Storage : >200 sets of measurement
Display : Backlit LCD 256 x 128 pixels
Data displayed : Vector group, phase, tap position, ratio, Ratio deviation, phase angle, phase angle Deviation, mag. Current, pass-fail result
Interface : RS232C, printer port
Input power : 240V10%, 50Hz AC
Standby power : Rechargeable battery of 4 hrs. continuous operation
Accessories : Windows compatible software for control Via PC (to be included free), HV/LV cables, RS- 232C cable, mains lead, clamps Operating manual, guarantee certificate
Tested for : EMI & EMC in EHV Switchyard upto 220KV

5. Portable Primary & Secondary Current Injection Test Kit with Separate Control & Loading Units: 1 No

Control Unit

Loading Unit Taps : 500A -1000A – 2000A – 4000A – 6000A (minimum)
Current Output : 0-25A/0-50A (cont.) 0-50A/0-100A (upto 5 min)
Voltage Output : 0-240V AC
Current & Voltage : By true RMS, 4 digit digital meters with Measurement : ±0.6% accuracy (+6 digit)
Timing Units : For ON & OFF
Range : 0 – 9999 Sec.
Resolution : 0.1 m sec.
Accuracy : ±0.1% + 2 digits
Power supply : 230V ±10%, 45-55 Hz, 1-phase
Display : Digital, Injected test current, timer result, auxiliary input values etc) Loading Unit
Ranges : 0-3000A continuously variable with 5.0 V @ 3000A
Other features : Fully portable by wheels Automatic thermal trip Built-in digital Ammeter of 0.5% accuracy Built- in digital Timer of 1ms resolution Automatic switch-off at end of test.

6. Portable Three Phase Universal Protective Relay Test Set: 1 No

The universal relay test shall be microprocessor based user friendly, modular in design, upgradable and site repairable using replacement modules. Module shall consist of four galvanically-isolated solid state regulated voltage sources and four current sources. All voltage sources will have the capability of

being converted to currents. The test system shall have digital timing and contact monitoring facilities and a battery simulator. The test system shall be manually controlled via a hand-held controller without needing a laptop. The system shall also be provided with communication ports for fully automated testing using computer software.

The hand-held controller eliminates the need for a computer, when testing most common types of relays with built in pre set test routines for over current, differential, impedance, synchronizing, frequency, voltage operated relays and reclosing relays.

The hand held controller shall have large colour LCD touch screen with programmable menu. The system shall have programmable output current & voltage waveforms and phase angles

In addition, the universal relay test set shall have significant features and capabilities which includes: Click-on-fault, binary search, RIO file import, Dynamic control, Recorder capability, modbus communications, SSI file reader, Test result import and IEC 61850 test capabilities as an option.

This system should have following specification:

Input Power : 100-240 V, 1 ph,50 Hz
Outputs : Each phase should provide with
AC/DC volts : up to 300 Volts rms at 150 VA
Accuracy : ±0.1%
Resolution : 0.0001/0.001/0.01
AC/DC currents : up to 30 Amps rms at 200 VA
Accuracy : ±0.1%
Resolution : 0.0001/0.001
Phase angle : 0.01 to 359.99
Accuracy : ±0.02 degree
Frequency : DC to 10 kHz
Resolution : 0.0001/0.001Hz
Total Harmonic Distortion: Less than 0.1 % typical.
Binary Input : 10 galvanically isolated
Binary output : 6 galvanically Isolated
Interfaces : RS 232, Ethernet, IEEE 488 GPIB, Trigger in & out
Safety : EMC, RFI conformance: IEC 61000-1,EN 50081/82-2

7. **Cable Fault Locator : 1 No**

Should be portable cable fault locator for determining the position of a single shorting fault between two conductors, or between one conductor and the cable sheath or ground. Powered from a mains electricity supply or from the internal battery.

The fault should be located by manually adjusting a potentiometer to find the null point on the front panel meter.

The instrument should utilize a bridge circuit with the two sections of the faulty conductor (either side of fault) acting as one half of the bridge network and the internal push button potentiometer forming the other.

The potentiometer should be adjusted until the null is found, at which point the distance to fault can be read form the instrument as a percentage of cable length.

Should be IP67 Protected

Features:

a) Fault pre-location using time domain reflectometry.

b) Fault stabilization/conditioning by using arc reflectometry.

c) Proof tester and burner

d) Multiple fault locating methods e.g. Voltage Decay method, Current Impulse method, Acoustic method etc.

e) Pin-pointing fault location

f)DC testing upto 40kV

g) Large VGA colour display TDR

h) Cable analysis software

i) Backlit LCD display for Pinpoint detector/Surge detector

Other features:

a) Input : 240V±10%, 1 phase, 50±5% Hz

b) Low voltage TDR Range : 60m to 30km; Resolution: ≤1m

c) Surge output : <1500 Joules

d) Display : Backlit LCD

8. Testing Kit for calibrating the Digital Energy Meter

Voltage Range : 0 to 1000V

Current Range : 0 to 20 A

Power : 0 to 20 KW

Pf range : 0 to unity lead/ lag

Frequency : 40 to 400 Hz in steps of 0.1 Hz

Accuracy : 0.01% FS ± 10 dgts for voltage and current 0.05 % ± 1dgts for PF 0.3% FS for wattmeter

9. Portable Hand held SF6 Gas Leakage Detector

With audio-visual indication

Sensitivity : 3 to 5 ppm

Ambient operating Temperature : - 10 deg. C to + 50 deg. C

Power : Re-chargeable battery

10. Portable Hand held Hydrogen Gas Leakage Detector

With audio visual indication Sensitivity :50 to 100 ppm

Ambient operating Temperature : - 10 deg. C to + 50 deg. C

Power : Re-chargeable battery

11. Portable Circuit Breaker Motion Analyser

The unit should be suitable to rapidly carry out tests on circuit breakers of all types that are typically installed in electric utility substations ranging from the lowest voltages up to the highest. The unit should be intended for use by maintenance personnel in performing periodic maintenance testing on circuit breakers. And start up tests on new or repaired equipment. It should be a unit with precision, flexibility, data processing and storage capabilities.

The unit should integrate the power of a multi channel storage oscilloscope with the processing power of state of the art personal computer. The efficiency with which the unit carries out test and its high quality graphical display of test results, should be sufficient to make it a useful instrument in all phases of high voltage breaker maintenance, manufacturing and development.

The unit should be connectable to a PC via a 57,600 baud high speed optical fibre link. It should be equipped with up to 2 breaker control outputs, up to 24 contact inputs to measure main and resistive contacts in a close or open state, and upto 8 analog inputs for measuring current or linear displacement, pressure, etc. The portable test instrument should be robust and shielded.

Hardware characteristics Input channels:

24 optically isolated digital input channels for main

or resistive contacts.

2 current analog inputs, each measuring close or open coil currents (0 to 20 A approx) Current sensors shall be built in.

6 general analog inputs (0-10 V DC) used for linear or rotary displacement measurements. Power for the transducer to be supplied by the main unit. They may also be used as general purpose analog inputs.

Analog inputs should have a resolution of minimum 12 bits each, and should be virtually a multichannel storage oscilloscope.

The digital inputs or contact inputs to measure both main and resistive contacts automatically and without the need for a contact type selection switch. Thus, a single channel should be able to measure the three states of a set of main/resistive contacts: open (0), resistive (0.5) or closed (1).

The contact inputs should measure the resistive states between 30 and 4000 ohms in environments up to 400 kV without external accessories.

Close and open commands

1 close coil command output

1 open coil command

The pulse widths of both these commands should be settable by the user via a menu selection in software.

Each output should be capable of AC and DC switching. These shall be DC rated at 250 V DC, 50 A minimum; and AC rated at 600 V AC,50 A minimum. The breaking current capacity to vary inversely with the voltage.

Recording Performance

Sampling time: from 32 to 32000 microseconds, user programmable via software.

Sampling frequency: from 31.25 to 31250 Hz

Total recording time: from 1 milli second to 15 minutes

Analog resolution: 12 bits

Features:

- Insensitive to noise and high voltage transients up to 400 kV
- Robust internal modular design made to sustain shocks and vibrations endured during transportation
- Light standard cables designed with optimum electromagnetic shielding requiring no calibration.
- Batch testing module: To perform unattended, automated long and repetitive testing routines.
- Configurable graphics and tabular reports for easy analysis
- Open architecture which allows the use of any transducer, any computer, any printer,etc
- Online testing of breaker first trip.
- Online monitoring

Analysis Software:

Powerful software should be supplied and the supply should include a compatible PC unit and connecting cables and printer so as to command and executes the entire test. It should have the facility of initiating the acquisition and analysis of test results by a single click of mouse and should enable analyse the data on spot or even afterwards.

Totally open software to allow data imports and exports, and all the upgrades after supplies should be available as FREE.

Software should integrate all necessary tools of high voltage circuit breaker specialist. Multiple programming should not be used so that friendly software is used and it should work with test plans configured by the user. A number of predefined test plans, should be supplied with the software and should meet most of the user's requirements. These test plans should be easily adaptable to special requirements. Should also allow import of files recorded- the DOS version of the software

Basic features of software to include:

1. Defining test conditions
2. Test information
3. Instant colour graphic reports for viewing and analysis
4. Export of recorded and calculated data
5. Tabular reports results
6. Typical calculation parameters
7. Pass/fail comparison

Advanced features of software

1. User configurable tabular reports
2. Reports generated in any language
3. User configurable graphic reports
4. Calculation functions (speed, travel, overtravel, rebound,etc)
5. Repetitive testing capability (batch testing)
6. Mathematical processing of the results (i.e. viewing the derivative of a displacement signal)

Test Functions

- Line test (test link): tests the quality of the RS-232/fibre optic communication link
- Cable test: to test continuity of the contact cable
- Breaker status: To allow the verification of state of breaker's contacts following a test

Capabilities:

- Number of tests: 30
- Graphics reports: Instantaneous
- Graphic pages per test: 10
- Viewable signals per graphic page: 30
- Calculation functions more than 40
- Dynamic variables per test plan 8640
- Static variables 2500
- Sampling time 32 to 32000 µsec
- Output pulse duration 1to 999ms in 1 ms steps
- Available graphic tools zoom, examine, scale
- Graphic tools use easy
- Viewing of contact rebound easy
- Graphic printing colour on colour printers
- Graphics export BMP format
- Tabular report export text and HTML
- Data export Raw and scaled
- Reports copied to Windows Clipboard Graphic and tabular
- Language used in software and reports: English
- Help and manual online and printed.
- Keyboard: Yes
- Monitoring projected
- External trigger projected
- Self powered RS232 fibre optic module: yes
- Repetitive (Batch) testing yes
- Features:
- Simple Graphic Environment Defining conditions
- Test plan information
- Executing the test
- Graphics analysis tools
- Superimposed signals
- Examining signal values
- Scale expansion
- Producing tabular reports
- Pass/Fail comparison

- Printing reports
- Export and interface with other applications
- Repetitive testing
- Additional tools for the test designer
- Mathematical analysis tools: Highly sophisticated calculation module should be included to allow instant calculation and display of up to nine calculated values for each signal, with or without a text legend or units.

The user decides what values are to be calculated and displayed for each test, and may or may not add text labels, according to his or her wishes.

Of over 40 available calculation functions, the main ones should be:

- Closing or opening time
- Damping time
- Average Closing or opening velocity
- Instantaneous velocity at certain reference points
- Short circuit time
- Insertion time during open and close operations
- Over travel
- Rebound
- Total travel
- Minimum and maximum
- displacement values
- Comparison between phases
- Tolerance comparison with failure indicator System Requirements

Operating system: Windows 95,98,or NT 4

Recommended microprocessor: Pentium

- Recommended memory: 32 MB
- Graphics resolution: VGA or better

Other specifications shall be as follows :

a) Input Supply : 240V AC±10%, 50±5% Hz

b) Battery : Built-in with charger

c) Time range : 0-6 s

d) Time measurement resolution : 0.1 ms

e) Number of channels : 12 analog, 24 digital

f) Printout options : Both graphic and numeric

g) Printer : Thermal

h) Display : 16 character alphanumeric LCD

12. Portable, Hand-held Thermal Imaging Camera

Suitable for thermal imaging and measurement of high voltage/ power transformers, site units cable, etc. should be based on uncooled micro bolometer FPA detector, Unit to be maintenance free and featuring advanced features such as image storage, visual image capturing, etc., and should be suitable for use in harsh environments, with 60 seconds of voice annotation per file, text annotations, adjustable emissivity of 0.01 to 1.00 in steps of 0.01, auto shut down feature.

Features:

Auto/manual focus, electronic zoom, video output, PIP, Touch screen, wide measurement modes, etc. To be supplied with laser locator, manual, certificate, standard kit and accessories, remote control handle, 35 mm IR lens, 3.5" VGA LCD screen,0.6" OLED view finder, touch pen, Rechargeable Li-ion batteries, AC adaptor, battery charger, Memory card (2 GB), and also built in fish memory- to save >1200 images, card reader suitable for image/data transfer to PC, complete control and analysis and reporting software, VGA and USB extension cables, RS 232 communication and TV video cable, RS 232 communication protocol, USB driver, carrying case and straps, analysis software.

Temp. Range : -20 Deg.C to +2000 Deg.C

Emmisivity correction : 0.01 to 1.00

Accuracy : ±1 % of rdg or ±1°C whichever is greater for lower temperatures upto 250 deg C and ±2% of rdg or ±2°C whichever is greater for higher temperatures.

Spectral Response : 8 to 14 microns

Minimum object focus distance: 3 m

Thermal Sensitivity : 0.08°C @ 30°C

Image frequency : 50 Hz so as to detect moving objects with high speed.

Field of View : 22° x 16°

Battery Operation : For at least 2-hours

13. DC Leakage Analyser

Voltage range : 0 to 500V DC

Current : 2000 micro amps

Indicators : LED

Accessories : Battery & battery charger, heavy duty rubber insulated coiled test leads

14. HV Discharge Rod & Portable Earthing Equipment

Class 'F' insulated. Having non-linear carbon film resistor with negative temperature co- efficient. Non-hygroscopic

Dimensions : ID 25 mm, OD 31 mm, Length 1250 mm (Main rod & each extension), total length : 6 metres

Discharge Hook : 100 mm dia on 12.5 mm dia copper rod

Earth lead : Flexible braided copper

Voltage Rating : Upto 420 KV

15. Storage type digital oscilloscope

16. Hot Sticks (Live/Dead Line Tester)

Class 'F' insulated upto 400 kV, extendible from 1.25 metre to 6.0 metres with inbuilt self-check feature. Contact or proximity type in a special carrying case.

SECTION-II

STANDARD TECHNICAL SPECIFICATION

1.0 TECHNICAL REQUIREMENTS

1.1 Basic technical requirements for Electrical Lab Equipment shall be as indicated in this section, in addition to technical requirements specified in Section-I.

1.2 The intent of specification is not to specify herein all the details of design and manufacture. However, the equipment shall confirm in all respect to high standards of design engineering and workmanship and shall be capable of performing in continuous commercial operation up to vendors guarantee.

1.3 The Bidder may note that the equipment range, rating, quantities as detailed herein, are the minimum requirement only. All accessories for the equipment not covered here, if necessary for satisfactory and trouble free operation of the equipment, shall be quoted by the Bidder.

1.4 The instrument shall be suitable for satisfactory operation at an ambient temperature from 0°C to 55°C.

1.5 The Analog instruments shall be provided with knife-edge pointer and anti – parallax mirror.

1.6 The Bidder to quote only 'one' make/model against each equipment best to suit specification requirement.

1.7 The instrument shall be suitable for hand held operation, rugged in construction and suitable for field use.

1.8 All the equipment components shall be procured from reputed manufacturers and make of equipment shall be subject to the approval of BHEL/ BHEL's Customer.

1.9 Bidder to note that "In case any offered make / model becomes obsolete or is stopped manufacturing by manufacturer, next higher model of the same make may be considered for ordering / supply at contract stage, without any price implication. In such cases, bidder is required to furnish valid confirmation letter from OEM as proof of change of model (citing reason: obsolete technology or stopping of manufacturing with date of effect) and that the offered model is "technically equivalent or better".

2.0 CODES AND STANDARDS

Some of the standards, which shall generally be followed, are listed below. Other applicable relevant standards for any component part, even if not covered in listed standards shall be followed.

i) IS – 6103 Method of test for specific resistance (resistivity) of electrical insulating fluid.

ii) IS – 6700 Requirements of general purpose Cathode Ray Oscilloscope.

iii) IS – 722 Specification for AC electricity meters.

iv) IS – 8143 Specification for plugs & keys for resistance boxes.

v) IS – 6104 Method of test for interfacial tension of oil against water.

vi) IEC-51 Direct acting indicating analogue electrical measuring instruments and their accessories.

vii) Any other relevant National/ International standards as mentioned in Section-II with technical specification.

3.0 DESIGN CRITERIA:

3.1 Electrical Laboratory Equipment shall be used for calibration & diagnostics of various electrical equipment/ devices during Commissioning, Operation and Maintenance of power plant.

3.2 The Equipment will be kept in a clean but hot, humid and tropical atmosphere when not in use. Equipment will be placed in dust laden, hot, humid atmosphere during its use.

3.3 For continuous operation at specified rating, temperature rise of various equipment/ components shall be limited to the permissible value stipulated in the relevant standards and this specification.

4.0 TEST REQUIREMENTS:

4.1 All equipment to be tested as per latest edition of relevant standards. Further, testing shall include verification of physical, functional & technical parameters of equipment & accessories, in line with approved datasheet.

4.2 The tests shall be carried out by the vendor at in-house lab/ OEM lab/ Third party govt. accredited lab. Charges for all these tests shall be deemed to be included in the bid price.

4.3 Vendor to furnish test report to BHEL for review/ acceptance. BHEL/BHEL's customer may witness the testing of equipment.

5.0 PACKING:

All equipment shall be properly packed in Galvanized sheet steel trunk/ box with proper lock & key arrangement except for equipment which are trolley mounted or are already available in rugged steel/wooden box packing. Further, any damage (reading error/calibration error/broken parts/missing parts etc) found on receipt at site, leading to replacement of parts/whole item, shall be to bidder's account.

6.0 DEMONSTRATION TO BHEL / BHEL'S CUSTOMER

6.1 The vendor shall be responsible for demonstration of the supplied equipment at site, conforming the satisfactory operation.

6.2 The equipment for which demonstration is required at site shall be intimated by BHEL.

6.3 The charges for visit to site for demonstration at site shall be in-line with Annexure- I of Section-II.

7.0 PERFORMANCE GUARANTEE

The bidder shall guarantee that the equipment offered shall meet the requirement as stipulated in this specification and as confirmed by them in Technical Data Sheet. In case the performance of equipment is not as per performance guarantee, the bidder will have to replace the equipment at site free of cost.

8.0 DRAWING DATA & MANUAL

8.1 To be submitted with the bid as technical offer:

a) Compliance to Technical parameters of various equipment as specified in Annexure-I of Section-I in Data Sheet – B (as enclosed).

b) Technical leaflets/ Catalogues/Product Manual of the Equipment

The Bidder may note that the drawing, data and manual listed herein are minimum requirement only. The Bidder shall ensure that the other necessary write-ups, curves and information required to fully describe the equipment are submitted with the bid.

8.2 Following documents/drawings shall be submitted after placement of order for BHEL & customer's approval:

a) Technical Datasheet for each equipment
b) Technical leaflets/ Catalogues/Product Manual of the Equipment
c) Tests Reports and calibration certificate
d) General arrangement drawing showing constructional features, accessories, connections, range and rating, mounting arrangement, space requirement etc.
e) Detail instructions for application, assembly & testing of equipment.
f) Wiring and schematic diagrams (if applicable).
g) Instruction manual/ O&M manual of individual equipment

8.3 Instruction manual/O&M Manual of individual equipment

The manual shall clearly indicate in English the installation and connection method, check list of the tests to be carried out before commissioning of equipment. Maintenance and Calibration method shall also be provided in the manual.

8.4 Bidder to furnish all user instruction manuals, maintenance, handling, installation manuals & all test reports complete in all respect in bound volumes & soft copies to BHEL / BHEL's customer at the time of handing over the same to BHEL / BHEL's Customer.

8.5 Bidder to note that quoted item cost shall include cost of main item, cost of all accessories required for successful operation of equipment and testing cost of all equipment test as per relevant standard.

SCHEDULE OF PRICES FOR DEMONSTRATION & HANDING OVER TO BHEL / BHEL'S CUSTOMER

SL. NO.	DETAILS	ACTIVITY	UNIT CHARGES
1	LUMP SUM ALL INCLUSIVE CHARGES PER VISIT FOR EXPERIENCED / CAPABLE ENGINEER (EXCEPT DAILY CHARGES)	1 VISIT	**20000/-**
2	LUMP SUM ALL INCLUSIVE CHARGES FOR EXPERIENCED / CAPABLE ENGINEER PER DAY	1 DAY	**5000/-**

Note:

1. TOTAL CHARGES = (Charges as per S.No.1) + [No. of Days(*) x Unit Charges as per Sl. No. 2]

*: To be certified by BHEL site

2. Bidder to note that provision of maximum 5 visits amounting to total 10 man days is envisaged for respective bidders.

1 X 660 MW PANKI TPS								
TECHNICAL SPECIFICATION FOR ELECTRICAL LABORATORY EQUIPMENTS								
PE-TS-426-556-E002, REV-00								
DATA SHEET-B (Annexure-II of Section-II)								
NOTE :-								
1) EQUIPMENT TO BE SUPPLIED ALONG WITH ESSSNTIAL ACCESSORIES FOR SUCCESSFUL OPERATION OF EQUIPMENT AT SITE .i.e. CLAMPS, CLIPS,LEADS ,CARRYING CASE etc.								
2) ALL EQUIPMENTS SHALL BE SUPPLIED WITH VALID CALIBRATION CERTIFICATE, WHEREVER APLLICABLE.								
3) All equipment shall be properly packed in Galvanized sheet steel trunk/ box with proper lock & key arrangement except for equipment which are trolley mounted or are already available in rugged steel/wooden box packing. Further, any damage (reading error/calibration error/broken parts/missing parts etc) found on receipt at site, leading to replacement of parts/whole item, shall be to bidder's account								
Item description	**Whether Quoted or not (Yes/No)**	**Make**	**Model no**	**Country of Manufacture**	**Authorization letter (attached or not)**	**Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification**	**Catalogue (attached or not)**	**Remarks**
1. Portable HV Decade Resistance Box: 1 Nos								
In Polystyrene case with lid and carrying handle								
Overall range : 1 K ohms to 1 Terra Ohms								
Resolution : 1K Ohms								
Accuracy : 0.1% - 2%								
Connection : Shielded Plugs with 1 Metre Cable								
2. Portable HV ac Test Set comprising : 1 No								
An epoxy cast, single phase, 0-100KV, 1.2 kVA to 10kVA rated low discharge transformer with maximum discharge level of 1 PC mounted in a steel tank fitted with swivel cast or wheels, HV bushing. A control unit with microprocessor based automatic control, programming key pad LCD display analog ammeter & voltmeter with ±2% accuracy trip push button, safety protections etc.								
A zero interlock circuit shall be provided to prevent energization of HV output on less voltage control is set to zero.								
Necessary power & metering cables, removable earth link fuses etc. shall be provided.								
For Higher Capacity Capacitive current : 0- 4.5A								
Capacity : 0-100kV, 1.2 kVA to 10kVA								
3. Automatic Capacitance and Tan-Delta Test Set (Schering Bridge) with oil resistivity test cell : 1 No								
Automatic Capacitance and Tan-Delta Test Set (Schering Bridge) with oil resistivity test cell.								
Fully automatic, microprocessor-based, accurate ac voltage bridge.								
Input : 240V, 50 Hz								
Output : 0-12KV, 100 mA (Cont.), 200mA (15 min)								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
Extendible to 4A with resonating inductor Capacitance : 1.6 pF to 8 pF (with 100pF Std. Capacitor)								
Measurement with ±0.02% to ±0.05% accuracy and 0.0001 pF resolution								
Tan-delta : 1 x 10-6 to 100% with acc. ±0.5% and 1 x 10-6 resolution								
Capacitive current : 0-5A								
Oil Test Cell : 2.5 KV(RMS), 150°C, 100 cm3, 50 pF when empty & 100 pF when filled								
Display : Large graphic TFT (4-5 digit) Test voltage, frequency, capacitance, Tan-delta								
Data storage facility : Minimum 120 readings.								
Interface : RS232 for Printer 1 PC								
Accessories : Mains cable.								
4. 3-phase Portable Transformer Turns Ratio & Vector Group Meter: 1 No								
Fully automatic, microprocessor based having automatic tap changer control with internal chip card reader and built-in keyboard. In a robust mobile case having following features :								
Measuring method : ANSI/IEEE C57.12.90								
Ratio Range : 0.75 to 20000								
Ratio accuracy : ±0.1% to ±0.3% ±1 digit								
Measuring voltage : 8, 40, 80, 160, 230V Selectable (or 8V....240V externally)								
Test voltage : At least 2 selectable set								
Frequency range : 45-65 Hz								
Phase angle range : ±90								
Phase angle : ±0.1 deg. ±2 digit accuracy								
Magnetising current : <1 mA - >1000mA								
Magnetising Current: Better than ±2% accuracy								
Measuring time : 5-20 sec.								
Data Storage : >200 sets of measurement								
Display : Backlit LCD 256 x 128 pixels								
Data displayed : Vector group, phase, tap position, ratio, Ratio deviation, phase angle, phase angle Deviation, mag. Current, pass-fail result								
Interface : RS232C, printer port								
Input power : 240V10%, 50Hz AC								
Standby power : Rechargeable battery of 4 hrs. continuous operation								
Accessories : Windows compatible software for control Via PC (to be included free), HV/LV cables, RS- 232C cable, mains lead, clamps Operating manual, guarantee certificate								
Tested for : EMI & EMC in EHV Switchyard upto 220KV								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
5. Portable Primary & Secondary Current Injection Test Kit with Separate Control & Loading Units: 1 No								
Control Unit								
Loading Unit Taps : 500A -1000A – 2000A – 4000A – 6000A (minimum)								
Current Output : 0-25A/0-50A (cont.) 0-50A/0-100A (upto 5 min)								
Voltage Output : 0-240V AC								
Current & Voltage Measurement : : By true RMS, 4 digit digital meters with ±0.6% accuracy (+6 digit)								
Timing Units : For ON & OFF								
Range : 0 – 9999 Sec.								
Resolution : 0.1 m sec.								
Accuracy : ±0.1% + 2 digits								
Power supply : 230V ±10%, 45-55 Hz, 1-phase								
Display : Digital, Injected test current, timer result, auxiliary input values etc) Loading Unit								
Ranges : 0-3000A continuously variable with 5.0 V @ 3000A								
Other features : Fully portable by wheels Automatic thermal trip Built-in digital Ammeter of 0.5% accuracy Built- in digital Timer of 1ms resolution Automatic switch-off at end of test.								
6. Portable Three Phase Universal Protective Relay Test Set: 1 No								
The universal relay test shall be microprocessor based user friendly, modular in design, upgradable and site repairable using replacement modules. Module shall consist of four galvanically-Isolated solid state regulated voltage sources and four current sources. All voltage sources will have the capability of being converted to currents. The test system shall have digital timing and contact monitoring facilities and a battery simulator. The test system shall be manually controlled via a hand-held controller without needing a laptop. The system shall also be provided with communication ports for fully automated testing using computer software.								
The hand-held controller eliminates the need for a computer, when testing most common types of relays with built in pre set test routines for over current, differential, impedance, synchronizing, frequency, voltage operated relays and reclosing relays.								
The hand held controller shall have large colour LCD touch screen with programmable menu. The system shall have programmable output current & voltage waveforms and phase angles								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
In addition, the universal relay test set shall have significant features and capabilities which includes: Click-on-fault, binary search, RIO file Import, Dynamic control, Recorder capability, modbus communications, SSI file reader, Test result import and IEC 61850 test capabilities as an option.								
This system should have following specification:								
Input Power : 100-240 V, 1 ph,50 Hz								
Outputs : Each phase should provide with								
AC/DC volts : up to 300 Volts rms at 150 VA								
Accuracy : ±0.1%								
Resolution : 0.0001/0.001/0.01								
AC/DC currents : up to 30 Amps rms at 200 VA								
Accuracy : ±0.1%								
Resolution : 0.0001/0.001								
Phase angle : 0.01 to 359.99								
Accuracy : ±0.02 degree								
Frequency : DC to 10 kHz								
Resolution : 0.0001/0.001Hz								
Total Harmonic Distortion: Less than 0.1 % typical.								
Binary Input : 10 galvanically isolated								
Binary output : 6 galvanically isolated								
Interfaces : RS 232, Ethernet, IEEE 488 GPIB, Trigger In & out								
Safety : EMC, RFI conformance: IEC 61000-1,EN 50081/82-2								
7. **Cable Fault Locator : 1 No**								
Should be portable cable fault locator for determining the position of a single shorting fault between two conductors, or between one conductor and the cable sheath or ground. Powered from a mains electricity supply or from the Internal battery.								
The fault should be located by manually adjusting a potentiometer to find the null point on the front panel meter.								
The instrument should utilize a bridge circuit with the two sections of the faulty conductor (either side of fault) acting as one half of the bridge network and the internal push button potentiometer forming the other.								
The potentiometer should be adjusted until the null is found, at which point the distance to fault can be read form the instrument as a percentage of cable length.								
Should be IP67 Protected								
Features:								
a) Fault pre-location using time domain reflectometry.								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
b) Fault stabilization/conditioning by using arc reflectometry.								
c) Proof tester and burner								
d) Multiple fault locating methods e.g. Voltage Decay method, Current Impulse method, Acoustic method etc.								
e) Pin-pointing fault location								
f)DC testing upto 40kV								
g) Large VGA colour display TDR								
h) Cable analysis software								
i) Backlit LCD display for Pinpoint detector/Surge detector								
Other features:								
a) Input : 240V±10%, 1 phase, 50±5% Hz								
b) Low voltage TDR Range : 60m to 30km; Resolution: ≤1m								
c) Surge output : <1500 Joules								
d) Display : Backlit LCD								
8. Testing Kit for calibrating the Digital Energy Meter								
Voltage Range : 0 to 1000V								
Current Range : 0 to 20 A								
Power : 0 to 20 KW								
Pf range : 0 to unity lead/ lag								
Frequency : 40 to 400 Hz in steps of 0.1 Hz								
Accuracy : 0.01% FS ± 10 dgts for voltage and current 0.05 % ± 1dgts for PF 0.3% FS for wattmeter								
9. Portable Hand held SF6 Gas Leakage Detector								
With audio-visual indication								
Sensitivity : 3 to 5 ppm								
Ambient operating Temperature : - 10 deg. C to + 50 deg. C								
Power : Re-chargeable battery								
10. Portable Hand held Hydrogen Gas Leakage Detector								
With audio visual indication Sensitivity :50 to 100 ppm								
Ambient operating Temperature : - 10 deg. C to + 50 deg. C								
Power : Re-chargeable battery								
11. Portable Circuit Breaker Motion Analyser								
The unit should be suitable to rapidly carry out tests on circuit breakers of all types that are typically installed in electric utility substations ranging from the lowest voltages up to the highest. The unit should be intended for use by maintenance personnel in performing periodic maintenance testing on circuit breakers. And start up tests on new or repaired equipment. It should be a unit with precision, flexibility, data processing and storage capabilities.								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
The unit should integrate the power of a multi channel storage oscilloscope with the processing power of state of the art personal computer. The efficiency with which the unit carries out test and its high quality graphical display of test results, should be sufficient to make it a useful instrument in all phases of high voltage breaker maintenance, manufacturing and development.								
The unit should be connectable to a PC via a 57,600 baud high speed optical fibre link. It should be equipped with up to 2 breaker control outputs, up to 24 contact inputs to measure main and resistive contacts in a close or open state, and upto 8 analog inputs for measuring current or linear displacement, pressure, etc.								
The portable test instrument should be robust and shielded.								
Hardware characteristics Input channels:								
24 optically isolated digital input channels for main								
or resistive contacts.								
2 current analog inputs, each measuring close or open coil currents (0 to 20 A approx) Current sensors shall be built in.								
6 general analog inputs (0-10 V DC) used for linear or rotary displacement measurements. Power for the transducer to be supplied by the main unit. They may also be used as general purpose analog inputs.								
Analog inputs should have a resolution of minimum 12 bits each, and should be virtually a multichannel storage oscilloscope.								
The digital inputs or contact inputs to measure both main and resistive contacts automatically and without the need for a contact type selection switch. Thus, a single channel should be able to measure the three states of a set of main/resistive contacts: open (0), resistive (0.5) or closed (1).								
The contact inputs should measure the resistive states between 30 and 4000 ohms in environments up to 400 kV without external accessories.								
Close and open commands								
1 close coil command output								
1 open coil command								
The pulse widths of both these commands should be settable by the user via a menu selection in software.								
Each output should be capable of AC and DC switching. These shall be DC rated at 250 V DC, 50 A minimum; and AC rated at 600 V AC,50 A minimum. The breaking current capacity to vary inversely with the voltage.								
Recording Performance								
Sampling time: from 32 to 32000 microseconds, user programmable via software.								
Sampling frequency: from 31.25 to 31250 Hz								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
Total recording time: from 1 milli second to 15 minutes								
Analog resolution: 12 bits								
Features:								
• Insensitive to noise and high voltage transients up to 400 kV								
• Robust internal modular design made to sustain shocks and vibrations endured during transportation								
• Light standard cables designed with optimum electromagnetic shielding requiring no calibration.								
• Batch testing module: To perform unattended, automated long and repetitive testing routines.								
• Configurable graphics and tabular reports for easy analysis								
• Open architecture which allows the use of any transducer, any computer, any printer,etc								
• Online testing of breaker first trip.								
• Online monitoring								
Analysis Software:								
Powerful software should be supplied and the supply should include a compatible PC unit and connecting cables and printer so as to command and executes the entire test. It should have the facility of initiating the acquisition and analysis of test results by a single click of mouse and should enable analyse the data on spot or even afterwards.								
Totally open software to allow data imports and exports, and all the upgrades after supplies should be available as FREE.								
Software should Integrate all necessary tools of high voltage circuit breaker specialist. Multiple programming should not be used so that friendly software is used and it should work with test plans configured by the user. A number of predefined test plans, should be supplied with the software and should meet most of the user's requirements. These test plans should be easily adaptable to special requirements. Should also allow Import of files recorded- the DOS version of the software								
Basic features of software to Include:								
1. Defining test conditions								
2. Test information								
3. Instant colour graphic reports for viewing and analysis								
4. Export of recorded and calculated data								
5. Tabular reports results								
6. Typical calculation parameters								
7. Pass/fail comparison								
Advanced features of software								
1. User configurable tabular reports								
2. Reports generated in any language								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
3. User configurable graphic reports								
4. Calculation functions (speed, travel, overtravel, rebound,etc)								
5. Repetitive testing capability (batch testing)								
6. Mathematical processing of the results (i.e. viewing the derivative of a displacement signal)								
Test Functions								
• Line test (test link): tests the quality of the RS-232/fibre optic communication link								
• Cable test: to test continuity of the contact cable								
• Breaker status: To allow the verification of state of breaker's contacts following a test								
Capabilities:								
• Number of tests: 30								
• Graphics reports: Instantaneous								
• Graphic pages per test: 10								
• Viewable signals per graphic page: 30								
• Calculation functions more than 40								
• Dynamic variables per test plan 8640								
• Static variables 2500								
• Sampling time 32 to 32000 µsec								
• Output pulse duration 1to 999ms in 1 ms steps								
• Available graphic tools zoom, examine, scale								
• Graphic tools use easy								
• Viewing of contact rebound easy								
• Graphic printing colour on colour printers								
• Graphics export BMP format								
• Tabular report export text and HTML								
• Data export Raw and scaled								
• Reports copied to Windows Clipboard Graphic and tabular								
• Language used in software and reports: English								
• Help and manual online and printed.								
• Keyboard: Yes								
• Monitoring projected								
• External trigger projected								
• Self powered RS232 fibre optic module: yes								
• Repetitive (Batch) testing yes								
• Features:								
• Simple Graphic Environment Defining conditions								
• Test plan information								
• Executing the test								
• Graphics analysis tools								
• Superimposed signals								
• Examining signal values								
• Scale expansion								
• Producing tabular reports								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
• Pass/Fail comparison								
• Printing reports								
• Export and Interface with other applications								
• Repetitive testing								
• Additional tools for the test designer								
• Mathematical analysis tools: Highly sophisticated calculation module should be included to allow instant calculation and display of up to nine calculated values for each signal, with or without a text legend or units.								
The user decides what values are to be calculated and displayed for each test, and may or may not add text labels, according to his or her wishes.								
Of over 40 available calculation functions, the main ones should be:								
• Closing or opening time								
• Damping time								
• Average Closing or opening velocity								
• Instantaneous velocity at certain reference points								
• Short circuit time								
• Insertion time during open and close operations								
• Over travel								
• Rebound								
• Total travel								
• Minimum and maximum								
• displacement values								
• Comparison between phases								
• Tolerance comparison with failure indicator System Requirements								
Operating system: Windows 95,98,or NT 4								
Recommended microprocessor: Pentium								
• Recommended memory: 32 MB								
• Graphics resolution: VGA or better								
Other specifications shall be as follows :								
a) Input Supply : 240V AC±10%, 50±5% Hz								
b) Battery : Built-in with charger								
c) Time range : 0-6 s								
d) Time measurement resolution : 0.1 ms								
e) Number of channels : 12 analog, 24 digital								
f) Printout options : Both graphic and numeric								
g) Printer : Thermal								
h) Display : 16 character alphanumeric LCD								
12. Portable, Hand-held Thermal Imaging Camera								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
Suitable for thermal imaging and measurement of high voltage/ power transformers, site units cable, etc. should be based on uncooled micro bolometer FPA detector, Unit to be maintenance free and featuring advanced features such as image storage, visual image capturing, etc., and should be suitable for use in harsh environments, with 60 seconds of voice annotation per file, text annotations, adjustable emissivity of 0.01 to 1.00 in steps of 0.01, auto shut down feature.								
Features:								
Auto/manual focus, electronic zoom, video output, PIP, Touch screen, wide measurement modes, etc. To be supplied with laser locator, manual, certificate, standard kit and accessories, remote control handle, 35 mm IR lens, 3.5" VGA LCD screen,0.6" OLED view finder, touch pen, Rechargeable LI-Ion batteries, AC adaptor, battery charger, Memory card (2 GB), and also built in fish memory- to save								
>1200 images, card reader suitable for image/data transfer to PC, complete control and analysis and reporting software, VGA and USB extension cables, RS 232 communication and TV video cable, RS 232 communication protocol, USB driver, carrying case and straps, analysis software.								
Temp. Range : -20 Deg.C to +2000 Deg.C								
Emmisivity correction : 0.01 to 1.00								
Accuracy : ±1 % of rdg or ±1°C whichever is greater for lower temperatures upto 250 deg C and ±2% of rdg or ±2°C whichever is greater for higher temperatures.								
Spectral Response : 8 to 14 microns								
Minimum object focus distance: 3 m								
Thermal Sensitivity : 0.08°C @ 30°C								
Image frequency : 50 Hz so as to detect moving objects with high speed.								
Field of View : 22° x 16°								
Battery Operation : For at least 2-hours								
13. DC Leakage Analyser								
Voltage range : 0 to 500V DC								
Current : 2000 micro amps								
Indicators : LED								
Accessories : Battery & battery charger, heavy duty rubber insulated coiled test leads								
14. HV Discharge Rod & Portable Earthing Equipment								
Class 'F' insulated. Having non-linear carbon film resistor with negative temperature co- efficient. Non-hygroscopic								

Item description	Whether Quoted or not (Yes/No)	Make	Model no	Country of Manufacture	Authorization letter (attached or not)	Bidder to indicate the parameters of offered model against each parameter mentioned in the tender specification so that it can be concluded that offered model is meeting all requiremnets as specified in technical specification	Catalogue (attached or not)	Remarks
Dimensions : ID 25 mm, OD 31 mm, Length 1250 mm (Main rod & each extension), total length : 6 metres								
Discharge Hook : 100 mm dia on								
12.5 mm dia copper rod								
Earth lead : Flexible braided copper								
Voltage Rating : Upto 420 KV								
15. Storage type digital oscilloscope								
16. Hot Sticks (Live/Dead Line Tester)								
Class 'F' insulated upto 400 kV, extendible from 1.25 metre to 6.0 metres with inbuilt self-check feature. Contact or proximity type in a special carrying case.								

ANNEXURE– VIII

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits

himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)! Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 – Disqualification from tender process & exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors". framed by the Principal.

Section 4 – Compensation for Damages

4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors

6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain

responsible for any default by his sub-contractors.

6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders / Contractors / Sub-contractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 –Independent External Monitor(s)

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non-disclosure agreement.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.

8.7 The IEMs would examine all complaints received by them and give their recommendations! views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious

irregularities requiring legal! administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.

8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organization.

8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code! Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.12 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty! guarantee etc. should be outside the purview of IEMs.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

----------	----------
For & On behalf of the Principal	For & On behalf of the Bidder/ Contractor
(Office Seal)	(Office Seal)
Place---------- SHRI	
Date---------- PRAKASH YADAV	
Witness: _____	Witness: _____
(Name & Address) _____	(Name & Address)_____

Digitally signed by SHRI PRAKASH YADAV
DN: c=IN, o=BHARAT HEAVY ELECTRICALS LIMITED, ou=POWER SECTOR-PROJECT ENGINEERING MANAGEMENT (PS-PEM), postalCode=201301, st=UTTAR PRADESH, 2.5.4.20=8f4e11ceddcd03ac5af3703732a80511e95fb3bb614e26b64a18d90c3591aad3, pseudonym=37DE274D0171SFEA705EE5677BEA2CDFA1DA5988, serialNumber=51874E6D31DA4E2307DD62E5682B40C2B17708AA7C37FE1F32A463C515C99298, cn=SHRI PRAKASH YADAV
Date: 2023.03.16 10:07:13 +05'30'