	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS 3x800MW PATRATU STPP	PE-PQ-434-507-E004
		REVISION NO. 0 DATE 23/05/2022
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ITEMS: Cable termination and jointing kits.

Vendor may be considered for evaluation for one or more type of cable termination kits (Voltage Grade 3.3/6.6/11/33 kV) and Jointing kits (Voltage Grade 3.3/6.6/11/33 kV):

Type 1 – Heat shrinkable [termination Kits & jointing kits]

Type 2 – Pre-moulded [termination Kits & jointing kits]

Type 3 – Cold shrinkable [termination Kits & jointing kits]

SCOPE: Supply: YES; Erection & Commissioning: NO;

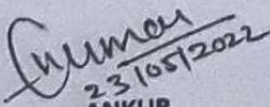
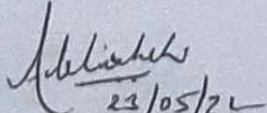
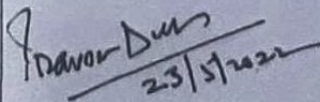
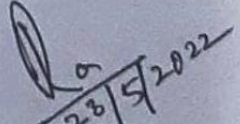
1	Vendor should be manufacturer of applicable type of Cable termination and jointing kits.
2	Availability of type test certificates as per applicable standards for the applicable type of cable termination and jointing kits.
3	Vendor should have in house facility for manufacturing and routine & acceptance testing for the applicable type of termination and jointing kits.
4	Vendor should have capacity to manufacture 600 nos. cable termination and jointing kits per month for the applicable type of cable termination and jointing kits.
5	Manufactured & supplied at least 1000 nos. cable termination and jointing kits of applicable type in one or more orders.
6	Minimum two (2) nos. purchase orders for cable termination and jointing kits of applicable type shall be submitted which should not be more than five (5) years old from the date of techno-commercial bid opening for establishing continuity in business.


Notes:

- For Sl. No: 1 & 3 vendor to furnish credentials for applicable type of Cable termination and jointing kits for assessment of manufacturing range of the vendor (i.e. for up to which voltage grade and conductor cross-section area).
- For Sl. No: 2, 4, 5 & 6 vendor to furnish credentials for applicable type of Cable termination and jointing kits of any of the voltage grades as mentioned above.

Notes (General points of PQR):

- Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/

PREPARED BY  ANKUR, ADDL. ENGR.	CHECKED BY  23/05/22 ABHISHEK SR. MANAGER	REVIEWED BY  23/5/2022 PRAVEEN DUTTA AGM	APPROVED BY  23/5/2022 D. RATH AGM(DH)
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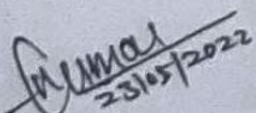
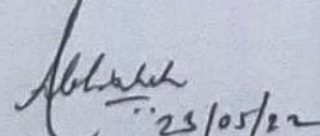
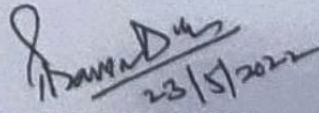
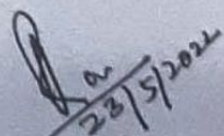
	PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS 3x800MW PATRATU STPP	PE-PQ-434-507-E004
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Indian subsidiaries shall be evaluated as follows:

- If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.
- If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
- If bidder happens to bid jointly with their partner, then credentials of both the partners will be considered for meeting PQR as per distribution of the work. In all such cases, lead bidder as specified in bid documents shall be responsible for overall execution of the contract and all guarantee/ warranty.
- If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. etc. and warranty/ guarantee shall be submitted along with the offer.

- Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of the project.
- Consideration of offer shall be subject to customer's approval of bidders, if applicable
- 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.
- 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.
- After satisfactory fulfilment of the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of tender.

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
 23/05/2022 ANKUR, ADDL. ENGR.	 23/05/22 ABHISHEK SR. MANAGER	 23/5/2022 PRAVEEN DUTTA AGM	 23/5/2022 D. RATH AGM(DH)

**3X800 MW PVUNL PATRATU
STPP PHASE-1 EPC PACKAGE**

TECHNICAL SPECIFICATION

FOR

***CABLE TERMINATION
& JOINTING KITS***

SPECIFICATION NO: *PE-TS-434-507-E009*

REVISION: 0



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UP (INDIA) – 201301**

974384/2022/PS-PEM-EL



TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS

SPECIFICATION NO. PE-TS-434-507-E009

VOLUME II

SECTION

REVISION 00

DATE: 05.07.2021

SHEET 1 OF 1

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Sl. No.	DESCRIPTION	NO. OF SHEETS
1.0	SECTION- I	
	COMPLIANCE CERTIFICATE	01
	SPECIFIC TECHNICAL REQUIREMENTS	01
	DATA SHEET – A	02
2.0	SECTION- II	
	STANDARD TECHNICAL REQUIREMENTS	03

Total nos. of sheets (including cover and separator sheets) = 11 sheets

	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	SPECIFICATION NO. PE-TS-434-507-E009	
		VOLUME II	
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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 'BOQ-Cum-Price schedule' shall not be considered.

BIDDER'S STAMP & SIGNATURE

974384/2022/PS-PEM-EL



TECHNICAL SPECIFICATION FOR CABLE
TERMINATION & JOINTING KITS

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SECTION - I

SPECIFIC TECHNICAL REQUIREMENTS



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

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1.0 SCOPE OF ENQUIRY

- 1.1 This specification covers the design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kit, conforming to this specification.
- 1.2 Technical requirements of Cable Termination & Jointing Kit are indicated in Data Sheet-A & Section-II.
- 1.3 The stipulation of Data Sheet-A shall prevail in case of any conflict between the stipulations of Data Sheet-A & Section-II.

2.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED

2.1 Documents required to be submitted by the bidder along with the Technical offer: -

- a) Type test report for 3.3kV & 11kV. Test Report should not be older than 10 years from date as 17.07.2017.

2.2 Documents as per NIT shall be submitted for specific project requirement after placement of order for BHEL & customer's approval.

NOTE: -

Document indicated above, shall be submitted through document management system (DMS).



**TECHNICAL SPECIFICATION FOR
CABLE TERMINATION & JOINTING KITS**

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DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

- 1.1 IS: 13573 (Latest Revision): For Type Testing (Cable accessories for extruded power cables).
- 1.2 IEC: 60754 1&2: For FRLS properties of termination & Jointing Kits.
- 1.3 IEC-60502-4: For Type Testing (For working Voltage 3KV -30KV).
- 1.4 IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

- 2.1 Voltage grade: 3.3kV(UE) / 11kV(UE)
- 2.2 Application: Indoor
- 2.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 2.4 Sizes: As per BOQ
- 2.5 Type testing conforming to As per IS 13573, IEC60502 & ESI 09-13 (external tests)
- 2.6 Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

- 3.1 Voltage grade: 3.3kV(UE) / 11kV(UE)
- 3.2 Application: Outdoor
- 3.3 Type: Heat Shrinkable/pre-moulded type/ cold shrinkable
- 3.4 Sizes: As per BOQ.
- 3.5 Testing requirement conforming to as per IS 13573, IEC60502 & ESI 09-13 (external tests)

4.0 BRIEF CABLE SPECIFICATION

- 4.1 Voltage grade: 3.3kV(UE) / 11kV(UE)
- 4.2 Conductor material: Stranded Aluminium, H4 Grade- Class-2
- 4.3 Conductor screening material: Extruded Cross-linked Semi conducting compound



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- 4.4 Insulation material: Cross-linked polyethylene (XLPE)
- 4.5 Insulation Screen material
- a) Non-conducting: Extruded Cross-linked Semi-conducting compound 0.3
- b) Conducting: Copper tape
- 4.6 Armour: As Applicable
- 4.7 Inner sheath material: PVC Type ST2 (For multicore cables only)
- 4.8 Outer sheath material: PVC ST2 FR-LSH

5.0 Required fault level:

Voltage Grade	Fault Value (rms)	Withstand Duration
11KV	50KA	0.12 Sec
3.3KV	40KA	0.12 Sec

- 6.0 Type testing requirement:** Type test certificates to be furnished in line with clause 4.4, 4.5, 4.6 of Section-II of specification. Type testing/Test certificates shall conform to IS 13573, IEC60502 & ESI 09-13 (external tests)
- 7.0 CABLE LUGS /RERRULES (As per DIN):** Crimping type solderless Tinned Copper (conforming to IS: 8309) (Heavy duty type).

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SECTION-II**STANDARD TECHNICAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

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1.0 INTENT OF SPECIFICATION

It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing in continuous commercial operation at site conditions & purchaser shall have power to reject any work or material which in his judgement is not in full accordance with this specification.

2.0 CODES AND STANDARDS

- 2.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well as of the locality where the material is to be installed.
- 2.2 The design, material, construction, manufacture, inspection, testing and performance of **Cable Termination & Jointing Kit** shall conform to the latest revision of relevant standards and codes of practices as per Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

3.0 TECHNICAL REQUIREMENTS

- 3.1 Technical particulars of Cable termination & jointing kits are specified in Technical Datasheet.
- 3.2 Termination Kits shall be of proven design and make, which have already been extensively used and fully type tested. Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Kit contents shall be supplied from the same source as were used for type testing.
- 3.3 The termination/jointing kits shall be suitable for site ambient conditions and polluted atmosphere, and for storage without deterioration at 50°C ambient temperature.
- 3.4 Termination kits shall be suitable for installation inside motor terminal boxes, metal clad switchgear, transformer terminal box etc.
- 3.5 Each kit shall contain all necessary components, accessories and consumables to make a complete termination in such a way that no live parts of the terminals and connecting lugs are exposed. Cable lugs for termination kits & jointing ferrules for straight through jointing kits shall form part of the kit.



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- 3.6 Cable lugs/ferrules shall be of Tinned Copper & heavy-duty type. Same shall be provided with bimetallic washer.
- 3.7 Termination and jointing kits shall have requisite stress relieving characteristics.
- 3.8 Termination and joints shall have provision for shield connection and earthing, wherever cable screening is specified.
- 3.9 All materials and components of the terminations/joints shall be suitable for and compatible with the type of cables for which the terminations/joints are intended.
- 3.10 Any surface treatment or sealants used to ensure environmental protection to the components of termination/joint or on the cable surface shall be non-tracking type and shall withstand the associated electric stress.
- 3.11 Cable jointing kits shall be suitable for directly buried cables.
- 3.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

4.0 QUALITY ASSURANCE, TESTING & INSPECTION

- 4.1 At contract stage, the successful bidder shall submit the signed & stamped Manufacturing Quality Plan for BHEL/ ultimate customer's approval. In case bidder has reference Manufacturing Quality Plan agreed with ultimate customer, same can be submitted for specific project after award of contract for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of Manufacturing Quality plan approval.
- 4.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Manufacturing quality plan, to be submitted by the bidder.
- 4.3 The bidder shall perform all tests necessary to ensure that the material and workmanship conform to the relevant standards and comply with the requirements of the specification. Charges for all these tests for all the equipments & components shall be deemed to be included in the bid price.
- 4.4 The bidder shall furnish the reports of all the type tests carried out, which shall conform to the latest revision of relevant standards. These reports should be for the tests conducted either in government approved third party laboratory or witnessed by client (such as major utilities/ industries) on identical/ similar items to those ordered under this contract.
- 4.5 In case bidder is not able to submit report of type test(s), or in case type tests report(s) are not found to be meeting the specification/ relevant standard requirements, then all such tests shall be conducted under this contract by the



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bidder free of cost to BHEL, and reports shall be submitted for approval. No charges shall be paid for testing under such circumstances.

- 4.6 Irrespective of the bidder furnishing valid type test report as indicated above, BHEL may get type tests as listed in Technical Datasheet, for which cost shall be borne by BHEL as per actual with additional 10% handling charges.
- 4.7 Bidder to offer higher voltage grade termination & jointing kits, if they cannot produce relevant type test certificates for particular kits conducted in any govt. / govt. approved lab, without any price implication.

5.0 PACKING

Individual parts of termination & jointing kits shall be packed in strong plastic bags to protect them from ingress of dust & moisture. Further total kits shall be placed in a strong cardboard container to protect it against damage during transit, storage for prolonged periods and handling. It shall have proper marking over the box for early identification.

Sl. No.	Suggested list of doc to be submitted with offer	Suggestive list of doc to be submitted with offer	Details of doc being submitted by Vendor	Remarks
1	Vendor should be manufacturer of applicable type of Cable termination and jointing kits.	MSME certificate / NSIC CERTIFICATE/ ISO certificate/any other Govt. doc.		
2	Availability of type test certificates as per applicable standards for the applicable type of cable termination and jointing kits.	Type Test Report		
3	Vendor should have in house facility for manufacturing and routine & acceptance testing for the applicable type of termination and jointing kits.	Test Reports		
4	Vendor should have capacity to manufacture 600 nos. cable termination and jointing kits per month for the applicable type of cable termination and jointing kits.	MSME certificate / NSIC CERTIFICATE/ Chartered Engineer certificate/any other Govt. doc		
5	Manufactured & supplied at least 1000 nos. cable termination and jointing kits of applicable type in one or more orders.	(i) Customer PO & corresponding dispatch docs like invoice/ MDCC etc or customer certificate		
6	Minimum two (2) nos. purchase orders for cable termination and jointing kits of applicable type shall be submitted which should not be more than five (5) years old from the date of technocommercial bid opening for establishing continuity in business..	(i) Customer Pos		
GENERAL DOCUMENTS				
1	Compliance cert BHEL	Signed & stamped Compliance cert(format provided by BHEL with enquiry documents)		
2	No technical deviation	Signed and stamped copy on Vendor letter head		
3	Unprice bid	Signed unpriced bid (format provided by BHEL with enquiry documents)		