342556/2021/PS-PEM-EL

BHEL	**PRE-QUALIFICATION REQUIREMENTS FOR CABLE TERMINATION & JOINTING KITS**	PE-PQ-999-507-E004 REVISION NO. 03 DATE 02/12/2020 Page **1** of **2**

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 1.1/3.3/6.6/11/33 kV):

Type 1 – Heat shrinkable [termination Kits & jointing kits]
Type 2 – Pre-moulded push on [termination kits]
Type 3 – Cold shrinkable [termination Kits & jointing kits]
Type 4 – Elastimold [termination Kits & jointing kits]
Type 5 – Tapex [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 application for registration or date of techno-commercial bid opening (as applicable) for establishing continuity in business.

Notes:

1. 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).
2. 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.

PREPARED BY	REVIEWED BY	APPROVED BY
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SUJIT KUMAR SETHY, **DY. MANAGER**	**MANISH SHUKLA,** **SR. DGM**	**PRAVEEN DUTTA,** **SR. DGM**

342556/2021/PS-PEM-EL

Notes (General points of PQR):

1. Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:

a. 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.
b. If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
c. 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.

d. 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.

2. 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.

3. Consideration of offer shall be subject to customer's approval of bidders, if applicable

4. 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.

5. Any other project specific requirement shall be as per Annexure-I and bidder shall submit relevant supporting documents. Bidder to meet criteria as stated above and as per Annexure-I.

6. 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.

7. 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.

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BHEL PEM-ELECTRICAL

PRE-QUALIFYING REQUIREMENTS FOR TERMINATION AND JOINTING KIT

ANNEXURE –I

PROJECT SPECIFIC CRITERIA AGAINST ENQUIRY

PROJECT: 5X800MW YADADRI TPS

NIL

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Dy. Manager-Electrical

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Controlling Officer
Narendra Nath Jajware
Sr. Manager-Electrical

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Section Head
Praveen Dutta
AGM-Electrical

DEBASISA RATH

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Deptt, Head
Debasisa Rath
AGM-Electrical

TELANGANA STATE POWER GENERATION CORPORATION LIMITED

5X800MW YADADRI TPS

VOLUME -II

TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS

SPECIFICATION NO: PE-TS-417-507-E014
REVISION: 00

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

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	VOLUME II	
		CONTENT SHEET	
		REVISION 00	DATE: 19.06.2021
		SHEET 1 OF 1	

CONTENTS

TOTAL SHEETS INCLUDING COVER SHEET, CONTENT/SEPARATOR SHEET = 11

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	VOLUME II	
		COMPLIANCE CERTIFICATE	
		REVISION 00	DATE: 19.06.2021

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 deviations 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 (i.e. technical description and quantities as per specification shall prevail).

BIDDER'S STAMP & SIGNATURE

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
BHEL	**TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS**	VOLUME II	
		SECTION-I	
		REVISION 00	DATE: 19.06.2021
		SHEET 1 OF 3	

SECTION – I

SPECIFIC TECHNICAL REQUIREMENTS

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
BHEL	**TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS**	VOLUME II	
		SECTION-I	
		REVISION 00	DATE: 19.06.2021
		SHEET 2 OF 3	

SPECIFIC TECHNICAL REQUIREMENTS: -

1.0 PURPOSE

This specification is intended for finalization of contract between BHEL PEM and Bidder.
Technical details as indicated in the specification shall be agreed upon between BHEL PEM and Bidder.

2.0 SCOPE OF ENQUIRY

2.1 Design, manufacture, inspection and testing at manufacturer's works, proper packing and delivery to site of Cable Termination & Jointing Kits conforming to this specification.

2.2 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.

2.3 Technical requirements of Cable Termination & Jointing Kits are indicated in Data Sheet-A, Section-I & Section-II.

2.4 The stipulation of Data Sheet-A shall prevail in case of any conflict between the stipulations of Data Sheet-A, Section-I & Section-II. The stipulation of Section I shall prevail in case of any conflict between the stipulations of Section I & Section-II.

3.0 BILL OF QUANTITIES

The bidder to quote for items as per price schedule attached with NIT.

4.0 TECHNICAL REQUIREMENTS: -

a) Materials of construction for a joint/termination shall perfectly match with the dielectric chemical and physical characteristics of the associated cables. The material and design concepts shall incorporate a high degree of operating compatibility between the cable and joints. The protective outer covering (jacket) used on the joints/terminations shall have the same qualities as that of the cable outer sheath in terms of ambient/operating temperature withstand capability and resistance to hazardous environments and corrosive elements.

b) The materials required for termination and straight through joints shall be supplied in kit form. The kit shall include all insulating and sealing materials apart from consumable items and installation instruction.

c) The termination kits shall be suitable for termination of the cables to indoor switchgear or to a weatherproof cable box of an indoor/outdoor mounted transformer/motor.

d) Supply of the cable termination kit and cable terminations shall be in scope of contractor.

e) Termination and jointing kits for 11/3.3 kV grade XLPE insulated cables shall be of proven design and make which have already been extensively used and type tested. Termination kits and jointing kits shall be heat shrinkable type. 11/3.3 kV grade joints and terminations shall be type tested as per IS: 13573. 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. The kit shall be complete with the aluminium solder less crimping type cable lugs & ferrule as per DIN standard.

f) Straight through joint and termination shall be capable of withstanding the fault level for 11 kV and 3.3 kV systems.

g) The termination and straight through joint kits for use on high voltage system shall be suitable for the type of cables offered by the contractor or the type of cables issued by owner for installation. The materials required for termination and straight through joints shall be supplied in kit form. The kit shall include all insulating and sealing materials apart from conductor fittings and consumable items. An installation instruction shall be included in each kit.

h) Cable termination kit and straight through joints should have been tested as per IS: 13573 for 3.3kV and 11kV class.

i) Cable termination compartment shall receive the stranded Aluminium conductor, XLPE insulated, FRLS, shielded, armoured single core / three core unearthed / earthed grade power cable(s).

j) Type test report for termination kit & jointing kit should not be older than 5 years from 17.10.2017.

5.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED

5.1 Documents/drawings shall be submitted after placement of order for BHEL and customer approval which has been specified in NIT.

NOTE-

1. Vendor shall submit the dates for drawing/document submission/BHEL comments/ resubmission after approval of documents.

2. In BOM each of the item to be uniquely identified with item code no. or item Sl. No. Supplier to ensure that all the items which will find separate mention in the packing list are covered in detailed BOM. Supplier to give following undertaking in BOM: " The BOM provided here completes the scope (in content and intent) of material supply under PO no. ---- dtd ----- Any additional material which may become necessary for the intended application of supplied item/package will be supplied free of cost in most reasonable time."

5.2 Drawings/ documents shall be submitted through Document Management System (DMS).

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	VOLUME II	
		DATA SHEET	
		REVISION 00	DATE: 19.06.2021
		SHEET 1 OF 2	

DATASHEET-A

1.0 REFERENCE CODES & STANDARDS

a) IS: 13573 (Latest Revision): Cable accessories for extruded power cables.

b) IS: 8309: Compression type tubular terminal ends for aluminium conductors of insulated cables.

2.0 TERMINATION KITS

a) Voltage grade: 3.3 kV (U/E) / 11kV (U/E)

b) Application: Indoor

c) Type: Heat Shrinkable type

d) Sizes: As per BOQ

e) Type testing conforming to: As per IS 13573

f) Total Shrouding of all live parts: Yes

3.0 STRAIGHT THROUGH JOINTING KITS

a) Voltage grade: 3.3 kV (U/E) / 11kV (U/E)

b) Type: Tapex / Paracast / Parawrap / Heat Shrinkable type

c) Sizes: As per BOQ.

d) Testing requirement conforming to as per IS 13573

4.0 BRIEF CABLE SPECIFICATION

a) Voltage grade: 3.3 kV (U/E) / 11kV (U/E)

b) Conductor material: Stranded aluminium

c) Conductor screening material: Extruded Semi conducting compound

d) Insulation material: Cross-linked polyethylene (XLPE)

e) Insulation Screen material

I. Non-metallic: Cross-linked semi-conducting compound
II. Metallic: Copper tape

f) Armour: Applicable

I. Single core: Aluminium round wire
II. Multi core: Galvanised steel round wire armour

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	VOLUME II	
		DATA SHEET	
		REVISION 00	DATE: 19.06.2021
		SHEET 2 OF 2	

g) Inner sheath material: Extruded HRPVC Type ST2

h) Outer sheath material: Extruded HRPVC Type ST2

5.0 REQUIRED FAULT LEVEL:

	3.3kV	**11kV**
RMS Value	40kA	50kA
Peak Value	100kA	125kA

Fault withstand duration: 1 sec

6.0 TYPE TESTING REQUIREMENT: Type test certificates to be furnished in line with clause 3.4, 3.5, 3.6 of Section-II of specification.
Type testing/Test certificate shall conform to IS:13573

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	VOLUME II	
		SECTION-II	
		REVISION 00	DATE: 19.06.2021
		SHEET 1 OF 3	

SECTION-II

STANDARD TECHNICAL REQUIREMENTS

	DOCUMENT TITLE	SPECIFICATION NO. PE-TS-417-507-E014	
	TECHNICAL SPECIFICATION FOR CABLE TERMINATION & JOINTING KITS	VOLUME II	
		SECTION-II	
		REVISION 00	DATE: 19.06.2021
		SHEET 2 OF 3	

1.0 CODES AND STANDARDS

1.1 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.

1.2 The design, material, construction, manufacture, inspection, testing and performance of Cable Termination & Jointing Kits shall conform to the latest revision of relevant standards and codes of practices as per Datasheet-A.

1.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

2.0 TECHNICAL REQUIREMENTS

2.1 Technical particulars of Cable termination & jointing kits are specified in Technical Datasheet.

2.2 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.

2.3 The termination/jointing kits shall be suitable for site ambient conditions and polluted atmosphere, and for storage without deterioration at 50°C ambient temperature.

2.4 Termination kits shall be suitable for installation inside motor terminal boxes, metal clad switchgear, transformer terminal box etc.

2.5 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.

2.6 Cable lugs shall be of Aluminium & heavy duty type. Same shall be provided with bimetallic washer.

2.7 Termination and jointing kits shall have requisite stress relieving characteristics.

2.8 Termination and joints shall have provision for shield connection and earthing, wherever cable screening is specified.

2.9 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.

2.10 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.

2.11 Cable jointing kits shall be suitable for directly buried cables.

2.12 Cable glands are excluded from the scope of supply of termination kit/ jointing kits.

3.0 QUALITY ASSURANCE, TESTING & INSPECTION

3.1 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.

3.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Manufacturing Quality Plan.

3.3 The supplier 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 equipment & components shall be deemed to be included in the bid price.

3.4 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.

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

3.6 Irrespective of the bidder furnishing valid type test report as indicated above, BHEL may get type tests conducted if specified as project requirement, for which cost shall be borne by BHEL as per actual with additional 10% handling charges.

3.7 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.

4.0 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.