

Project Engineering
Management

Bharat Heavy Electricals Limited

(A Govt. Of India Undertaking)



ENQ. NO. E-5157/2015.

DATE: 12/01/2016

DUE DATE
08/02/2016
10:00 AM (IST)

Subject: GLOBAL Tender Enquiry of Ultrasonic flow meter as per Technical Specification/s No. PE-TS-410-145-1916 & PE-TS-411-145-1916 for 1X800 MW KOTHAGUDAM TPS & 4X270 MW BHADRADARI TPS.

BHEL invites offer from reputed Vendors (Refer pre-qualifying requirements enclosed in the Tender Documents uploaded on our websites www.bhelpem.com, www.bhel.com & CPP portal (www.eprocure.gov.in)) for ULTRASONIC FLOWMETER of 1X800 MW KOTHAGUDAM TPS & 4X270 MW BHADRADARI TPS . Detailed scope of work & equipment details shall be as per technical specification PE-TS-410-145-1916 & PE-TS-411-145-1916 & other details hosted on above indicated BHEL-websites.

Your offer shall be submitted in two parts strictly as per Clause-2.0 of the "Instructions to Bidders" of GCC, Rev. 06 in quintuplicate (5 sets), in sealed covers for the below mentioned equipment/system.

Item Description – ULTRASONIC FLOWMETER	
Project	Technical Specification no.
1X800 MW KOTHAGUDAM TPS & 4X270 MW BHADRADARI TPS	PE-TS-410-145-1916 & PE-TS-411-145-1916

Your best quotation/offer for the above requirement, in line with our terms and conditions (hosted on our website, as indicated above), should either be delivered in person or sent by COURIER/REGISTERED or SPEED POST, to the following address only:

Tender Room
Bharat Heavy Electricals Ltd.
Project Engineering Management
PPEI Building, HRD & ESI Complex,
Plot No. 25, Sector – 16A,
NOIDA – 201 301 (U.P.)
Attention: 1) Mr. AKASH VERMA,(PG-II-2,ENGINEER)
2) Mr. RAJEEV KUMAR SHARMA,(PG-II-2,SENIOR ENGINEER)

E-MAIL: akashverma@bhelpem.co.in; rajeevsharma@bhelpem.co.in
Ph. No. PHONE 0120-4368960,0120-4368569

It shall be the responsibility of the bidder to ensure that the tender is delivered on or before the due date by 10:00 AM (IST). The offer has to be deposited in tender box only. Part-I bids shall be opened at 11:00 AM (IST) on the due date in the presence of authorized representatives of the bidders, who may like to be present.

Akash Verma
12/11/16

AKASH VERMA,(PG-II-2.ENGINEER)
BHEL/PS-Project Engineering Management,
Power Project Engineering Institute,
Plot no. 25, Sector – 16A, Noida (UP) 201301, INDIA
(Ph. No.) 0120-4368960
(E-Mail.) akashverma@bhelpem.co.in

Regd. Office
BHEL House Siri Fort
New Delhi-110049



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Important Note to be considered by All Bidders:

The offers of the bidders who are on the banned list as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site http://www.bhel.com/vender_registration/vender.php.

TERMS AND CONDITIONS:

1. Bidders are advised to go through the GCC Rev-06 (<http://bhhelpem.com/Documents/GCC/GCC-Rev.06.pdf>) while submitting the offers.
2. Bidders have to note that Integrity Pact is not applicable.
3. **Pre-Qualifying Requirements:**
Bidders have to provide the required details as per TECHNICAL AND FINANCIAL PRE-QUALIFICATION REQUIREMENT CRITERIA (enclosed as NIT Tender Documents) in their Techno-Commercial offer. Bids of only those bidders shall be evaluated who meet the Technical as well as Financial Pre-Qualifying requirements.
4. Bidders have to submit their offers in line with clause no. 2.0 of "Instructions to Bidders" of GCC Rev. 06.
5. Seller/ Contractor shall not dispatch any material before issue of MDCC by BHEL/ CUSTOMER. For details refer clause no. 15.0 of "General Commercial Terms & Conditions" of GCC Rev. 06.
6. Bidders have to note that TERMS AND CONDITIONS of the tender shall be as per Notice Inviting Tender (NIT) conditions, Special Conditions of Contract (SCC) of Project & General Conditions of Contracts (GCC, Rev. 06)
Order of precedence shall be as per clause NO. 35.0 Of GCC Rev. 06 (GENERAL COMMERCIAL TERMS & CONDITIONS).
7. Price bid (Part-II) opening/RA participation of those bidders, who are not approved by end Customer, shall be subjected to approval of bidder by the customer. Same shall be taken up by BHEL with the customer based on the credentials/reference list being submitted by the bidder.
8. Bidders have to note that BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. For details refer clause no. 13.0 of "Instructions to Bidders" of GCC Rev. 06.

Akash Verma
12/1/16

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Project Engineering
Management



ENQ. NO. E-5157/2015.

DATE: 12/01/2016

9. Delivery Terms (Project-wise):

For 1X800 MW TSGENCO KOTHAGUDEM TPS-

Main Supply: Delivery completion shall be within 20 weeks from the date of Purchase Order. Drgs /docs submission schedule shall be as per technical specification PE-TS-410-145-1916, VOL IIB, section D & every resubmission is to be within ten (10) days of receipt of comments (incorporating all the BHEL/customer comments)

Supervision of E&C: Vendor has to depute their personnel within 15 days of intimation of BHEL.

For 4 X 270 MW BHADRADRI TPS-

Main Supply: delivery completion shall be within 20 weeks from the date of Purchase order. Drgs /docs submission schedule shall be as per technical specification: PE-TS-411-145-1916, VOL IIB, section D & every resubmission is to be within ten (10) days of receipt of comments (incorporating all the BHEL/customer comments)

Supervision of E&C: Vendor has to depute their personnel within 15 days of intimation of BHEL

10. CIF is not available for subject package of subject project. For any import, if any, shall be on merit basis.
11. Prices shall remain firm as per GCC REV 06
12. For Indigenous Supplies, Bidders have to quote freight charges in percentage of quoted Total Ex-works prices.
13. The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.
14. Evaluation shall be on over all L1 basis (total cost to BHEL) & will be done separately for both the projects. Bidder has to refer respective project SCC & GCC for the same.
15. Two (02) separate offers are to be submitted for Bhadradri & Kothagudem project. Techno-commercial Bids and Price Bids for both the project should be submitted in separately in two (02) separate envelopes (containing unpriced and price bids separately) project-wise. Complete offers of both the projects then should be placed in single envelope with details marked mentioned above.
16. Bidders to note that following forms the part of Tender Documents :
 - General Conditions of Contract (GCC) Rev. 06
 - Technical Specification No. PE-TS-410-145-1916 & PE-TS-411-145-1916
 - Price format
 - Special Conditions of Contract

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- Financial PQR, Technical PQR.
- NIT CONDITIONS & other Enclosures

Bidders to note that offers shall be submitted strictly in accordance with the requirements of the above Tender Documents & all the above Tender Documents along with post-bid agreements/MoMs (during Techno-Commercial evaluation) shall automatically become the part of the Order/Contract after its finalisation.

17. The bidders (who are not registered with BHEL-PEM) to download the Supplier Registration Form (SRF) from www.bhel.com or <http://www.bhelpem.com/Vendor%20Corner.aspx> and submit the same duly filled in along with credentials- experience list, performance certificates and other statutory data to our Vendor Development section with intimation to us.
18. Bidders to note that Deviations (if any) are to be listed only in 'Annexure II: Deviation Sheet' of GCC Rev. 06. Any deviation mentioned or shown separately or found hidden in offer, will not be taken cognizance of.
19. Foreign bidders quoting along with their Authorised Indian associates to comply with BHEL corporate circular AA:MM:AGENCY dated 06th August 2010 for the guidelines regarding dealings with Indian agents of Foreign bidders (as enclosed).
20. All corrigenda, addenda, amendments, time extensions, clarifications, etc. to the tender will be hosted on BHEL website (www.bhel.com) & BHEL-PEM website (www.bhelpem.com) only. Bidders should regularly visit websites to keep themselves updated.
21. In case of joint bidding, Consent letter is also required for acceptance of part order by foreign bidder and balance by Indian vendor. Total overall responsibility including submission of BG of the contract shall be the foreign bidder.
22. In case of joint bidding, Bidders to furnish scope matrix which should be clearly defined between foreign bidder and their Indian representative along with the offer for the Main Supply and Erection & Commissioning.
23. MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure-1 where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. Documents should be notarized or attested by a Gazetted officer.

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24. Online Registration Portal is operational in BHEL. Non-registered Vendors, who wish to apply for registration with BHEL-PEM, have to apply through Online Registration Portal available at www.bhelpem.com -> vendor section -> Online Supplier Registration. All credentials and/or documents duly signed and stamped related to registration has to be uploaded on the website and submit the application for registration. One set of hard copy of the filled-up SRF downloaded from Online Registration Portal duly signed and stamped has to be submitted.
25. All correspondence thereof, shall be addressed to the undersigned by name & designation and sent at the following address :-

AKASH VERMA,(PG-II-2,ENGINNER) M/s. Bharat Heavy Electricals Ltd., Project Engineering Management, Power Project Engineering Institute, HRD & ESI Complex, Plot No 25, Sector-16 A, Noida-201301,U.P.,INDIA E-MAIL: akashverma@bhelpem.co.in Ph. No. PHONE 0120-4368960	RAJEEV KUMAR SHARMA,(PG-II-2,SENIOR ENGINNER) M/s. Bharat Heavy Electricals Ltd., Project Engineering Management, Power Project Engineering Institute, HRD & ESI Complex, Plot No 25, Sector-16A,Noida-201301,U.P.,INDIA E-MAIL: rajeevsharma@bhelpem.co.in Ph. No. PHONE 0120-4363582
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NOTE: In case you are not making an offer against this enquiry, you are requested to send a regret letter so as to reach us on or before the due date & time.

Thanking You.

Yours faithfully,
For and on behalf of BHEL

AKASH VERMA, (PG-II-2, ENGINNER)

Enclosures:

1. Technical Specification No. PE-TS-410-145-1916 & PE-TS-411-145-1916
2. Price format of both projects
3. Special Conditions of Contract of both projects
4. Financial PQR, Technical PQR.
5. BHEL corporate circular AA:MM:AGENCY dated 06th August 2010

Akash Verma
12/1/16

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TELANGANA STATE POWER GENERATION CORPORATION LTD
4X270 MW BHADRADRI TPS, UNITS # 1 TO 4, MANUGURU,
KHAMMAM DISTRICT

TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOWMETER

VOLUME II-B & III

SPECIFICATION No: PE-TS-411-145-I916



BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT DIVISION
NOIDA, INDIA

PREAMBLE

1.0 The tender document contains three (3) volumes. The bidder shall meet the requirements of all the three volumes.

1.1 **Volume-I (CONDITIONS OF CONTRACT)**

This consists of four parts as below :-

- Volume-IA : This part contains instructions to bidders for making bids to BHEL.
- Volume-IB : This part contains general commercial conditions of the tender & includes provision that vendor is responsible for the quality of item supplied by their sub-vendors.
- Volume-IC : This part contains special conditions of contract.
- Volume-ID : This part contains commercial conditions for erection & commissioning site work, as applicable.

1.2 **Volume-II TECHNICAL SPECIFICATIONS**

Technical requirements are stipulated in Volume-II which comprises of :-

- Volume-IIA : General Technical Conditions
- Volume-IIB : Technical Specification including Drawings, if any.

1.2.1 **Volume-IIB**

This volume is sub-divided into following sections :-

- Section-A : This section outlines the scope of enquiry.
- Section-B : This section provides "Project Information".
- Section-C : This section indicates technical requirements specific to the contract, not covered in Section-D.
- Section-D : This section comprises of technical specifications of equipments complete with data sheet A, B and C.

Data Sheet - A specifies data and other requirements pertaining to the Equipment.

Data Sheet - B Specifies data to be filled by the bidder (Data Sheet-B is contained in Volume-III).

Data Sheet - C Indicates data/documents to be furnished after the award of contract as per agreed schedule by the vendor (as applicable).

1.2.2 **Volume-III TECHNICAL SCHEDULES**

This volume contains technical schedules and Data Sheets-B, which are to be duly filled by the bidder and the same shall be furnished with the technical bid as per instructions given in Document No. PE-SS-999-100-Q-002 in Volume-III.

2.0 The requirements mentioned in Section-C / Data Sheets-A of section-D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-D.



TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOWMETER

4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION A

REV. NO. 00

DATE 05/06/2015

SHEET 1 OF 2

SECTION – A
SCOPE OF ENQUIRY



**TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOWMETER**

4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION A

REV. NO. 00

DATE : 05/06/2015

SHEET 2 OF 2

SCOPE OF ENQUIRY

1.0 SCOPE

- 1.1 This specification covers the Design, Manufacture, Inspection and Testing at manufacturer's works, proper packing for transportation and delivery to site of the Ultrasonic flow meter with accessories as mentioned in different sections of this specification for 4X270 MW Bhadradri Thermal Power Plant.
- 1.2 The quality plan enclosed, forms the minimum requirement but not limited to be adhered to by the bidder. Bidder to sign and stamp the same and submit along with the offer as an acceptance.
- 1.3 Scope of supply shall be Ultrasonic flow meter along with accessories. as indicated in specification.
- 1.4 Following formats to be signed, stamped with company seal and submitted :
 - a) Complete offer including calculation sheets, catalogues etc.
 - b) Quality Plan
 - c) Datasheets A & B, duly filled
 - d) Schedule of submission of drawings/documents, equipment manufacture inspection and dispatch.
 - e) Schedule of price, unit prices, inspection schedule.

2.0 GENERAL TECHNICAL INSTRUCTIONS

- 2.1 It is not the intent here to specify all the details of design and manufacture. However, the equipment shall conform in all respects to high standard of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to the customer / consultant, who will interpret the meaning of drawing and specification and shall be entitled to reject any component or material which in his judgment is not in full accordance herewith.
- 2.2 The omission of specific reference to any component / accessory necessary for the proper performance of the equipments shall not relieve the supplier of the responsibility of providing such facilities to complete the supply within the quoted prices.
- 2.3 BHEL's/Customer's representative shall be given access to the shop in which the equipments are being manufactured or tested and all test records shall be made available to him.
- 2.4 The equipment covered under this specification shall not be dispatched unless the same have been finally inspected, accepted and Material Dispatch Clearance Certificate (MDCC) is issued by BHEL.



**TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOWMETER**

4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION B

REV. NO. 00

DATE : 05/06/2015

SHEET 1 OF 2

SECTION – B

PROJECT INFORMATION



PROJECT INFORMATION
FOR
4 X 270 MW BHADRADRI TPS

SPECIFICATION NO. `PE-TS-411-145-I916

VOLUME II - B

SECTION - B

REV 00

DATE 05.06.2015

PROJECT INFORMATION

INTRODUCTION

4x270 MW Bhadradi TPS is being set up by Telangana State Electricity Corporation Limited (TSGENCO) at Manuguru in the district of Khammam, Telangana, India.

The Bidder shall acquaint himself by a visit to the site, if felt necessary, with the conditions prevailing at site before submission of the bid. The information given here in under is for general guidance and shall not be contractually binding on BHEL/Owner. All relevant site data /information as may be necessary shall have to be obtained /collected by the Bidder.

APPROACH TO SITE

The distance from Manuguru to Major cities in state:

City	Km
Hyderabad	345
Warangal	180
Bhadrachalam	38
Kothagudem	70
Khammam	130
Vijayawada	195

District: KHAMMAM

State : TELANGANA

Nearest Airport: The nearest airport is Vijayawada Airport but the most used airport is the Hyderabad International Airport.

Nearest Railway Station: Manuguru railway station is 10KM from nearby town. However Warangal/Vijaywada railway Station is major railway station near to Manuguru.



PROJECT INFORMATION
FOR
4 X 270 MW BHADRADRI TPS

SPECIFICATION NO. PE-TS-411-145-1916

VOLUME II - B

SECTION - B

REV 00

DATE 05.06.2015

1. Owner : TSGENCO
2. Project Title : 4X270 MW Bhadradri TPS
3. Location : 16 Km from Manuguru Railway station
4. Nearest Railway Stn. : Manuguru
5. Temperature
 - a. Mean daily minimum ambient temperature during oldest month of the year: 11.5 Deg.C
 - b. Mean daily minimum ambient temperature during hottest month of the year: 45.1 Deg.C
6. Rainfall: Intensity of rainfall @ 50 mm/hr considering heaviest fall in 24 hrs
7. Wind Data: Basic wind speed at 10m height : 44 m/sec
8. Wind pressure As per IS: 875 Part III- 1987
9. Seismic Zone: Zone III as defined in IS:1893 (part-1)-2002 according to Indian Standard Seismic Zoning Map

10	Power Supply : The power supplies for distribution and auxiliaries shall be as under:	
	a) In plant generation	16.5kV $\pm 5\%$, 3ph, 50Hz $\pm 5\%$, high resistance earthed.
	b) MV distribution	6.6kV $\pm 6\%$, 3ph, 3w , 50 Hz, + 5 % to - 5%, Non-effectively earthed
	c) LT distribution	415V $\pm 10\%$, 3ph, 4W, 50Hz + 5% to -5%, Effectively earthed
	d) Motor rated above 160kW	6.6kV $\pm 6\%$, 3 ph 50Hz +5% to -5%.
	e) Motor rated 160kW and below all motorized actuators.	415V $\pm 10\%$, 3 ph, 50Hz +5% to -5%.
	f) For motors equal and below 30kW winding heating	24V AC $\pm 10\%$, 50 Hz %, [to be generated in 415V switchgear by vendor]
	g) DC Motors	220V DC + 10% to - 15%, 2 wire ungrounded system
	h) Control supply for relay panel/ 6.6kV breakers/415V breakers and DC emergency lighting.	220V DC + 10% to - 15%, 2 wire ungrounded system
	i) UPS for instrumentation & Control system	240V AC $\pm 1\%$, 1 ph ,50Hz $\pm 0.5\%$ 2 Wire AC system
	j) Control supply for 415V Motor contactors/AC Control circuits [to be generated in MCC /panel by vendor]	110V AC $\pm 10\%$, 50Hz + 5% to -5%.
	k) Diesel Generator emergency supply	415V $\pm 10\%$, 3ph,3W, 50Hz +5%to -5%.
11	Fault levels	
	a) 400kV	40kA rms for 1 sec
	b) 6.6kV	40 kA rms for 1 sec.
	c) 415V	50 kA rms for 1 sec.
	d) DC Supply	25 kA



TECHNICAL SPECIFICATION FOR
ULTRASONIC FLOWMETER

4X 270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION C

REV. NO. 00

DATE 05/06/2015

SHEET 1 OF 2

SECTION-C
SPECIAL TECHNICAL REQUIREMENT



**TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOWMETER**

4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION A

REV. NO. 00

DATE : 05/06/2015

SHEET 2 OF 2

SPECIFIC TECHNICAL REQUIREMENTS

The technical requirements in this section are specific for this project and shall override the specification under Section-D in case of any contradiction.

- 1.0 Bidder to note that duly filled up Data sheet-B, Quality Plan, Format “Schedule of submission of Drawings / Documents, Equipment Manufacture, Inspection and Dispatch” enclosed in Section-D of Volume IIB, to be signed and stamped and submitted with the bid.
- 2.0 Bidder Presence is required for 2 days each time (4 times) for any site support requirement. All the expenses like boarding, lodging and travel, Air fare etc. shall be in bidder’s scope.
- 3.0 DOCUMENTATION:**
- (A) **Along with the bids:** No separate documentation required at the time of bids except those specifically listed under Cl. No. 6.0 of Sec-D of Vol-II B.
- (B) **After the award of contract:** 10 sets of the following documents to be enclosed along with the contract documents for approval:
- a) Datasheet C completely filled-up.
 - b) Quality plan duly signed and stamped.
 - c) All Differential pressure vs Flow graphs.
 - d) Calculation Sheet.
 - e) Assembly dimensional drawings.
 - f) GA Drawing.
- (C) **Final documentation:** The documentation as listed below shall be submitted as a part of final documentation.
1. Approved final drawings/data sheets, – 10 sets with 2 CD-ROMS
 2. All Test certificates – 10 sets.
 3. Operation & Maintenance Manuals for Ultrasonic flow meter – 10 sets
 4. Assembly drawings and QP for approval – 10 sets.
 5. “As built” drawings – 10 sets.
- 4.0 In case during erection/commissioning of the Ultrasonic flow meter, any spares are required which have not been specified in the Start-up/commissioning spares list, the same will have to be supplied by the vendor free of cost.

1.07.00 ULTRASONIC FLOW TRANSMITTER

1. Type : Ultrasonic – Clamp On
2. Accuracy : +/- 1 % of reading
3. Repeatability : +/- 0.3 % of reading
4. Rangeability : 400 : 1
5. Output Signal : 4-20 mA DC with HART
6. Measured Parameter : Volumetric flow, Totalized flow and flow Velocity
7. Display : LCD with internal Key Pad (Flow rate & Totalization)
8. Power Supply : 24 V DC (2 Wire)
9. Enclosure : SS (IP- 68 – Submersible)
10. Mounting : SS Chain or Strap
11. Accessories
 1. Handheld calibrator
 2. ½”NPT cable gland
 3. Transducer cable
 4. All mounting hardware (SS-316)
 5. SS Nameplate
12. Adjustment/Calibration/ /Maintenance : From handheld calibrator/ HART management system
13. Applications : Plant water service

~~Note. Multi-path insertion type (minimum 4 path) Ultrasonic Flow meter shall be provided for Raw water/ Cooling Water flow measurements.~~

2.00.00 ~~HART HAND HELD CALIBRATOR~~

~~Hand held calibrators (5 nos. for each type) shall be provided for adjustment/ calibration/maintenance of the HART compatible~~



**TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOWMETER**

4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION B

REV. NO. 00

DATE : 05/06/2015

SHEET 1 OF 21

SECTION – D

- **EQUIPMENT SPECIFICATION**
- **DATA SHEETS – A & B**
- **QUALITY PLAN**
- **BILL OF QUANTITY**
- **SPARES**
- **SCHEDULE OF SUBMISSION OF DRAWINGS/
DOCUMENTS, EQPT. MANUFACTURE, INSPECTION
AND DISPATCH**



**TECHNICAL SPECIFICATION FOR
ULTRASONIC FLOWMETER**

4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION D

REV. NO. 00

DATE 05/06/2015

SHEET 2 OF 21

SECTION-D

EQUIPMENT SPECIFICATION



**TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOW METER**

SPEC NO.: PE-SS-999-145-I027

VOLUME II B

SECTION D

REV. NO. 01

DATE : 30.08.2012

SHEET 3 OF 21

1.0 SCOPE

This specification covers the Design, Manufacture, Calibration, Inspection and Testing at the manufacturer's works, proper packing for transportation and delivery to site of Ultrasonic Flow Meter for use in Utility/Captive Power Station/Combined Cycle Station.

2.0 CODES AND STANDARDS

- 2.1 All the equipments specified herein shall comply with the requirements of the latest issue of the relevant National and International standards.
- 2.2 The Ultrasonic Flow Meters shall be of proven reliability, accuracy and repeatability requiring a minimum of maintenance. The Design and Materials used for the components shall also comply with the relevant National and International standards.

3.0 TECHNICAL REQUIREMENT

The Ultrasonic Flow Meters and the accessories shall be suitable for continuous operation under an ambient temperature of 0-55°C for Transmitter and (-) 20 to 100°C for Transducer and Relative Humidity of 0-95% unless specified otherwise in volume IIB Section-B or Section-C.

All accessories required for mounting/erection of these instruments shall be furnished as necessary for completeness of the system.

3.1 Flow measurement

The Ultrasonic Flow Transmitter shall be based on transit-time flow measurement technique uses a pair of transducers with each transducer sending and receiving coded ultrasonic signals through the fluid. When the fluid is flowing, signal transit-time in the downstream direction is shorter than in the upstream direction; the difference between these transit times is proportional to the flow velocity. The Ultrasonic Flow Transmitter measures this time difference and uses programmed pipe parameters to determine flow rate and direction. Ultrasonic Flow Transmitters are classified as either wetted or non-wetted (clamp-on). Clamp-on transducers are clamped onto the outside of the pipe and never come into contact with the process fluid. Wetted transducers are mounted into the pipe or flow cell in direct contact with the process fluid. Hart Compatibility for the transmitter shall be provided. In case of Intrusion type meter shall be provided with spool piece along with end Flange & counter Flanges (as applicable).

3.2 Accessories:

All mounting hardware like clamping fixtures, mechanism to remove the sensors on line, interconnecting screened cables between Transducer & Transmitter , Cable Glands etc. is required to be supplied. Weather canopy for protection from direct sunlight and direct rain shall also be offered as an option. Material of all fittings shall be SS-316.

4.0 GUARANTEE AND PERFORMANCE

The guarantee of flow measuring assembly shall be 18 months from the date of dispatch or 12 months from commissioning whichever is earlier.



**TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOW METER**

SPEC NO.: PE-SS-999-145-I027	
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5.0 TEST & INSPECTION

- 5.1 The bidder shall adopt suitable quality assurance plan to ensure that the equipments offered will meet the specification requirements in full.
- 5.2 The Quality Plan shall be discussed and finalized with the technically accepted bidders before opening the price bid. The stages where the purchaser would like to be associated for witnessing or verification would be indicated by the purchaser in the Quality Plan before approval.
- 5.3 Inspection will be conducted by BHEL and/or their authorized representatives as per the agreed inspection schedule. The inspection schedule will be submitted by the bidder for BHEL's approval at contract stage. The cost of all tests and inspections will be deemed to have been included in the bid. For all the type tests "Type Test Certificates" as per agreed Quality Plan shall be furnished. In the absence of the same, such Type Tests shall be arranged at the Vendor's works in the presence of BHEL and/or their authorized representatives or in independent Test House/Laboratory approved by BHEL.

6.0 SPARES AND CONSUMABLES

6.1 Commissioning Spares and consumables

As part of the main equipment supply, the bidder shall supply all commissioning spares and consumables required during Start-up,

6.2 Recommended Spares

The bidder shall furnish a list of Recommended Spares along with the normal service expectancy period and frequency of replacement; quantities recommended for 3 years operation along with unit rate against each item to enable BHEL/BHEL's Customer to place a separate order later, if required.

6.3 Special Tools & Tackles

The bidder shall furnish a list of Special Tools & Tackles included in the bid.

7.0 DRAWINGS & DOCUMENTS

7.1 The offer shall include the following in 4 copies each.

- i. Technical data sheet for each flow measuring device assembly in the Pro forma enclosed under Data Sheet-B.
- ii. Catalogue/Technical Literature.
- iii. Assembly drawing with dimensional details.

7.2 4 copy each of the following along with 2 CDs to be furnished after award of contract for owner approval.

- i. Technical Data Sheet-C.
- ii. Sizing Calculations.
- iii. Assembly drawing with dimensions.
- iv. Installation drawing.



**TECHNICAL SPECIFICATION
FOR
ULTRASONIC FLOW METER**

SPEC NO.: PE-SS-999-145-I027

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SHEET **5 OF 21****8.0 FOR INFORMATION**

- 8.1 Storage and Commissioning Instruction
8.2 O&M are to be supplied as specified.

9.0 PACKING & MARKING

- 9.1 Each item shall be properly packed with adequate protection against friction, stresses, vibration & shock during transportation. Each packing box shall have marking as per Purchase Order.
- 9.2 Each assembly shall be identified with the following information.
- Tag No.
 - Service.
 - Line size & thickness.
 - Direction of flow.

10.0 APPLICABLE DATA SHEETS

This document shall be read in conjunction with following data sheets.

1. Data Sheet - A & B : Data sheet no. PES-145-27-DS1-0



TECHNICAL SPECIFICATION FOR ULTRASONIC FLOW METER

SPEC NO.: PE-SS-999-145-I027

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SECTION D

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PRINCIPLE OF MEASUREMENT

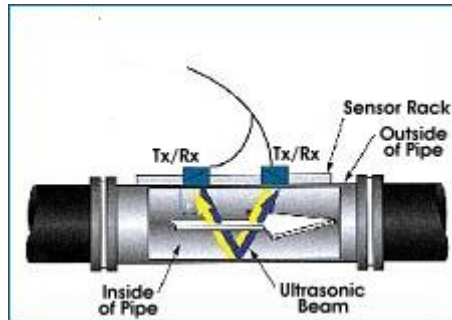


FIG.1

Transit-time flow meters measure the difference in travel time between pulses transmitted in a single path along and against the flow. Two transducers are used, one upstream of the other. Each acts as both a transmitter and receiver for the ultrasonic beam.

TYPICAL INSTALLATION (ASSEMBLY)

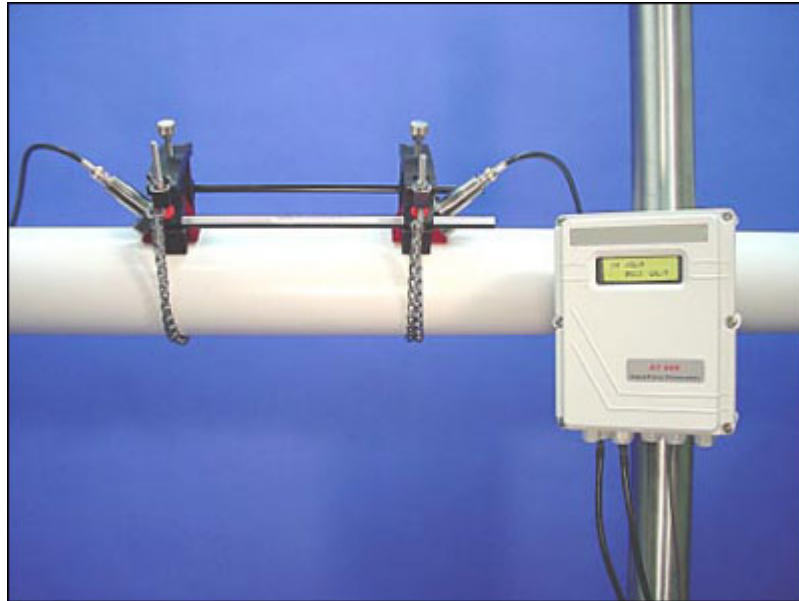


FIG.2

Ultrasonic flow meter suitable for clamp on flow measurement without modifications to pipe work.



**TECHNICAL SPECIFICATION FOR
ULTRASONIC FLOW METER**

4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

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SECTION-D

DATA SHEETS - A&B



DATA SHEET FOR UTRASONIC FLOW METER

SPEC NO.: PE-TS-411-145-I916	
VOLUME	II B
SECTION	D
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DATE	:05.06.15
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PROCESS DATA	FLUID RATE OF FLOW (T/HR) UPSTREAM WORKING PRESS (Kg/cm2g) DESIGN PRESS (Kg/cm2g) NORMAL TEMP (Deg C) MAXIMUM TEMP (Deg C) PIPE LOCATION	CLARIFIED WATER NORMAL : 34500 MAXIMUM : 44850 2.5 5.0 33 Bidder to indicate <input type="checkbox"/> UNDERGROUND <input type="checkbox"/> OVERGROUND
	PIPE LINE DATA PIPE SIZE (OD x THK) mm PIPE MATERIAL AVAILABLE PIPE STRAIGHT LENGTH	2335 X 18 MM CARBON STEEL AS PER IS 2062 GR.B UPSTREAM : 10D DOWNSTREAM : 5D

NOTE:- 1) Accessories like ½” NPT cable gland, Transducer cable, All mounting hardware (SS-316), SS nameplate etc. shall be provided.
 2) Double compression type nickel plated brass cable gland.
 3) Transducer cable min length shall be mentioned as per GA of Pit and location of transmitter.
 4) Remote Transmitter:
 i) Enclosure Material – Die Cast Aluminium (incase PP offered, suitable metal enclosure/housing shall be provided. Since it is located in the field.



DATA SHEET FOR UTRASONIC FLOW METER

SPEC NO.: PE-TS-411-145-I916	
VOLUME	II B
SECTION	D
REV. NO.	00
DATE	:05.06.15
SHEET	11 OF 21

PROCESS DATA	FLUID RATE OF FLOW (T/HR) UPSTREAM WORKING PRESS (Kg/cm2g) DESIGN PRESS (Kg/cm2g) NORMAL TEMP (Deg C) MAXIMUM TEMP (Deg C) PIPE LOCATION	CLARIFIED WATER NORMAL : 34500 MAXIMUM : 44850 2.5 5.0 33 Bidder to indicate <input type="checkbox"/> UNDERGROUND <input type="checkbox"/> OVERGROUND
	PIPE LINE DATA PIPE SIZE (OD x THK) mm PIPE MATERIAL AVAILABLE PIPE STRAIGHT LENGTH	2335 X 18 MM CARBON STEEL AS PER IS 2062 GR.B UPSTREAM : 10D DOWNSTREAM : 5D

NOTE:- 1) Accessories like ½” NPT cable gland, Transducer cable, All mounting hardware (SS-316), SS nameplate etc. shall be provided.
 2) Double compression type nickel plated brass cable gland.
 3) Transducer cable min length shall be mentioned as per GA of Pit and location of transmitter.
 4) Remote Transmitter:
 i) Enclosure Material – Die Cast Aluminium (incase PP offered, suitable metal enclosure/housing shall be provided. Since it is located in the field.



DATA SHEET FOR UTRASONIC FLOW METER

SPEC NO.: PE-TS-411-145-I916	
VOLUME	II B
SECTION	D
REV. NO.	00
DATE	:05.06.15
SHEET	13 OF 21

PROCESS DATA	FLUID RATE OF FLOW (T/HR) UPSTREAM WORKING PRESS (Kg/cm2g) DESIGN PRESS (Kg/cm2g) NORMAL TEMP (Deg C) MAXIMUM TEMP (Deg C) PIPE LOCATION	CLARIFIED WATER NORMAL : 34500 MAXIMUM : 44850 2.5 5.0 33 Bidder to indicate <input type="checkbox"/> UNDERGROUND <input type="checkbox"/> OVERGROUND
	PIPE LINE DATA PIPE SIZE (OD x THK) mm PIPE MATERIAL AVAILABLE PIPE STRAIGHT LENGTH	2335 X 18 MM CARBON STEEL AS PER IS 2062 GR.B UPSTREAM : 10D DOWNSTREAM : 5D

NOTE:- 1) Accessories like ½” NPT cable gland, Transducer cable, All mounting hardware (SS-316), SS nameplate etc. shall be provided.
 2) Double compression type nickel plated brass cable gland.
 3) Transducer cable min length shall be mentioned as per GA of Pit and location of transmitter.
 4) Remote Transmitter:
 i) Enclosure Material – Die Cast Aluminium (incase PP offered, suitable metal enclosure/housing shall be provided. Since it is located in the field.



DATA SHEET FOR UTRASONIC FLOW METER

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION D

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<p>PROCESS DATA</p>	<p>FLUID RATE OF FLOW (T/HR) UPSTREAM WORKING PRESS (Kg/cm2g) DESIGN PRESS (Kg/cm2g) NORMAL TEMP (Deg C) MAXIMUM TEMP (Deg C) PIPE LOCATION</p>	<p>CLARIFIED WATER NORMAL : 34500 MAXIMUM : 44850 2.5 5.0 33 Bidder to indicate <input checked="" type="checkbox"/> UNDERGROUND <input type="checkbox"/> OVERGROUND</p>	<p>..... </p>
<p>PIPE LINE DATA</p>	<p>PIPE SIZE (OD x THK) mm PIPE MATERIAL AVAILABLE PIPE STRAIGHT LENGTH</p>	<p>2335 X 18 MM CARBON STEEL AS PER IS 2062 GR.B UPSTREAM : 10D DOWNSTREAM : 5D</p>	<p>..... </p>

- NOTE:-
- 1) Accessories like ½” NPT cable gland, Transducer cable, All mounting hardware (SS-316), SS nameplate etc. shall be provided.
 - 2) Double compression type nickel plated brass cable gland.
 - 3) Transducer cable min length shall be mentioned as per GA of Pit and location of transmitter.
 - 4) Remote Transmitter:
 - i) Enclosure Material – Die Cast Aluminium (incase PP offered, suitable metal enclosure/housing shall be provided. Since it is located in the field.



TECHNICAL SPECIFICATION FOR
ULTRASONIC FLOWMETER
4X 270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

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SECTION-D

BILL OF QUANTITY



Technical specification for
ULTRASONIC FLOW METER

4X270 MW BHADRADRI TPS

SPECIFICATION NO. **PE-TS-411-145-1916**

VOLUME **II-B**

SECTION **D**

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DATE 05/06/2015

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BILL OF QUANTITY

[A] ULTRASONIC FLOWMETER WITH ALL ACCESSORIES

S. No.	KKS	SERVICE/ ITEM DESCRIPTION	QTY/UNIT	TOTAL QTY FOR STN
1	1PAB10CF001, 2PAB10CF001, 3PAB10CF001 & 4PAB10CF001	COOLING WATER SUPPLY HEADER TO CONDENSER (ONE AGAINST EACH TAG)	1	4



**TECHNICAL SPECIFICATION FOR
ULTRASONIC FLOW METER
4X270 MW BHADRADRI TPS**

SPEC NO.: PE-TS-411-145-I916

VOLUME II B

SECTION D

REV. NO. 00

DATE : 05/06/2015

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**SECTION-D
QUALITY PLAN**



PEM :: C&I

**QUALITY PLAN
FOR
ULTRASONIC FLOWMETER**

QUALITY PLAN NO.: **PE-QP-999-145-I-011**
 VOLUME **IIB**
 SECTION **D**
 REV. NO. **00** DATE: **31.03.2014**
 SHEET **19 OF 21**

Sl. No.	Component / operation	Characteristics Checked	* Category	Type/Method of Check	Extent of Check	Reference documents	Acceptance Norms	Format of Records	Agency \$			Remarks
									P	W	V	

1	Standard Certificates	Certificate of Compliance, Warranty Certificate,	Major	Visual	As applicable	Technical documents/Approved documents	Technical catalogue/Approved documents	Technical catalogue/Approved documents	2/ 3	---	2, 1	
2	Visual Check	Mechanical	Major	Visual	100%	Technical catalogue/Approved documents	Technical catalogue/Approved documents	Technical catalogue/Approved documents	2/ 3	1	1	
3	Functional test & power ON	Electrical	Major	Visual	100%	Functional test report for meter & transducer	Approved documents	Technical catalogue/Approved documents	2/ 3	-	1	
4	HART Communication	Electrical	Major	---	100%	Technical catalogue/Approved documents	Technical catalogue/Approved documents	Technical catalogue/Approved documents	-	-	1	

LEGEND:

\$ P - Agency Performing the Test.
 W - Agency Witnessing the Test.
 V - Agency Verifying the Test.

1 - Customer
 2 - Vendor
 3 - Sub-vendor



TECHNICAL SPECIFICATION FOR
ULTRASONIC FLOW METER
4X270 MW BHADRADRI TPS

SPEC NO.: PE-TS-411-145-I916

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**SCHEDULE OF SUBMISSION OF DRAWINGS/ DOCUMENTS, EQPT.
MANUFACTURE, INSPECTION AND DISPATCH**

	Technical specification for ULTRASONIC FLOW METER 4X270 MW BHADRADRI TPS	SPECIFICATION NO. PE-TS-411-145-I916	
		VOLUME II-B	
		SECTION D	
		REV. NO. 00	DATE: 05/06/2015
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SCHEDULE OF SUBMISSION OF DRAWINGS / DOCUMENTS, EQUIPMENT MANUFACTURE INSPECTION AND DESPATCH

1. <u>ZERO DATE</u>	<u>DATE of LOI / FOI / TOI</u>
2. Submission of Data Sheets / documents / catalogues for approval.	2 Weeks from the Zero date.
3. Technical finalisation, freezing of inputs of manufacture by way of vetting of documents and technical discussions and resubmissions of documents (if required)	6 Weeks from the Zero date.
4. Inspection of Equipment as per Approved (Category-I) drawings / documents.	18 Weeks from the Zero date.
5. Release of MDCC by BHEL	19 Weeks from the Zero date.
6. Dispatch (Packaging & Dispatch)	20 Weeks from the Zero date.
7. Final documents submission as per Contract	24 Weeks from the Zero date.

NOTE: Delays due to non-fulfillment of the requirements of approved Quality Plan and approved Data sheets, Drawings, Catalogues and Sizing Calculations observed during inspection shall be to the Vendor's account.

Delays due to INCOMPLETE (Partly) submission of Data sheets, Drawings, Catalogues and Sizing Calculations also be considered as "**DOCUMENTS NOT SUBMITTED**"

(Signature and Stamp of the Bidder)



Technical specification for
ULTRASONIC FLOWMETER
1X800 MW KOTHAGUDEM TPS STAGE-VII,
UNIT#12, PALONCHA

SPECIFICATION NO. **PE-TS-410-145-1916**

VOLUME **III**

SECTION

REV. NO. 01

DATE: 24.06.2015

SHEET 1 OF 6

VOLUME-III

**COMPLIANCE CERTIFICATE
For**

ULTRASONIC FLOWMETER

(To be Signed & Stamped by the Bidder)

Project: 1X800 MW KOTHAGUEM TPS STAGE-VII, UNIT#12, PALONCHA

Specification no.: PE-TS-410-145-1916

We shall comply with the following:-

1. All the requirements as stated in Technical Specification / Specific Technical requirement / Data sheets / Drawings, BHEL quality plan etc as enclosed in the tender, shall be fully complied **without any deviation.**
2. BHEL Quality Plan (enclosed with the specification) duly signed and stamped is submitted herewith **without any deviation.**

Signature with date	
Name	
Company seal	



Technical specification for
ULTRASONIC FLOWMETER
1X800 MW KOTHAGUDEM TPS STAGE-VII,
UNIT#12, PALONCHA

SPECIFICATION NO. **PE-TS-410-145-1916**

VOLUME **III**

SECTION

REV. NO. 01

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CONTENTS

VOL-III

S. No.	DESCRIPTION
1	COMPLIANCE CERTIFICATES
2	SCHEDULE OF PRICES
3	SCHEDULE OF UNIT PRICES
4	INSPECTION SCHEDULE



Technical specification for
ULTRASONIC FLOWMETER
1X800 MW KOTHAGUDEM TPS STAGE-VII,
UNIT#12, PALONCHA

SPECIFICATION NO. PE-TS-410-145-1916

VOLUME **III**

SECTION

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DATE: 24.06.2015

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SCHEDULE OF PRICES

S.NO.	ITEM DESCRIPTION	QTY	UNIT PRICE
[A] ULTRASONIC FLOW METER			
S. No.	KKS NO.	SERVICE/ ITEM DESCRIPTION	
1	PAB10BP001	CW HEADER TO CONDENSER	1
2	PCB20BP001	ACW SUPPLY HEADER	1

[B] SUPERVISION OF ERECTION & COMMISSIONING

S. No.	KKS NO.	SERVICE/ ITEM DESCRIPTION		PRICE PER ITEM
1	PAB10BP001 & PCB20BP001	SUPERVISION OF INSTALLATION (FOR 2 MAN DAYS PER TAG)	1	

PARTICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE

NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL



Technical specification for
ULTRASONIC FLOWMETER
1X800 MW KOTHAGUDEM TPS STAGE-VII,
UNIT#12, PALONCHA

SPECIFICATION NO. PE-TS-410-145-1916

VOLUME **III**

SECTION

REV. NO. 01

DATE: 24.06.2015

SHEET 4 OF 6

SCHEDULE OF UNIT PRICES

ULTRASONIC FLOW METER

S. No.	ITEMS	UNIT PRICE
1.	SENSOR	
2.	TRANSMITTER	
3.	CABLE BETWEEN SENSOR TO TRANSMITTER (PER METER)	
4.	SUPERVISION OF INSTALLATION PER MAN DAYS	

PETICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE

PETICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL



Technical specification for
ULTRASONIC FLOWMETER
1X800 MW KOTHAGUDEM TPS STAGE-VII,
UNIT#12, PALONCHA

SPECIFICATION NO. **PE-TS-410-145-1916**

VOLUME **III**

SECTION

REV. NO. 01

DATE: 24.06.2015

SHEET 5 OF 6

INSPECTION SCHEDULE

(PLACE & ADDRESS OF TESTING/ INSPECTION AND ITS SCHEDULE DATE & DURATION IN NUMBER OF DAYS ITEM/COMPONENTWISE TO BE LISTED)

PARTICULARS OF THE BIDDER / AUTHORISED REPRESENTATIVE

NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL



PRE - QUALIFYING REQUIREMENTS

ENQUIRY NO:

PROJECT:

4X270 MW BHADRADRI TPS

PACKAGE:

ULTRASONIC FLOW METERS

CRITERIA FOR EVALUATION - FINANCIAL :

	Amount (in Rs.)
Average annual financial turnover during the last Three Financial Years should not be less than Rupees Thirty Eight Lakh(s) Only	Rs.38,00,000.00

Notes:-

a) The bidder has to submit financial accounts (audited, if applicable), for last three years (or from the date of incorporation, whichever is less) as on tender due date to review the above criteria. In case the incorporation of vendor is less than 3 years, average annual financial turnover shall be calculated based on available information as below:-

i) If the accounts are available for ≤ 1 Financial Year, the Average Annual Turnover shall be calculated based on available information divided by 1 (One).

ii) If the accounts are available for >1 but ≤ 2 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 2 (Two).

iii) If the accounts are available for >2 but ≤ 3 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 3 (Three).

b) Foreign bidder is to submit a latest report from reputed third party business rating agency like Dun & Bradstreet, Credit reform etc. in addition to the documents mentioned at point (a) above for review of above criteria.

c) Other Income shall not be considered for arriving at Annual Turnover/Sales.

d) For evaluation of foreign bidder, exchange rate (TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid in case of two part bid) shall be considered.

RE-QUALIFICATION CRITERIA

PACKAGE	ULTRASONIC FLOW METERS	DATE	08.01.2015
		REV NO	02

1.0	Supplier shall be OEM or its authorised representative or its authorised channel partner of the Ultrasonic Flow Meter.
2.0	Supplier to furnish list of orders executed in last five years.
3.0	<p>The Product being offered by the Supplier should successfully in operation in Power Plant/ similar Industrial application for at least two years. Supplier to submit either of following supporting documents for the product/</p> <p>a. Copy of minimum two Satisfactory Performance Feedback Certificate from different end users specifying that product has been running successfully for 2 years from date of commissioning. The certificate should indicate salient features like year of commissioning of equipment, duty parameters (size, flow, ANSI Rating), project name, PO no & date, date of issue of certificate and name/designation of the certificate issuer. Also copy of related Purchase Order to be attached.</p> <p style="text-align: center;">OR</p> <p>b. Copy of repeat orders from minimum two different end user/ Customer.</p> <p style="text-align: center;">OR</p> <p>c. Copy of one Performance Certificate as per sl. No.3.0 (a) above and one repeat order.</p> <p>Manufacturer should comply with BHEL quality plan & specification. (As per Annexure attached)</p> <p><i>A confirmation for the same shall be submitted.</i></p>
4.0	Documents submitted by supplier should be in English/ Translated in English only.

NOTES

- 1.0 This PQR shall also be applicable for Bidder(s) already registered with BHEL-PEM-Noida, India (with/ without any technical limit) for subject package, they need to submit credentials for criteria indicated above.
- 2.0 In case an authorised representative /channel partner is quoting, it shall submit authorisation letter from OEM stating the kind of contract between the OEM and the representative along with the bid.
- 3.0 In case, bids are submitted by authorised representative/ channel partner, PQR documents shall be verified for the OEM.
- 4.0 After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all other terms of the tender.
- 5.0 Consideration of offer will be subject to end user's and BHEL approval of bidder.

Terms & Conditions of Reverse Auction

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to “REVERSE AUCTION PROCEDURE” i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit ‘online sealed bid’ in the Reverse Auction. Non-submission of ‘online sealed bid’ by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
6. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at “Total Cost to BHEL” like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse auction will be conducted on scheduled date & time.
9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.
13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
15. In case BHEL decides to go for reverse auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

ANNEXURE II

DEVIATION SHEET (COST OF WITHDRAWAL)

PROJECT:- 4X270 MW BHADRADRI TPS

PACKAGE :ULTRASONIC FLOW METERS

NAME OF VENDOR:-

SL NO	VOULME/ SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATION / TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF WITHDRAWL OF DEVIATION	REFERENCE OF PRICE SCHEDULE ON WHICH COST OF WITHDRAWL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRAWL OF DEVIATION (POSITIVE/ NEGATIVE)	REASON FOR QUOTING DEVIATION
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TECHNICAL DEVIATIONS

COMMERCIAL DEVIATIONS

PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE

NAME	DESIGNATIONS	SIGN & DATE
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NOTES:

- For self manufactured items of bidder, cost of withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
- For directly dispatchable items, cost of withdrawal of deviation will be applicable on the basic price including taxes, duties & freight.
- All the bidders have to list out all their Technical & Commercial Deviations (if any) in detail in the above format.
- Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
- Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable.
- Bidder shall furnish price copy of above format along with price bid.
- The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
- Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.
- For deviations w.r.t. Payment terms, Liquidated damages, Firm prices and submission of E1/ E2 forms before claiming 10% payment, if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VIII of GCC, Rev-06 will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not
- Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be accepted.
- All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.
- Cost of withdrawal is to be given separately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL.
- In case nature of cost of withdrawal (positive/negative) is not specified it shall be assumed as positive.
- In case of discrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.

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SPECIAL CONDITIONS OF CONTRACT (REV 01)

FOR 4 X 270 MW BHADRADRI TPS

These Conditions shall be read in conjunction with General Condition of Contract (GCC) enclosed along with the tender enquiry. In case of any conflict or inconsistency, the requirement of SCC shall prevail over the GCC.

1.0	Project Name	4X270 MW TSGENCO BHADRADRI TPS
2.0	Ultimate Customer	TSGENCO
3.0	Location of Plant	The distance from Manuguru to Major cities in state: Hyderabad-345KM, Warangal-180km, Bhadrachalam-38km, Kothagudem-70km and Khammam-130km, Vijayawada-195km. Village: RAMANUJAVARAM District: KHAMMAM State : TELANGANA, Nearest Airport: The nearest airport is Vijayawada Airport but the most used airport is the Hyderabad International Airport. Nearest Railway Station: Manuguru railway station is 10KM from nearby town. However Warangal/Vijaywada railway Station is major railway station near to Manuguru.
4.0	Consignee Address / BHEL Site Office Address	Later
	Notes:	<ol style="list-style-type: none">1. Consignee address in LR should be strictly as per Sl. No. 04.2. Vendor to note that to effect "Sale in Transit", BHEL shall issue "Delivery Order" to the Transporter for transferring the ownership from BHEL to customer (TSGENCO).3. It is Vendor's responsibility to ensure availability of trucks well in advance for dispatch of material to meet contractual delivery requirement. <p>Delivery Order shall be carried by transporter along with other dispatch documents</p>
5.0	Buyer and Paying Authority	A) <u>For Inter-State sales (where CST is applicable):</u> <ol style="list-style-type: none">1. For those packages, for which PO is placed by BHEL-PEM -NOIDA.2. For those packages for which PO is placed by BHEL-PSWR & LOA is issued by BHEL-PEM - <u>BHEL-PSWR, Nagpur.</u>

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		<p>B) FOR Intra-State sales (where VAT is applicable):</p> <p>1. For those packages, for which PO is placed by BHEL-PEM- <u>Paying Authority shall be BHEL-PEM, Noida. However Buyer will be informed later on.</u> Detailed requirements are enclosed as Annexure I which are to be followed strictly.</p> <p>2. For those packages for which PO is placed by BHEL-PSWR & LOA is issued by BHEL-PEM - <u>Paying Authority shall be BHEL-PSWR, Nagpur. However Buyer will be informed later on.</u> Detailed requirements are enclosed as Annexure I which are to be followed strictly.</p>
6.0	Mode of Dispatch	By Road/Rail/Sea on Door Delivery and freight Pre-Paid Basis.
7.0	Road Permit Required	Later
8.0	Transit Insurance	<p>In BHEL Scope.</p> <p>Vendor shall inform the following details of dispatches to the Underwriter (refer details below) under intimation to BHEL-PEM and BHEL Site office:</p> <p>(1) Policy No. (2) Consignee Name. (3) Consignment Details (items with their weights and value (in INR)). (4) Project Name and P.O. No. (5) LR No. and date, Despatch origin and destination details, Inv. No..</p>
	Policy No.	Later
	Underwriters	Later
9.0	BHEL-PEM TIN No.	09765702874
10.0	Customer CST & VAT Nos.	<p>TSGENCO TIN/ CST No. - 36280126964 TSGENCO VAT No. - Later TSGENCO TAN No. - Later TSGENCO PAN No. - Later</p>
11.0	Unloading at site	<p>- By BHEL site office for Supply packages. (The Vendor shall furnish LR wise Gross Wt. and net weight of the consignment in attached format annex-II for the purpose of handling the consignment by BHEL site loading/unloading contractor).</p> <p>- By Vendor for Turnkey i.e. Supply and Erection & Commissioning Packages.</p>
12.0	Storage at site	<p>- By BHEL site for Supply packages.</p> <p>- By Vendor for Turnkey i.e. Supply and Erection & Commissioning Packages.</p>
13.0	Movement of Material within Site	<p>- By BHEL site for Supply packages.</p> <p>- By Vendor for Turnkey i.e. Supply and Erection & Commissioning Packages.</p>

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14.0	Provision of facilities at Site (Applicable for Turnkey Packages)	<p>Construction Power: it will be provided at one point of plant boundary free of cost.</p> <p>Construction Water: it will be provided at one point of plant boundary free of cost.</p>
15.0	Inspection Agency (Domestic & Imported supply supplies)	Later
16.0	Dispatch Documents required (to be furnished by Vendor for payment)	<p><u>For Despatch Payment</u></p> <p>For materials originating from Indian Territory</p> <p>(a). One (1) original and Six (6) copies of the clean rail/lorry receipt.</p> <p>For payment Receipted LR (signed & stamped)/ confirmation from site regarding receipt of packages/ Boxes original / copy.</p> <p>(b). One (1) original and Six (6) copies of signed Invoices (Paying Authority along with TIN No. should be mentioned, for VAT cases Annexure-I to be followed).</p> <p>(c). One (1) original and Seven (7) copies of Challan and Packing List (clearly showing number of packages, gross weight and net weight).</p> <p>(d). Eight (8) copies of Customer/BHEL MDCC.</p> <p>(e). Delivery order- Two (2) copies.</p> <p>(f). Guarantee Certificate – One (1) Original + One (1) copy.</p> <p>(g). Insurance Intimation - Two (2) copies.</p> <p>(h). CQIR / Inspection Reports – One (1) Original + Six (6) copy.</p> <p>(i). PVC Calculation and copy of all applicable indices, if PVC applicable. – Two (2) copies.</p> <p>(j) LR wise gross weight and net weigh as per annex-II</p> <p>For materials originating from non-Indian Territory</p> <p>(a). Three (3) original and Seven (7) copies of clean bill of lading or One (1) clean original Airway Bill & Four (4) copies, in case of air freight.</p> <p>(b). One (1) original and Six (6) copies of signed Invoices (Paying Authority along with TIN No. should be Mentioned).</p> <p>(c). One (1) original and Seven (7) copies of Packing List (clearly showing number of packages, gross weight and net weight).</p>

Signature

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		<p>(d). Six (6) copies of certificate of country of origin.</p> <p>(e). Eight (8) copies of Customer/BHEL MDCC.</p> <p>(f). Six (6) copies of inspection certificate, if any, issued by the customer/his authorised representative.</p> <p>(g). Six (6) copies of certificate from the vendor to the effect that drawings and catalogues for customs clearance purpose have been kept with the packages for shipment.</p> <p>(h). Six (6) copies of certificate from the vendor to the effect that the contents in each case are not less than that entered in the invoices and guaranteed as new and as per the relevant technical specifications.</p> <p>(i) Shipping Specification – One (1) copy.</p> <p>(j). Quality Certificate – One (1) copy.</p> <p>(k). Approved Test Certificates if any. - Six (6) copies.</p> <p>(l). Guarantee Certificate – One (1) Original + One (1) copy.</p> <p>(m). Inspection Reports – One (1) Original + One (1) copy.</p> <p>(n). PVC Calculation and copy of all applicable indices, if PVC applicable. – Two (2) copies.</p> <p>For Claiming Freight, MRC & Services Payments refer GCC.</p>
17.0	Material Receipt Certificate (MRC).	<p>FOR Packages wherever E&C is in the scope of Vendor, The vendor shall arrange Material Receipt Certificate from the project site, duly signed by Customer and BHEL-Site after receipt & physical verification of the material at site.</p> <p>FOR Supply Packages, Material Receipt Certificate shall be arranged by BHEL-PEM. Vendor to provide copy of receipted LRs to enable BHEL-PEM to obtain MRC from site.</p>
18.A	Taxes & Duties (For Domestic Bidder)	<p>All bidders/vendors to note that this project is a Non-Mega power Project. However Essentiality certificate shall be issued by TSGENCO (customer) for availing concessional custom duty under Project Import Regulations.</p> <p>Essentiality certificate shall be issued by TSGENCO through BHEL for the items to be imported by the vendor for specified items, limited to CIF content mentioned in the offer/order, for availing concessional custom duty.</p> <p>The bidder has to indicate in their offer, the import contents (if any) i.e. list of items along with qty., currency of import, country of import & CIF value.</p> <p>Availability of CIF for packages, if any, shall be intimated in NIT.</p>

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		<p>Concessional Sales Tax against issuance and exchange of form 'C' & 'E1/E2' / VAT, as applicable, are to be quoted by the bidder in their offer.</p> <p>Bidders has to note that in order to derive the total Landed Cost to BHEL, following pricing elements shall also be considered in evaluation:</p> <ol style="list-style-type: none"> i. ED (as applicable on self-manufactured items), ii. CST/VAT (as applicable), iii. Freight (including service Tax), iv. Service Tax ((as applicable for Supply Packages) <p>However, Service Tax quoted in case of Turn-Key packages shall not be considered in evaluation.</p> <p>VAT for Intra-state despatch shall be paid subject to conditions specified in Annexure I.</p> <p>Wherever cenvat credit, if applicable could not be availed by BHEL within statutory time limit of six months(as per cenvat credit rule,2014) due to delay in submission of invoices or for any other reason attributable to bidder/contractor, liability towards loss of such cenvat credit (Excise duty/service tax etc.) should be passed on to bidders/contractors.</p> <p>Entry Tax/ Octroi: If any, shall be payable extra at actuals by BHEL. Hence, the same should not be considered in the offer.</p>
18.B	<p>Taxes & Duties (For Order Directly to Foreign Bidders)</p>	<p>In case of Order on foreign Vendor, the dispatches shall be on FOB (Port of Dispatch) basis and the Taxes Duties in the country of dispatch (origin) shall be borne by Foreign Bidder & to be accounted in the prices quoted to BHEL/PEM/NOIDA.</p> <p>Evaluation shall be done as per provisions of GCC.</p>
19.0	<p>Packing, Identification & marking</p>	<ul style="list-style-type: none"> • The supplier shall include and provide for securely protecting and packing the materials so as to avoid loss or damage during handling & transport by air, sea, rail and road. • All packing shall allow for easy removal and checking at site. Special precaution shall be taken to prevent rusting of steel and iron parts during transit by sea. Gas seals or other materials shall be adopted by the Contractor for protection against moisture during transit. • The number of each package in a shipment shall be shown in fraction, numerator showing number of the package and the denominator showing total number of packages in a lot / consignment. The packages number shall be generally prepared in the sequence in which they will be required for erection. • Each package delivered under the Contract shall be marked by and at the expense of the 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

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		<p>address of consignee, the gross weight and net weight of the package, the name of the Contractor with a distinctive number of mark sufficient for purposes of identification. All markings shall be carried out with such materials as to ensure quickness of drying, fastness and indelibility. Each equipment or parts of equipment shall, when shipped or railed or otherwise dispatched be tagged with reference to the assembly drawings and corresponding part numbers. Each bale or package shall contain a packing note quoting specifically the name of the Contractor, the number and date of contract and the name of the office placing the contract, nomenclature of the stores and include a schedule of parts for each complete equipment giving the part numbers with reference to the assembly drawing and the quantity of each part, drawings nos. and tag numbers.</p> <ul style="list-style-type: none"> • Rotor bearings should not be used as a support while packing. • Besides wherever necessary, packing shall bear a special marking "TOP", "BOTTOM", "DO NOT TURN OVER", "KEEP DRY", "HANDLE WITH CARE", etc. • All packing cases, containers (excluding marine container), packing and other similar materials shall be new. • Notwithstanding anything stated in this clause, the Contractor shall be entirely responsible for loss, damage or depreciation or deterioration to the materials & supplies due to faulty and/or insecure packing. • One copy of respective standard manufacturer's erection instruction/operation instruction manual shall be kept in each package/container for immediate reference. • Each and every package box shall be marked with the following, as a minimum: <ul style="list-style-type: none"> (i). Name and address of Consignee : (ii). Project reference : (iii). Contract No.: (iv). Packing No.: (1/10, 2/10, 3/10 when there are 10 packages For one consignment) (v). Net Weight/Gross Weight : (vi). Port of Loading : (vii). Destination Port : Chennai (viii). Packing Mark : [symbols indicating "TOP" and other special markings as per clause 10.10.(4) & 10.10.(6) above] (ix). Type of Equipment : <ul style="list-style-type: none"> "E" (for Equipment supply) "T" (for Tools & Tackles) "S" (for Mandatory Spares) • Two copies of packing list should be kept in case/package No. 1 of each consignment of the goods and four copies in each case (three inside the box and one copy in a special packet at the outer side of the Box).
20.0	Commissioning spares	<p>The commissioning spares shall be properly packed separately in separate box and each spare shall be properly tagged giving details (to match the description given in the packing slip) to facilitate their proper identification. Three copies of packing list is to be kept inside the box and one copy in a special packet at the outer side of the Box.</p>

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21.0	Mandatory Spares	The Mandatory spares shall be properly packed separately in separate box indicating Mandatory Spares in bold letters and each spare shall be properly tagged giving details i.e. item number of the equipment in line with the Ultimate Customer Contract & Number per item (to match the description given in the packing slip) to facilitate their proper identification by ultimate customer M/s TSGENCO. Three copies of packing list along with Manufacturing drawing no. Reference, Catalogue reference etc. is to be kept inside the box and one copy in a special packet at the outer side of the Box.			
22.0	Submission of Final Drawing / Documents along with O&M Manual, Type Test Certificates (if any)	As per GCC/ Technical specification/ Kickoff meeting.			
	Prepared By	Checked By	Review by	Vetted By Finance	Approved By
Name:	SUJEET KUMAR	ANIL KUMAR PAL	ANUJ KUMAR	checked	PERMINDER SINGH
Designation:	SR. ER./PG-II-2	MGR/PG-II-2	DGM/PG-II-2	w.r.t. taxes	DH/PG-II-2
Signature:	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	& duties only.	<i>[Signature]</i>
Date:	24.03.15	24/3/15	24/3/15	Swati	24/3/15

[Handwritten signature]
24/3/15.

SPECIAL CONDITIONS OF CONTRACT (REV 01)

FOR 4 X 270 MW BHADRADRI TPS

In order to avail the benefit of input tax credit available to BHEL in case of VAT leviable on intra-state transaction between BHEL and vendor, & to fulfill the compliances as per requirements of applicable State's VAT law, the following modality shall be applicable:

BHEL has identified a nodal agency in each State to take care of VAT compliances in the State in which project is located. For the subject project details of nodal agency shall be provided later on.

Nodal agency is defined as Buyer in such cases, where VAT is applicable.

Vendors' original tax invoice for intra State transactions is one of important documents for availing Input Tax credit. In this regard the following may be noted by all vendors for strict compliance:

- As a general rule, a tax invoice must be original, must contain vendor's TIN No with full address, invoice no & date, product description with unit rate, quantity, value, VAT rate, VAT amount, gross value of bill, **buyer i.e. BHEL's address with TIN No**, (as given above) special marking like "Original" and/or "valid for input credit"/ Buyer can take credit against this" etc as per applicable State VAT law.
- Please note that BHEL's address and TIN to be mentioned in vendors tax invoice shall be **principal place of business & applicable TIN No. of nodal agency of BHEL, as given above**. In no case the vendors, invoices shall be addressed to BHEL PEM nor shall they contain our TIN as buyer.
- As original tax invoice of vendors are to be furnished to nodal unit for assessment/VAT audit purposes, extra copy of Original invoice is required to be submitted by vendors for retaining with bank payment voucher.
- Original tax invoice along with extra copy of Original Tax invoice in line with respective state VAT law shall be essential document to be submitted by vendor for claiming payment.
- Vendor shall also furnish a certificate/statement/document as prescribed under applicable State VAT law. Please note that some of the States requires additional certificate/documents e.g. Haryana requires certificate in form C-4 in addition to original tax invoice.
- Please note that reimbursement/payment of VAT shall be subject to furnishing of Vat complaint tax invoice and other certificate/document as per applicable State VAT law.
- Tax invoice must show Vat rate & VAT amount separately and in no case all inclusive prices is to be shown in the tax invoice since input credit is not admissible in case VAT is not indicated separately.
- In case vendor is unable to furnish Vat compliant tax invoice & other certificate/document, VAT shall not be reimbursed by BHEL.
- Where the supplies are made from within the same state where the project is located, the vendor has to provide VAT tax invoice for such supplies even if the prices quoted is all inclusive.



