

# **1 X 800 MW TSGENCO KOTHAGUDAM TPP**


## **VOLUME – IIB**

### **TECHNICAL SPECIFICATION FOR AIR TRAPS**

**SPECIFICATION NO. PE-TS-410-100-M011**



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

	<b>PREAMBLE</b>	SPECIFICATION NO. PE-SS-999-100-Q001	
		VOLUME	
		SECTION	
		REV. NO.	DATE: 26/08/2011
		SHEET	1 OF 1

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.

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

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# SECTION-A

## SCOPE OF ENQUIRY

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## SCOPE OF ENQUIRY

### 1. SCOPE

This enquiry covers the Design, Manufacture, Inspection & Testing at vendor's and/or his sub-vendor's works, proper packing and delivery to site of air traps complete with all accessories as per the requirements mentioned in different sections of the specification for 1 X 800 MW TSGENCO KOTHAGUDAM TPP.


### 2. GENERAL TECHNICAL INSTRUCTIONS

- a) It is not the intent to specify herein all the details of design and manufacture. However the equipment shall conform in all respects to high standards of design, engineering and workmanship, and shall be capable of performing the required duties in a manner acceptable to Engineer/ Owner, who will interpret the meaning of drawing and specifications, and shall be entitled to reject any component or material, which in his judgement is not in full accordance herewith.
- b) The omission of specific reference to any component/ accessories necessary for the proper performance of air traps shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of air traps at quoted prices.
- c) Design/ drawings/ data sheets etc. shall be subject to approval of BHEL as per specification, in the event of order.
- d) BHEL's / customer's representative shall be given access to the shop in which the equipment are being manufactured or tested and all test records shall be made available to him.
- e) The equipment covered under this specification shall not be despatched unless the same have been finally inspected, accepted and shipping release issued by BHEL.

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# SECTION-B


## PROJECT INFORMATION

	<b>TECHNICAL SPECIFICATION</b> <b>AIR TRAPS</b> <b>1 X 800 MW TSGENCO</b> <b>KOTHAGUDAM TPP</b>	SPECIFICATION NO. PE-TS-410-100-M011	
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## PROJECT INFORMATION

**INTRODUCTION** The proposed 1x800 MW Kothagudem Thermal Power Station (KTPS), Stage-VII, Unit-12 would be set up by Telangana State Power Corporation Ltd. (TSGENCO) at Kothagudem, Telangana. The proposed Power Plant will be installed adjacent to the existing D colony of Kothagudem Thermal Power Station, at Kothagudem. 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 the Owner.

**APPROACH TO SITE:** Site is located in the existing D Colony of Kothagudem Thermal Power Station, which is at a distance 30 km from temple town of Bhadrachalam and 300 km from Hyderabad by road. The Nearest railway station is Bhadrachalam Road (Known as Kothagudem) at a distance of 12 km. Kothagudem- Bhadrachalam National Highway branches off to the power station site near village Paloncha. 3.00.00

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## SECTION-C

# SPECIFIC TECHNICAL REQUIREMENTS

	<b>SPECIFIC TECHNICAL REQUIREMENTS AIR TRAPS</b>	SPECIFICATION NO. PE-TS-410-100-M011	
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**1. GENERAL**

- 1.1 The air traps shall meet the technical requirements and conform to the standard technical specification and Data sheet A of Section D. In addition, the requirements of this Section-C shall also be complied with. However, wherever the details given in standard technical specification of Section-D and Data sheet- A are different, the requirements of Data sheet- A shall prevail. Similarly in the event of contradictions between Section –C & Section –D/ Data sheet A, Section –C will prevail.
- 1.2 The technical requirements for air traps shall, in general, be as per the attached standard technical specification for Air traps, and Data sheets A of Vol. II B Section D.

**2. SCOPE OF SUPPLY**

- 2.1 The air traps along with strainer shall be supplied as per Data sheets A of Section D. For detail refer the same.
- 2.2 Commissioning spares, if any.
- 2.3 Mandatory spares as applicable depending upon the project requirement.
- 2.4 Various drawings, datasheets, operation and maintenance manuals etc. as specified in Data Sheet-C.

**3 EXCLUSIONS:**

Erection & Commissioning of equipment at site.

**4 QUALITY ASSURANCE**

The Quality Plans enclosed with this specification specify minimum quality control requirement. During contract stage vendor shall furnish these Quality Plans duly signed & stamped for their compliance. Quality plans shall be approved by BHEL and customer (If necessary). All inspection and testing shall be carried out by BHEL and CUSTOMER (if necessary). In case inspection is by both BHEL and CUSTOMER, then the inspection can be carried out jointly or separately, which will be informed later.

**5 GALVANIZING REQUIREMENT (FOR CARBON STEEL):**

Carbon steel bodies and internals shall be thoroughly cleaned, pickled & rinsed as specified in IS: 2629. These shall then be hot dip galvanized as per IS: 2629. The minimum thickness of galvanizing shall be minimum 50 microns.

	<b>SPECIFIC TECHNICAL REQUIREMENTS AIR TRAPS</b>	SPECIFICATION NO. PE-TS-410-100-M011	
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## 6 PACKING INSTRUCTIONS:

- a) Each trap shall be drained, cleaned, prepared and suitably protected in such a way so as to minimize the possibility of damage and deterioration during transit and storage.
- b) The trap shall be dispatched in total assembled form.
- c) Body ends shall be suitably sealed to protect them against damage during transit and storage.
- d) Trap Tag Nos. shall be incorporated in all the dispatch documents.
- e) Proper care shall be taken to avoid damage to the finished surface during transit.
- f) Vendor to provide soft copy of photos/snaps of duly packed air trap. The soft copies to be provided by vendor after final inspection of valves. Clearance for dispatch of air traps will be given only after satisfactory packing conditions from vendors work.
- g) All the air traps shall be packed suitably in wooden cases in order to avoid damage during transit and also during storage at site in tropical climate conditions for a period of 15-18 months.

## 7 SPARES


- a) **Mandatory Spares:** These shall be as per Data Sheet-A.
- b) **Recommended Spares:** ~~List of recommended spares for 3 year reliable operation along with the unit price shall be indicated in the schedule of prices for recommended spares enclosed in Volume III. Cost of Recommended spares shall not be included in the base price.~~
- c) Order for the spares may be placed simultaneously or otherwise at the option of purchaser.

## 8 DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

Bidder shall submit the following documents (enclosed in Vol III) duly filled, signed and stamped along with the bid:


- a) Compliance sheet
- b) Schedule of Deviations if any.
- c) Unpriced Schedules of Price indicating "Quoted / Not Quoted" against each item.
- d) Schedule of declaration.

The above are the only documents which will be used for technical evaluation unless other documents are asked for during technical clarifications. Any other technical document enclosed with the bid shall be ignored for the purpose of technical evaluation. All other documents attached with the specification are for information of the vendor and no comments shall be marked on these.

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## SECTION-D

# STANDARD TECHNICAL SPECIFICATION DATA SHEET – A QUALITY PLAN DATA SHEET – C

	<b>STANDARD TECHNICAL SPECIFICATION FOR AIR TRAPS</b>	SPECIFICATION NO. PE-SS-999-555-M011	
		VOLUME. II B	
		SECTION D	
		REV. NO. 02	DATE. 19-06-2012
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## 1 GENERAL

This specification covers the design, materials, construction features, manufacture and testing of Air Traps along with Integral/External Strainers at Vendor's or/ and sub-Vendor's works inclusive of painting and packing requirements.

## 2 DESIGN REQUIREMENTS

All traps shall be suitable for removal of water from compressed air piping and shall be suitable for the service conditions i.e. flow, temperature and pressure under which they are required to operate. Those performing similar duties shall be interchangeable with each other unless otherwise specified.

## 3 CONSTRUCTION FEATURES:


- 3.1 The traps covered in the specification shall be of Ball Float Type/ Inverted Bucket Type with auto-drain arrangement conforming to supplier's own proven design and shall be with Integral/External Strainer designed suitably to prevent the internals of the trap from damage due to dirt etc.
- 3.2 The traps should be with internals easily accessible and replaceable.
- 3.3 Arrow showing inlet should be cast on the body of traps.
- 3.4 For ball float type traps, a balancing line connection shall also be provided at the top of the body.
- 3.5 A metallic (stainless steel plate 2mm thick) nameplate shall be fitted on each trap. Nameplate inscription required for each trap shall be indicated at the contract stage. Inscriptions shall be engraved 1 mm deep filled with enamel paint.

## 4 MATERIALS

- 4.1 The materials of construction of main parts of traps shall be specified in Data sheet-A.
- 4.2 The materials of construction of the remaining parts shall be suitable for the service conditions shall be subject to approval of the purchaser.
- 4.3 Materials used in manufacture of traps shall be of tested quality.

## 5 INSPECTION AND TESTS:

- 5.1 The items covered under this contract shall be subjected to inspection, testing and quality surveillance. The Inspection Agency shall, at all reasonable times have access to Vendor's works, Quality Control records and all facilities as reasonably required for carrying out the inspection and testing efficiently, and these shall be provided by the vendor free of cost.
- 5.2 The minimum NDT/testing and inspection requirements for traps shall be as per the attached Quality Plan. However, in case of order, final inspection and testing shall be carried out as per the final approved quality plan without any price implications.

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**6 SURFACE PREPARATION AND GALVANIZING:**

- 6.1 The surfaces of equipment to be galvanised shall be thoroughly cleaned of all grease, oil, loose mill scale, dirt, rust and any other foreign materials as mentioned in IS: 2629.
- 6.2 Traps & Strainers bodies shall be hot dip galvanised as per IS: 2629 after the necessary testing has been carried out. The minimum thickness of coating shall be 40 ~ 70 microns.

**7 PROTECTION FOR DESPATCH**

- 7.1 Traps shall be protected from external damage and sealed against the ingress of dirt.
- 7.2 Ends of the traps shall be protected by means of polythene caps/rubber end protectors.
- 7.3 All the traps shall be suitably packed in wooden cases in order to avoid damage during transit and also during storage at site.
- 8 Trap Tag Nos. shall also be incorporated in all the despatch documents.



**DATA SHEET- A  
AIR TRAPS**

**1 X 800 MW TSGENCO KOTHAGUDAM TPP**

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**SECTION D**


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SL. NO.	DESCRIPTION	Size (NB)	Body Matl.	End Connection	Quantity MAINS (Nos.)	Quantity MANDATORY SPARES (COMPLETE ASSEMBLY) Refer Note No. 4
1	BALL FLOAT AIR TRAP (WITHOUT STRAINER) COMPLETE ASSLY.	25	CCS	Screwed as per IS:554 Female Parallel Threaded	30	1
2	EXTERNAL 'Y' TYPE STRAINER COMPLETE ASSLY.	25	CCS	Screwed as per IS:554 Female Parallel Threaded	30	1


**NOTE :-**

1. Ball float air traps without strainers (at Sl. No. 1) are used with external 'Y' type strainers (at Sl. No. 2). In this case traps and external Y type strainers will be considered as single unit for ordering. Offers will only be considered when both the items are quoted.
2. Bidder to specify flow handling capacity & working pressure for each size of trap.
3. Maximum working Pressure: 10.2 kg/cm<sup>2</sup>(g), Maximum working Temperature: 50 Deg. Cent.
4. Mandatory Spares are complete traps (including all the accessories and are identical to main traps) as per sr no. 2.5 of CL IV page no.117 & 118 of mechanical list A of Mandatory Spares list in EPC Bid Document e-PCT/TS/K/02/2014-15 ANNEXURE-I.

	<b>DATA SHEET-A</b> <b>AIR TRAPS</b> <b>1 X 800 MW TSGENCO</b> <b>KOTHAGUDAM TPP</b>	SPECIFICATION NO. PE-TS-410-100-M011	
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**MATERIAL OF CONSTRUCTION**

			<b>PART NAME</b>	<b>MATERIAL REQUIRED</b>
A	BALL FLOAT AIR TRAP (WITHOUT STRAINER) COMPLETE ASSLY.	1	Body and Cover	Cast Carbon Steel as per ASTM A216 Gr. WCB (HDG)
		2	Valve, Valve seat	AISI 420 (furnace hardened to 50 RC). Differential hardness shall be maintained between seats.
		3	Float unit assembly, Valve seat gasket, Pivot frame, Support frame and Pivot pin	AISI 304
		4	Bolts/ Nuts	ASTM A193 Gr.B7/ ASTM A194 Gr.2H
B	EXTERNAL 'Y' TYPE STRAINER COMPLETE ASSLY.	1	Body & Cap	ASTM A216 Gr. WCB (HDG)
		2	Screen	SS to AISI 304 - 20 mesh
		3	Gasket	Non - Asbestos type

	<b>QUALITY PLAN</b>		CUSTOMER: TSGENCO			PROJECT: 1 X 800 MW TSGENCO KOTHAGUDAM TPP			SPEC. NO : PE-SS-999-555-M011			
			BIDDER/VENDOR: LATER			QP NO. PE-QP-410-555-M001		REV.00 DATE 23.05.2016		SPEC. TITLE AIR TRAPS		
	SHEET 1 OF 3		SYSTEM <b>SERVICE AIR/ INSTRUMENT AIR</b>			ITEM: <b>BALL FLOAT AIR TRAP</b>			SECTION VOLUME			
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	


<b>1.0</b>	<b>MATERIALS</b>											
1.1	BODY, COVER	1.PHYSICAL & CHEM. PROPERTIES	MA	PHYS.&CHEM, TEST	ONE /HEAT / HEAT BATCH	APPROVED DRAWING / TECH. SPEC.	APPROVED DRAWING/ TECH. SPEC.	TEST CERT.	3/2	2	1	- CO-RELATED TCs SHALL BE FURNISHED. - FOR CAST IRON ONLY PHYSICAL TEST.
		2.SURFACE DEFECTS	MA	VISUAL	100%	MSS-SP-55	MSS-SP-55	LOG BOOK	3/2	2	1	
1.2	FLOAT UNIT ASSEMBLY, VALVE SEAT, PIVOT FRAME, SUPPORT FRAME, PIVOT PIN, VALVE SEAT ,GASKET	1. PHYS., CHEM. PROPERTIES	MA	PHYS., CHEM. TEST	ONE /HEAT / HEAT BATCH	APPD. DRG	APPD. DRG	TEST CERT	3/2	2	1	
		2. SURFACE DEFECTS	MA	VISUAL	100%	MSS-SP-55	MSS-SP-55	INSPN. REPORT	3/2	2	1	
1.3	FASTENERS	1. PHYS., CHEM. PROPERTIES	MA	PHYS., CHEM. TEST	ONE PER TYPE	APPD. DRG	APPD. DRG	TEST CERT	3/2	2	1	
<b>2.0</b>	<b>IN-PROCESS</b>											
2.1	ALL COMPONENTS	1.DIMENSIONS	MA	MEASUREMENT	100%	MFG. DRAWING	MFG. DRAWING	INT. INSPN. REPORT	3/2	-	2	
		2. SURFACE DEFECTS	MA	VISUAL	100%	-DO-	-DO-	INSPN. REPORT	3/2	-	2	
2.2	VALVE, VALVE SEAT	1.SURFACE DEFECTS	CR	PENETRANT TEST	100%	ASTME-165	NO DEFECTS	INT. INSPN. REPORT	2	2	1	
		2. HARDNESS	MA	TESTING	100%	APPD. DRG.	APPD. DRG.	INT. INSPN. REPORT	2	2	1	
		3. BALL IMPRES	MA	BY AIR	100%	SEAT SURFACE SHALL HAVE METAL TO METAL CONTACT		INT. INSPN. REPORT	2	2	1	
<b>3.0</b>	<b>SUB- ASSEMBLY</b>											
3.1	VALVE & VALVE SEAT	1. LEAK TIGHTNESS	CR	AIR/HYDRO	100%	APPD. DRG	APPD. DRG.	INT. INSPN. REPORT	2	2	1	

<b>BHEL</b>	PARTICULARS	BIDDER/VENDOR	
	NAME		
	SIGNATURE		
	DATE		BIDDER'S/ VENDOR'S COMPANY SEAL

	<b>QUALITY PLAN</b>		CUSTOMER: TSGENCO			PROJECT: 1 X 800 MW TSGENCO KOTHAGUDAM TPP			SPEC. NO : PE-SS-999-555-M011			
			BIDDER/VENDOR: LATER			QP NO. PE-QP-410-555-M001		REV.00 DATE 23.05.2016		SPEC. TITLE AIR TRAPS		
	SHEET 2 OF 3		SYSTEM <b>SERVICE AIR/ INSTRUMENT AIR</b>			ITEM: <b>BALL FLOAT AIR TRAP</b>			SECTION VOLUME			
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	

3.2	COVER	1. ALIGNMENT	MA	VISUAL	100%	--DO--		PROPER FITTING	INT. INSPN. REPORT	2	2	1	
<b>4.0</b>	<b>HYDRAULIC TEST (BEFORE GALVANISING)</b>												
4.1	BODY COVER SHELL TEST (BEFORE GALVANISING)	LEAK TIGHTNESS	CR	HYDRO. TEST AT 2 TIMES OF DESIGN PR.	100%	APPD. DRG./TECH. SPEC./DATA SHEET		NO LEAKAGE	TEST CERT	2	2	1	
<b>5.0</b>	<b>GALVANISING</b>												
5.1	HOT DIP GALVANISING OF BODY, COVER	1. SURFACE PREPARATION & THICKNESS OF GALVANISING& UNIFORMITY.	MA	VISUAL & MEASURE-MENT	100%	IS:2629	IS:2629	INSPN REPORT		2	2,1	-	GALVANISING THICKNESS MIN.50 MICRONS TO BE CHECKED WITH ELCOMETER
<b>6.0</b>	<b>ASSEMBLY (AFTER GALVANISING)</b>												
6.1	COMPLETE ASSEMBLY	1. CLEANLINESS & COMPLETENESS, DIMENSIONS, THREADING ENDS, ARROW MARKING ETC.	MA	VISUAL & MEASURE-MENT	100%	APPROVED DRAWING		APPROVED DRAWING	INSPN REPORT	2	2,1	-	
		2.LEAK TIGHTNESS OF BODY	CR	HYDRO. TEST AT 2 TIMES OF DESIGN PR.	100%	APPD. DRG./TECH. SPEC./DATA SHEET		NO LEAKAGE	TEST CERT	2	1	-	100% inspection/check to be done by manufacturer & 10% or min.2 to be done by BHEL/Customer.
		3.FUNCTIONAL TEST	CR	FUNCTION-AL TEST AT MAXIMUM WORKING PRESSURE  ( VISUAL DISCHARGE OF CONDENSATE)	100 %	APPD DRG./ GIVEN PROCEDURE ON PAGE 3/3 OF THIS QP.		NO AIR LEAKAGE	TEST CERT.	2	1	-	

<b>BHEL</b>	PARTICULARS	BIDDER/VENDOR	
	NAME		
	SIGNATURE		
	DATE		BIDDER'S/ VENDOR'S COMPANY SEAL

	<b>QUALITY PLAN</b>			CUSTOMER: TSGENCO			PROJECT: 1 X 800 MW TSGENCO KOTHAGUDAM TPP			SPEC. NO : PE-SS-999-555-M011		
				BIDDER/VENDOR: LATER			QP NO. PE-QP-410-555-M001			REV.00 DATE 23.05.2016		
	SHEET 3 OF 3			SYSTEM <b>SERVICE AIR/ INSTRUMENT AIR</b>			ITEM: <b>BALL FLOAT AIR TRAP</b>			SECTION VOLUME		
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	


6.2	FLOW CAPACITY TEST (TYPE TEST)	CONDENSATE DISCHARGE	CR	DISCHARGE FLOW	1 PER PRESSURE RATING & ORIFICE SIZE TRAP	APPD. FLOW CAPACITY	APPD. FLOW CAPACITY	TYPE TEST CERTIFICATE	3/2	2	1	
7.0	END CONN.	DIMENSIONS	CR	MEASUREMENT	100%	APPD. DRG./TECH. SPEC	APPD.DRG/TECH.SPEC	INSPN REPORT	3/2	2,1	-	
8.0	VERIFICATION OF ALL PREVIOUS TEST CERTIFICATES	REVIEW OF ALL TEST CERTIFICATES/ INSP. REPORTS AS PER TECH. SPEC.	MA	VISUAL	100%	TECH. SPEC.	TECH. SPEC.	INSPN REPORT	2	1	-	
9.0	PROVISION OF NAME PLATE WITH PURCHASER'S TRAP TAG NOS. & PACKING IN WOODEN CASES	AS PER TECHNICAL SPECIFICATION	MA	VISUAL	100%	--DO--	--DO--	INSPN REPORT	2	2	1	PHOTOGRAPHS OF AIR TRAPS AFTER PACKING TO BE VERIFIED BY BHEL BEFORE ISSUING MDCC

- FUNCTIONAL TEST PROCEDURE.** 1. COMPRESSED AIR AT MAXIMUM WORKING PRESSURE IS SUPPLIED IN A MIXING CHAMBER.
2. WATER IS ADDED IN THE SAME CHAMBER SO THAT AIR IN THE CHAMBER HAS SUFFICIENT MOISTURE
3. TRAP IS INSTALLED AT THE BOTTOM OF THIS CHAMBER AND ITS PERFORMANCE IS CHECKED.  
A GOOD PERFORMING TRAP **DRAINS OUT ONLY WATER DROPLETS** AND RETAINS **COMPRESSED AIR BACK IN THE SYSTEM.**

**NOTE:-**


<b>CR-</b> MEANS CRITICAL ACTIVITY	<b>MA-</b> MEANS MAJOR ACTIVITY	<b>MI-</b> MEANS MINOR ACTIVITY
1 = PURCHASER (BHEL)/ CUSTOMER	2 = VENDOR	3 = SUB VENDOR OF THE VENDOR
P = PERFORMED BY	W = WITNESSED BY	V = VERIFIED BY

<b>BHEL</b>	PARTICULARS	BIDDER/VENDOR	
	NAME		
	SIGNATURE		
	DATE		BIDDER'S/ VENDOR'S COMPANY SEAL

	<b>QUALITY PLAN</b>		CUSTOMER: TSGENCO			PROJECT: 1 X 800 MW TSGENCO KOTHAGUDAM TPP			SPEC. NO :PE-SS-999-555-M011			
			BIDDER/VENDOR: LATER			QP NO. PE-QP-410-555-M016		REV.00 DATE 23.05.2016		SPEC. TITLE AIR TRAPS		
	SHEET 1 OF 2		SYSTEM <b>SERVICE/ INSTRUMENT AIR</b>			ITEM: <b>CARBON STEEL/CAST IRON Y-TYPE AIR STRAINER</b>			SECTION VOLUME			
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	

<b>1.0</b>	<b>MATERIAL CONTROL</b>											
1.1	BODY, CAP	1 PHYS & CHEM PROPERTIES	MA	PHYS TESTS CHEM TESTS	ONE/HEAT/ BATCH	APPD. DATA SHEET/ TECH.SPEC.	APPD,DATA SHEET/ TECH.SPEC	TEST CERT.	3/2	2	1	CORRELATION REQD. FOR CAST IRON, ONLY PHYS. TEST
		2. SURFACE DEFECTS	MA	VISUAL	100%	---DO---	---DO---	INSPN. REPORT	3/2	2	1	
1.2	MESH	1. CHEM PROPERTIES	MA	CHEM. TESTS	1/SHEET	APPD. DATA SHEET/ TECH.SPEC.	APPD,DATA SHEET/ TECH. SPEC	TEST CERT	3/2	2	1	
		2. MESH SIZE/ PERFORATION DIA	MA	MEASUREMENT	SAMPLE PIECE	---DO---	---DO---	INSPN REPORT	3/2	2	1	
<b>2.0</b>	<b>IN PROCESS CONTROL</b>											
2.1	ALL COMPONENTS	1.WORKMANSHIP & FINISH	MA	VISUAL	100%	MFG DRG	MFG DRG	INSP REPORT	2	2	1	
		2.DIMENSIONS	MA	MEASUREMENT	100%	MFG DRG	MFG DRG	MFG DRG	2	2	1	
<b>3.0</b>	<b>HYDRAULIC TEST (BEFORE GALVANISING)</b>											
3.1	BODY CAP (BEFORE GALVANIZING)	LEAK TIGHTNESS	CR	HYDROTEST AT 2 TIMES THE DESIGN PRESSURE	100%	APPD.DRG/T ECH. SPEC	NO LEAKAGE	TEST CERT	2	2	1	100% inspection/check to be done by manufacturer & 10% or min.2 to be done by BHEL/Customer.
4.0	<b>GALVANISING</b>											
4.1	HOT DIP GALVANISING OF BODY,COVER	1. SURFACE PREPARATION & THICKNESS OF GALVANISING& UNIFORMITY.	MA	VISUAL & MEASURE-MENT	100%	IS:2629	IS:2629	INSPN REPORT	2	2,1	-	THICKNESS MIN.50 MICRONS CHECKED WITH ELCOMETER

<b>BHEL</b>		<b>PARTICULARS</b>	<b>BIDDER/VENDOR</b>	
		NAME		
		SIGNATURE		
		DATE		
				BIDDER'S/ VENDOR'S COMPANY SEAL

	<b>QUALITY PLAN</b>		CUSTOMER: TSGENCO			PROJECT: 1 X 800 MW TSGENCO KOTHAGUDAM TPP			SPEC. NO :PE-SS-999-555-M011			
			BIDDER/VENDOR: LATER			QP NO. PE-QP-410-555-M016		REV.00 DATE 23.05.2016		SPEC. TITLE AIR TRAPS		
	SHEET 2 OF 2		SYSTEM <b>SERVICE/ INSTRUMENT AIR</b>			ITEM: <b>CARBON STEEL/CAST IRON Y-TYPE AIR STRAINER</b>			SECTION VOLUME			
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	

5.0	<b>ASSEMBLY CONTROL (AFTER GALVANISING)</b>											
5.1	COMPLETE STRAINER	1. WORKMANSHIP AND FINISH	MA	VISUAL	100%	APPD.DRG	APPD.DRG	INSPN. REPORT	2	2	1	
		2. OVERALL DIMENSIONS	CR	MEASUREMENT	100%	---DO---	DO---	--DO--	2	2,1	1	
		3. LEAK TIGHTNESS,	CR	HYDROTEST AT 2 TIMES THE DESIGN PRESSURE MEASUREMENT	100%	APPD.DRG/T ECH. SPEC	NO LEAKAGE	TEST CERT	2	2,1	1	
6.0	END CONN.	DIMENSIONS	CR		100%	APPD DRG/ TECH SPEC.	APPD DRG/ TECH SPEC	INSPN REPORT	2	2,1	-	
7.0	VERIFICATION OF ALL PREVIOUS TEST CERTIFICATES/ INSPN REPORTS	REVIEW OF ALL TEST CERTIFICATES/ INSPN. REPORTS OF PREVIOUS STAGES	MA	VISUAL	100%	TECH SPEC	TECH SPEC	INSPN REPORT	2	1	-	
8.0	PROVISION OF NAME PLATE WITH PURCHADER'S STRAINER TAG NOS IF ANY & PACKING IN WOODEN CASES	AS PER TECH. SPEC	MA	VISUAL	100%	TECH. SPEC	TECH. SPEC	INSPN REPORT	3/2	2	1	PHOTOGRAPHS OF AIR TRAPS AFTER PACKING TO BE VERIFIED BY BHEL BEFORE ISSUING MDCC

NOTE: CR = CRITICAL ACTIVITY

MA = MAJOR ACTIVITY

MI = MINOR ACTIVITY

1 = PURCHASER (BHEL)/ CUSTOMER

2 = VENDOR


3 = SUB VENDOR OF THE VENDOR

P = PERFORMED BY

W = WITNESSED BY

V = VERIFIED BY

<b>BHEL</b>	PARTICULARS	BIDDER/VENDOR	BIDDER'S/ VENDOR'S COMPANY SEAL
	NAME		
	SIGNATURE		
	DATE		

	<b>TECHNICAL SPECIFICATION</b> <b>AIR TRAPS</b> <b>1 X 800 MW TSGENCO</b> <b>KOTHAGUDAM TPP</b>	SPECIFICATION NO. PE-TS-410-100-M011	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 23.05.2016
		SHEET 1 OF 1	

### **DATA SHEET - C**

Drawings/documents distribution schedule to be followed by the successful bidder:

1.0 The successful bidder shall submit the following drawings/documents within two weeks after award of contact.

1.1 Relevant drawings/leaflets for the traps showing following information.

- i) Complete cross sectional arrangement of the traps.
- ii) Binding dimensions, dismantling clearances & weights.
- iii) Bill of material incorporating all the materials of construction of various parts along with BS/ASTM/IS standards to which the materials conform to.
- iv) Special features, if any, as called for in the specific requirement
- v) Type of oil/Grease wherever required and its annual consumption.

1.2 Quality Plan duly signed & stamped with bidder's seal.

2.0 Within the stipulated time period as per vendor's drawings/ documents schedule, the following shall be submitted but not later than one month before first dispatch.

- a) Drawings of components & details as deemed necessary.
- b) Instruction manual for erection, operation and maintenance.
- c) Storage instructions.

3.0 Before dispatch of the equipment the vendor shall furnish the following.

- a) Material Test certificates.
- b) Shop test reports and certificates.

4.0 Distribution of drawings / documents for all projects:

After award of the contract the successful bidder shall furnish drawings/ documents as per following distribution schedule.

Sl. No.	Type of Document	No of Hard copies	No. of Soft copies
1	Documents submitted for Approval	2 Nos.	1 Nos.
2	Final Distribution(Approved Documents)	12 Nos.	1 Nos.
3	O&M Manuals	12 Nos.	2 Nos.

**1 X 800 MW TSGENCO KOTHAGUDAM TPP**

**VOLUME – III**

**TECHNICAL SCHEDULES**


**FOR**

**AIR TRAPS**

**SPECIFICATION NO. PE-TS-410-100-M011**




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

	<b>AIR TRAPS</b> <b>1 X 800 MW TSGENCO</b> <b>KOTHAGUDAM TPP</b>	SPECIFICATION NO. PE-TS-410-100-M011	
		VOLUME : III	
		SECTION:	
		REV. NO.: 00	DATE: 23.05.2016
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2	SCHEDULE OF DEVIATIONS
3	SCHEDULE OF DECLARATIONS

	<b>COMPLIANCE SHEET</b> <b>AIR TRAPS</b> <b>1 X 800 MW TSGENCO</b> <b>KOTHAGUDAM TPP</b>	SPECIFICATION NO.:PE-TS-410-100-M011	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 23.05.2016
		SHEET 1 OF 2	


**The bidder shall sign and return a copy of this compliance sheet along with his offer, indicating his compliance to the points specified herein:**

**A) Technical Details:** Bidder to tick whichever is applicable.

1.	Technical requirements as per Data sheet-A & Standard Technical Specification of Vol IIB Section-D	<b>Accepted</b>	<b>Not Accepted</b>
2.	Quality Plan	<b>Accepted</b>	<b>Not Accepted</b>
3.	Specific Technical requirements of Vol IIB Section-C	<b>Accepted</b>	<b>Not Accepted</b>
4.	Documentation requirement as per Data sheet-C of Vol IIB Section-D	<b>Accepted</b>	<b>Not Accepted</b>

- B) Deviations to the technical specification are not acceptable. However, if there are any deviations due to unavoidable reasons then the same to be clearly specified in the schedule of deviation. In case of no deviations, schedule of deviations to be filled as NIL by bidder.
- C) The offered materials should be either equivalent or superior to those specified. Also for components where material is not specified, the material used shall be suitable for intended duty.
- D) QP/ test procedures shall be submitted in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL/Customer approval in the event of order & customer hold points for inspection/ testing shall be marked in the QP at the contract stage. All Inspection/ testing shall be as per approved QP. The charges for 3rd party inspection (Lloyds, TUV or equivalent) for foreign bidders shall be included in the base price of the equipment by the bidder. This 3rd party inspection agency shall be approved by BHEL and will be decided in contract stage.
- E) All drawings/data – sheets etc. to be submitted during contract shall be subject to BHEL/Customer review/ approval.
- F) GA drawings, as submitted with offer at tender stage are for reference purpose only and shall be subject to approval during contract stage.
- G) The commissioning spares (if any) are supplied on ‘As Required Basis’ & prices for same shall be quoted in the price bid format. If the bidder has not quoted for commissioning spares at tender stage and if the same are actually required during commissioning, then the same shall be supplied by bidder without any cost to BHEL.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

	<b>COMPLIANCE SHEET</b> <b>AIR TRAPS</b> <b>1 X 800 MW TSGENCO</b> <b>KOTHAGUDAM TPP</b>	SPECIFICATION NO.:PE-TS-410-100-M011	
		VOLUME : III	
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- H) All drawings/documents in soft as well as hard copy shall be submitted within 2 weeks from placement of Purchase orders in the event of order. A technical representative of bidder shall come for meeting with BHEL along with revised documents within one week of receipt of BHEL comments to resolve all issues and incorporate all comments in the soft copy for further submission to customer if required. Further, on receipt of customer comments on the documents a technical representative from bidder shall come for meeting to resolve all issues and incorporate all comments in the soft copy at BHEL and resubmit the drawings /documents for CAT I approval and shall visit customer/customer's consultant if required for across the table approval of documents.
- I) Any special tools & tackles, if required, shall be in bidder's scope.
- J) Prices for recommended spares (if any) for three year operation shall be furnished separately and not to be included in the base price.
- K) The offered model design should be of bidder's proven model and they should have designed, manufactured, supplied and tested the equipment of similar type and rating in at least Two (2) projects and be in satisfactory operation for last two (2) years.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL



**TITLE**  
**\* SCHEDULE OF DEVIATIONS**  
( ) From Technical Specifications (Volume –II B)

SPECIFICATION NO  
PE-TS-410-100-M011

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We the undersigned hereby certify that the above mentioned are the only deviations.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				COMPANY SEAL
NAME	DESIGNATION	SIGNATURE	DATE	

	<b>TITLE</b>  <b>*SCHEDULE OF DECLARATIONS</b>	SPECIFICATION NO PE-TS-410-100-M011
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\* Bidder shall include this schedule both in technical and Price offers

## DECLARATION

I .....certify that all the technical data and information pertaining to this specification are correct and are true representation of the equipment/system covered by our format proposal number Dated ..... and there is no deviation to the specification other than those listed in "Schedule of deviations" of this Vol III.

I hereby certify that I am duly authorized representative of the Bidder's company whose name appears above my signature.

Bidder's Company Name .....

Authorized representative's  
Signature .....

Name .....

Bidder's Name The bidder hereby agrees to fully comply with the requirements and intent of this specification for the price indicated

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	
				COMPANY SEAL