

## **Supply of Drier assembly**

Requirements:

We require the following item as per the specification & Drawing attached.

ENQ. Ref : SD:MECH:01:DRIER dated 06.06.08

ITEM : Four Bank top outlet mist extractor as per drawing 3-93-170-05230/00 and specification BHE:700:Drier/Rev00

Quantity : 16 nos.

01. The scope of supply is to include high capacity moisture separator vanes, frame parts and jacking material in a four bank fully assembled and welded moisture separator assembly ready for installation in to the steam dryer equipment.

02. The offer shall be based on the flow parameters given in the specification

03. Material of construction as per drawing and specification attached.

04. Inspection agency:

For import by Lloyds

For indigenous supply BHEL authorized agency

05. Test certificate and performance guarantee (PG) shall be supplied along with assembly as per specification.

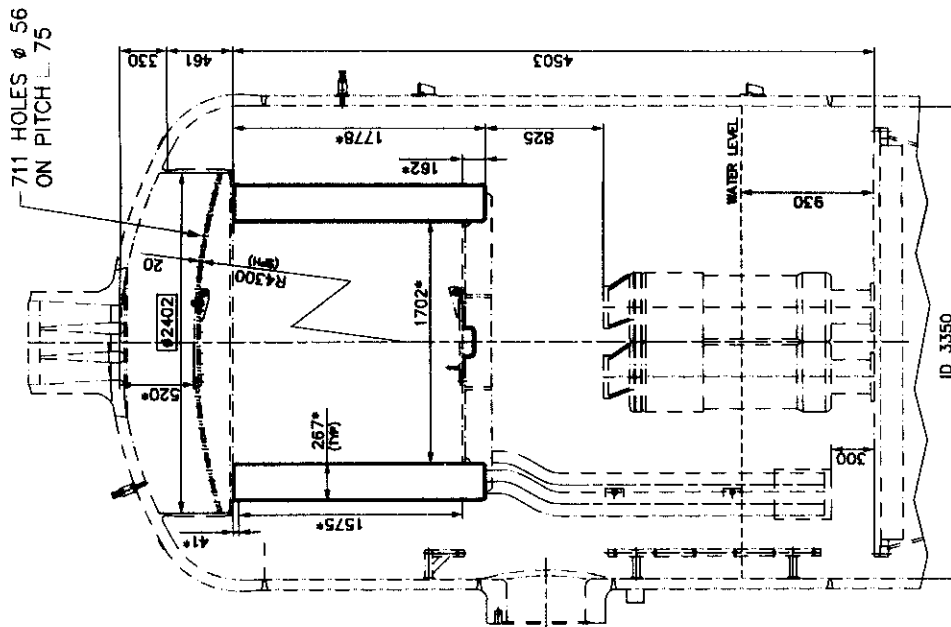
06. The supplier shall establish to demonstrate for PG in terms of evidence and customer references.

Pl. send yr. offer on or before 20.06.08. The offer to be submitted in TWO part bid system i.e. Technical offer with commercial terms and conditions and price bid in a separate sealed covers.

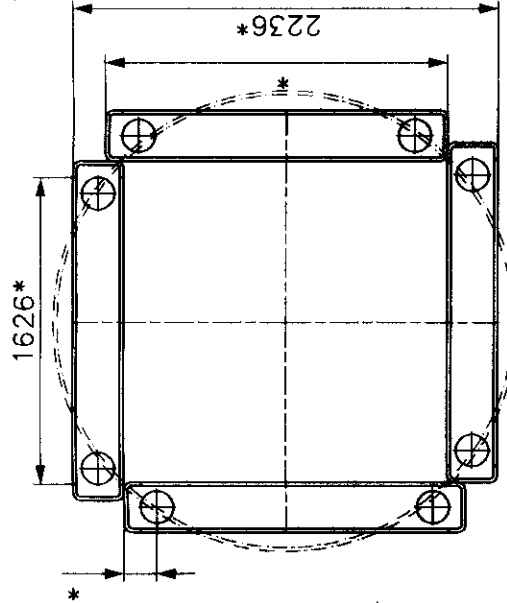
Specific confirmation to all clauses of our specification to be furnished in the offer any deviation to be clearly spelt out.

The tender will be opened on 20.06.08 at 2.30 PM.

DRAWING NO:  
3-93-170-05230



ALL DIMENSIONS ARE IN MILLIMETERS



# NOTES:-

1. ALL DIMENSIONS ARE IN mm
2. SCOPE OF SUPPLY AS INDICATED IN THICK LINES AND AS PER SPECIFICATIONS
3. FOUR BANKS TO BE WELDED TOGETHER BY THE SUPPLIER AS SHOWN.
4. SUPPLIER TO CONFIRM THE DIMENSIONS.
5. COMMENT ON : i) THE SIZE & NO.OF HOLES IN PERFORATED PLATE  
ii) CONFIRM THE VOLUME ABOVE THE PERFORATED PLATE TO HANDLE THE STEAM FLOW.
- iii) VANE TYPE USED : PBX/HIGHER PERFORMANCE VANE TYPE
- iv) CONFIRM AND PROVIDE \* DIMENSIONS
6. LIMITATION IN HOOD DIMENSION [22402] CANNOT BE CHANGED. SLIGHT MODIFICATION IN THE BOTTOM HOOD IS PERMISSIBLE TO ARREST THE LEAKAGE.

PRELIMINARY

700MW

TYPE OF PRODUCT  
OR NAME OF  
CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		TENDER DRG	
DATE	230308	DATE	230308
K.R.	MANDAL	V.R.	230308
APPD	230308	APPD	230308
WEIGHT (Kg)	820014	WEIGHT (Kg)	820014
GRADE OF C/M/F	150	GRADE OF C/M/F	150
NC	150	NC	150
CONC	150	CONC	150
SCALE	1:1	SCALE	1:1
NO. OF ITEM	1	NO. OF ITEM	1
DRAWING NO : 3-93-170-05230		REV	
U 01		REV	
FOUR BANK TOP OUTLET MIST EXTRACTOR (700MW)		FOUR BANK TOP OUTLET MIST EXTRACTOR (700MW)	
Size A3		Size A3	

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

REV DATE ALTERED : CHD&APPD :  
REV DATE ALTERED : CHD&APPD :  
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REV DATE ALTERED : CHD&APPD :

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**TOP OUTLET DRIER ASSEMBLY****1.0 SCOPE**

This specification covers the technical requirements for the design, procurement of materials, manufacture, inspection, testing, guarantee, packing and supply of 4 Bank, Top outlet Mist Extractor (Drier). The requirements covered under this specification represent the minimum requirements and shall be fully met with. For number of drier assemblies to be supplied the purchase order may be referred to.

**2.0 APPLICABLE DOCUMENTS:**

The drier shall be capable of being accommodated within the available space of the heat exchanger, which is shown in Purchaser's drawing (3-93-170-05230/ rev 00).

**3.0 DESCRIPTION**

The drier shall be designed for installation inside a heat exchanger at the top and shall be supported vertically from the dished head. The drier shall be capable of providing steam at outlet with a quality of 99.75% or better dryness (by weight). The arrangement and construction of the vanes (high performance) shall allow the separated moisture to drain at right angles to the steam flow in order to prevent re-entrainment of moisture. The vanes shall be assembled in boxing, complete with jacking plate, jacking fasteners and locking devices, etc.

**4.0 MATERIAL**

4.1 Raw material for **vanes** shall be established stainless steel conforming to the requirements as under DIN-17440-1.4550 or ASTM A240 Type 347 and it should have been solution annealed and pickled prior to manufacture.

4.2 The **boxing and base** of the drier shall be of DIN 17155-15Mo3 (1/2 Mo Carbon steel) or ASME equivalent material.

4.3 Jacking fasteners and locking washer shall be metric dimension and the material shall be made of Stainless steel

**5.0 DESIGN REQUIREMENTS FOR 4 BANK TOP OUTLET DRIER:**

5.1	Dried steam flow at outlet	968400 kg/hr
5.2	Operating pressure at full power	44.0 kg/cm <sup>2</sup> gauge
5.3	Design pressure of the vessel	55 kg/cm <sup>2</sup> gauge.

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- |      |   |  |
|------|---|--|
| 5.4  | Operating temperature   | 256.0 deg. C   |
| 5.5  | Design temperature of the vessel  | 326.0 deg. C   |
| 5.6  | Steam quality at inlet to Drier   | 20% moisture content   |
| 5.7  | Steam quality required at outlet  | 99.75% dryness (by weight) or better   |
| 5.8  | The drier shall also be designed for an overload of 10%   |  |
| 5.9  | Raw Material:   |  |
|      | Raw materials of vanes:   | DIN-17440-1.4550 or ASTM A240 TYPE 347 (stabilized SS)(solution annealed and pickled prior to manufacture) |
|      | Box:  | DIN 17155-15Mo3(or equivalent)   |
|      | Jacking bolts:  | Stainless Steel (Metric size)  |
|      | Lock washer:  | ASTM A304  |
| 5.10 | Supporting document for the vane surface area and pressure Calculations   |  |
| 5.11 | Supporting document with calculation for the drainpipe sizing and collector box height.   |  |
| 5.12 | CFD analysis of Drier arrangement is to be carried out and submitted along with final documentation   |  |
| 5.13 | No. of separators:  | 29 nos.  |
| 5.14 | Steam flow/separator:   | ~37 T/hr   |
| 5.18 | Recirculation ratio   | 4.415  |
| 5.19 | Percentage of water at the drier inlet  | ~20 %r   |
| 5.20 | Upset condition   | ~10%   |
| 6.0  | INSPECTION  |  |
| 6.1  | The drier component and assembly shall be visually inspected and measured for their various dimensions by purchaser or his authorized agency. The inspection report shall accompany the driers when they are shipped. |  |

7.0 **DRAWING AND DOCUMENTATION**

- 7.1 The supplier shall submit all the drawings, bill of materials for the vane banks, frame and supports and quality plan for purchaser's approval prior to manufacture.
- 7.2 Documentation shall consist of approved drawings, material certificates (as per DIN 50049-3.1B), inspection reports, etc. and shall be approved by purchaser or his authorized agency before shipment of the drier.

8.0 **CLEANLINESS:**

All surfaces of the drier assembly shall be cleaned and shall be free of oil, grease and other impurities.

9.0 **GUARANTEE CONDITION:**

The drier shall be designed to give a guaranteed steam quality of 99.75 (by weight) or better under all operating conditions. Supplier shall also provide supporting documents to detail out the facilities and test procedure to meet the guarantee requirements

10.0 **PACKING AND SHIPPING:**

Each drier assembly shall be packed dry in air-tight polythene sheets. Care should be taken to avoid any projections on the inside of the crate to avoid damage to the driers. Suitable moisture absorbers shall be provided inside the crates. A detailed drawing showing the packing arrangement shall be submitted to the purchaser, for approval.