

## SPECIFIC COMMERCIAL TERMS AND CONDITIONS

**For Enquiry No: B508IT8P2190DK1..For Supply of Outer Casings.**

**This is a mandatory document to be filled and attached to your technical bid for evaluation**  
(Otherwise your bid will be disqualified)

| Sl. No. | Terms & Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Supplier confirmation | Deviations / Remarks |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------|
| 1.      | <p>Two Part Bid shall consist of:</p> <ul style="list-style-type: none"><li>• <u>Techno commercial Bid</u>, with all technical specification &amp; scope and all applicable Commercial Terms and Conditions including applicable duties/taxes/other charges, except the price, AND</li><li>• <u>Price Bid</u>, containing ONLY the price and duties/taxes/other charges applicable and should not contain any technical and commercial terms and conditions.</li></ul> <p>a) Technical bid and price bid should be submitted in separate sealed covers – putting them in third cover.</p> <p>b) The details like Tender No, Due Date, Technical Bid or Price Bid, as the case may be, shall be clearly super-scribed on each cover. The third cover containing both technical and price bid covers should be super-scribed with Tender No and Due date.</p> <p>c) Techno-commercial Bid will be opened first and after freezing technical and commercial conditions only, the Price Bid will be opened.</p> <p>d) The date for the Price Bid opening shall be intimated to all the Techno-commercially qualified bidders before the Price Bid is opened.</p> <p>e) The bidder (s) will also be informed, if their Tehno-commercial bid is not acceptable</p> <p>f) The bidders will be allowed to submit the impact due to changes in technical scope /commercial terms or revised price bid, if felt needed, only when their technical/commercial parameters or specifications are changed subsequently.</p> <p>g) Revised offers will not be accepted unless asked for.</p> |                       |                      |
| 2.      | <p><b>Offer validity</b> should be 90 days minimum from date of price bid opening.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |                      |
| 3.      | <p>Quoted PRICES, after Placement of P.O, shall be FIRM and valid till complete execution of the Order without any escalation/increase for any reason whatsoever.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                      |
| 4.      | <p><b>Payment Terms:</b></p> <ul style="list-style-type: none"><li>• <u>For Indian vendors</u>: 100% payment within 90 days (45 days incase of SSI Units) from the date of dispatch of materials.</li><li>• <u>For Foreign vendors</u>: 100% payment against irrevocable LC (LC will be opened 30 days prior to dispatch schedule).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |                      |
| 5.      | <p><b>Terms of Delivery:</b><br/>The items are to be quoted on <b>EX-WORKS</b> for Indian vendors and <b>FOB Nearest Port</b> for Foreign vendors.</p> <p><b>Delivery Period:</b><br/>_____ weeks/months from the date of LOI/PO<br/>Delivery shall be strictly quoted w.r.t. the date of LOI/PO only.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                       |                      |

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 6.   | <b>Third Party Inspection:</b> (Mandatory)<br>Inspection by M/s. LLOYDS (nominated inspection agency by BHEL). Charges for inspection are to be included in the price quoted by vendor.                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| 7.   | <b>Guarantee:</b> Materials should be guaranteed for a period of 18 months from date of supply or 12 months from the date of assembly, whichever is later.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
| 8.   | <b>Penalty:</b><br>a) Penalty (Not Liquidated Damages ) will be levied @ 0.5% per week of delayed supply (w.r.t Delivery clause) not exceeding 10% of Total Order value<br>b) No grace period allowed for calculating penalty period.<br>c) Delivery for penalty purpose is w.r.t LR date/Excise invoice date/ Third party inspection clearance certificate date (LLOYDs)<br>For any deviations to the penalty clause, the offer may be rejected or suitably loaded for L1 evaluation.                                                                                                                             |  |  |
| 9.   | a) Price Bids Shall be evaluated on landed cost basis i.e., TOTAL COST TO BHEL (after considering CENVAT or VAT benefit, if any) and w.r.t the finalised Technical Scope and Commercial conditions only.<br>b) In case BHEL decides to load the vendor/vendors on any deviations on Commercial condition(s) whatsoever, it shall in advance intimate such criteria for loading to the concerned vendors before price bid opening<br>c) In case of Multiple items, BHEL has the right to evaluate and arrive at the lowest bidder on Individual item / Total basis at its discretion, and in the interests of BHEL. |  |  |
| 10.  | BHEL reserves the right to increase / decrease the quantity indicated in the enquiry.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| 11.. | Supply should strictly confirm to BHEL drawings / specifications. All tests should be carried out as per BHEL drawings / specifications. All Test certificates, guarantee certificates and Pre inspection reports (PIR) should be furnished along with dispatch documents                                                                                                                                                                                                                                                                                                                                          |  |  |
| 12.  | BHEL may choose for placing repeat order for additional quantity, as and when required, with the acceptance of vendor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |
| 13.  | BHEL reserves all rights for rejecting any or all offers without assigning any reason therefor in the interests of BHEL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| 14.  | Vendors shall submit offers within the due date. If, no communication is received from any vendor within the due date, it will be deemed that the vendor can not meet our delivery / technical requirements.                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| 15.  | Tender due date: 31.01.2009, 11.00 Hrs. (IST)<br><b>No tender due date extension</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |

**NOTE TO VENDORS:**

**a) Vendors to indicate their response to each of the above clauses either by 'YES' or "NO' in the Supplier confirmation column.**

**b) Vendors , if taking deviations from the specified conditions , may indicate the same clearly in deviation column and if needed on a separate sheet, with reasons for such deviation and in such a case BHEL reserves the right to reject the offer summarily or load the vendor suitably – solely at its discretion and in its interests.**

**c) Commercial Conditions quoted in any place other than this format , including stated in Vendor's General Terms and conditions enclosed, if any , shall be summarily ignored and be invalid for evaluation of the Preferred Bidder.**

**d) Vendors to note that the above are specific Terms & conditions only , and in respect of other terms and conditions, BHEL's General Terms & conditions will apply and the same can be obtained upon making a request.**

**Signature of the supplier**



**PLANT PURCHASING  
SPECIFICATION  
HYDERABAD**

**HY19573**

**REV. NO. 06**

**PAGE 1 OF 3**

**ALLOY STEEL CASTINGS FOR STEAM TURBINES  
FOR HIGH TEMPERATURE SERVICE**

**GRADE : G 17 Cr Mo V 510**

**1.0 GENERAL:**

This specification governs the quality requirements of castings required to operate at high pressure and elevated temperatures in steam turbines.

**2.0 APPLICABLE ADDITIONAL SPECIFICATION:**

General requirements of steel castings shall be as per plant standard HY0851165 Rev.01 (based on TLV 0100).

**3.0 CHEMICAL COMPOSITION:**

Heat analysis according to EN10213 in weight % shall be as follows:

| Element | Melt analysis |         |
|---------|---------------|---------|
|         | Minimum       | Maximum |
| C       | 0.15          | 0.20    |
| Si      | -             | 0.60    |
| Mn      | 0.50          | 0.90    |
| S       | -             | 0.015   |
| P       | -             | 0.020   |
| Mo      | 0.90          | 1.10    |
| Cr      | 1.20          | 1.50    |
| Ni      | -             | 0.70    |
| V       | 0.20          | 0.30    |
| Cu      | -             | 0.30    |
| Al      | -             | 0.040   |
| Ti      | -             | 0.025   |
| Sb      | -             | 0.010   |
| Sn      | -             | 0.025   |

**4.0 WELDING:**

Welding as per approved WPS and PQR shall be performed only on quenched and tempered castings. Design welds are allowed only after permission from BHEL.

**Revisions:**

**Revised the cross referred standard in cl. 2**

**Issued :**

**STANDARDS ENGINEERING DEPARTMENT**

**Rev.No. 06**

**Amd.No.**

**Reaffirmed:**

**Prepared:**

**Approved:**

**Dt .of 1<sup>st</sup> issue**

**Dt. MAY, 07**

**Dt.**

**Year:**

**MATLS. ENGG.**

**GM (ENGG.)**

**AUG. 1983**

|                    |                                                         |                                                                                     |
|--------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>HY19573</b>     | <b>PLANT PURCHASING<br/>SPECIFICATION<br/>HYDERABAD</b> |  |
| <b>REV. NO. 06</b> |                                                         |                                                                                     |
| <b>PAGE 2 OF 3</b> |                                                         |                                                                                     |

The welding filler materials shall be in accordance to the WPS and shall have the following analysis (%).

|    |               |
|----|---------------|
| C  | = 0.10 – 0.15 |
| Si | = 0.50 max.   |
| Mn | = 1.0 max.    |
| Cr | = 1.00 – 1.50 |
| Mo | = 0.90 – 1.30 |
| V  | = 0.20 – 0.30 |
| Ni | = 0.40 max.   |

The use of other welding filler material is only allowed after prior agreement with the purchaser. On each casting, weld hardness shall be checked at random and documented accordingly. Values of maximum 320 HV or 304 BHN max. are allowed.

## 5.0 **HEAT TREATMENT:**

According to EN10213.

**Hardening:** At temperature 920 - 960°C, holding time corresponding to the wall thickness. Depending on the wall thickness, cooling to be done in oil or an adequate liquid or circulated air.

**Tempering:** At temperature 680 - 740°C, holding time corresponding to the wall thickness. Cooling at calm air or cooling in furnace down to 300°C, then calm air. With respect to optimum long – term properties a microstructure transformation in the upper bainite range is to be achieved. After rough machining in the foundry, stress relieving treatment is necessary before delivery of the casting. The stress relieving temperature should not be more than the actually applied tempering temperature. The cooling rate for the stress relieving should be  $\leq 30^\circ\text{C/hr}$  down to  $\leq 300^\circ\text{C}$ .

The stress relieving after rough machining can be dropped, if production welding followed by stress relieving is carried out after rough machining.

## 6.0 **MECHANICAL PROPERTIES:**

The mechanical properties of each casting shall be determined on attached samples in the delivery condition.

The following properties shall be achieved at room temperature.

| Tensile strength<br>N/mm <sup>2</sup> | 0.2% Proof stress,<br>N/mm <sup>2</sup><br>min. | Elongation %<br>L=5.65 √So<br>min. | Reduction<br>in area %<br>min. | Charpy impact<br>strength *<br>J min. |
|---------------------------------------|-------------------------------------------------|------------------------------------|--------------------------------|---------------------------------------|
| 590-780                               | 440                                             | 15                                 | 40                             | 27                                    |

\* Average of three charpy V-notch specimens, where the smallest value shall be at least 21 J.



# PLANT PURCHASING SPECIFICATION HYDERABAD

**HY19573**

**Rev. No. 06**

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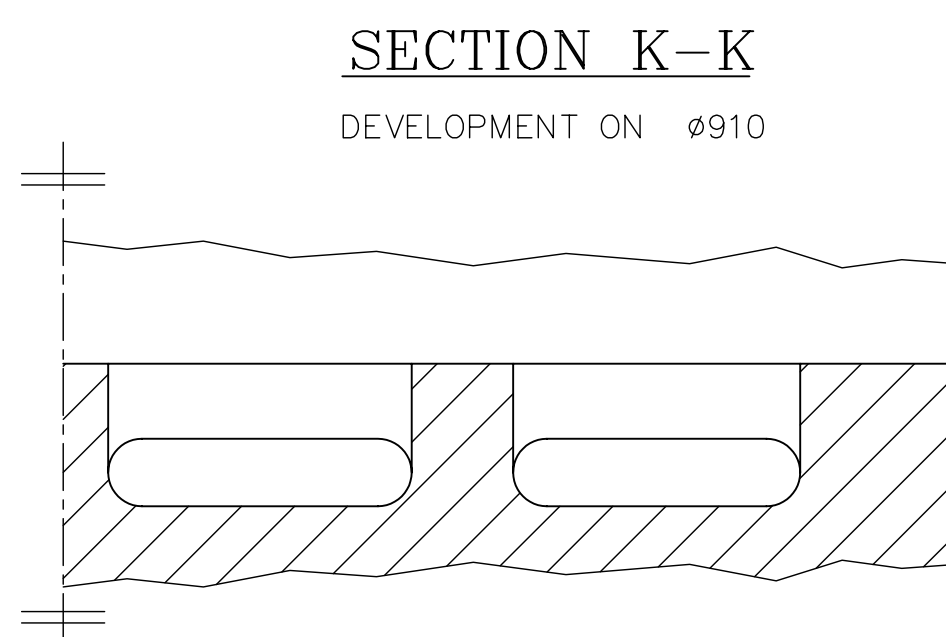
## **7.0 SCOPE OF THIRD PARTY INSPECTION:**

In case of non-availability of any specified quality plan, following will be the scope of third party inspection agency.

1. Review of chemical composition report.
2. Selection/identification of test specimen for physical tests before detaching from the casting.
3. Witness of all physical tests and NDT as applicable.
4. Review of heat treatment cycles followed.
5. Dimensional inspection.



|                                                                |               |               |                    |
|----------------------------------------------------------------|---------------|---------------|--------------------|
| INVENTORY NO                                                   | SIG. AND DATE | REF. DRG. NO. | COMPUTER FILE NAME |
|                                                                |               |               | 25-381608.DWG      |
| M                                                              |               | L             | K                  |
| GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261 |               |               |                    |



- THE QUALITY LEVELS ARE ALREADY MARKED ON THE DRAWING  
FOR SOME AREAS, ELSEWHERE, THE CASTING SHALL CONFIRM  
TO THE QUALITY LEVELS, AS GIVEN IN THE FOLLOWING TABLE:

| S.NO. | FOR MATERIALS.                                          | QUALITY LEVELS TO BE ADHERED TO: |
|-------|---------------------------------------------------------|----------------------------------|
| 1.    | HY 19573 (G17CrMoV5-10)<br>AND<br>HY 19572 (GS17CrMo55) | QUALITY LEVEL-2<br>(DIN17245-77) |
| 2.    | HY 19571 (GS 22 Mo4)<br>AND<br>HY 19570 (GS-C25)        | QUALITY LEVEL-3<br>(DIN17245-77) |

9. X-RAY TEST TO BE CARRIED OUT AT POSITION MARKED  
THUS XXXXXXXXXXXXXXXXXXXX

\*FOR d1=580, d2=550 AND d3=600, WEIGHTS ARE:

|          |        |
|----------|--------|
| 2        | 1480   |
| 1        | 1945   |
| POS. NO. | WEIGHT |

NOTE FOR BHEL ENGG. DEPTT. ONLY. (NOT FOR CASTING SUPPLIER)

1. MAXIMUM ALLOWABLE VALUES FOR DIMENSIONS  $\phi d2$  &  $\phi d3$  ARE:
- |                      |
|----------------------|
| $\phi d2 = \phi 610$ |
| $\phi d3 = \phi 675$ |

|               |             |         |     |     |     |                           |                |             |
|---------------|-------------|---------|-----|-----|-----|---------------------------|----------------|-------------|
| TC9217309389  | LOWER PART  | 2       | 700 | 540 | 580 | HY19573<br>G17CrMoV5-10   | 1250           | 01          |
| TC9217309370  | UPPER PART  | 1       | 700 | 540 | 580 | HY19573<br>G17CrMoV5-10   | 1715           | 00          |
| MATERIAL CODE | DESCRIPTION | POS.NO. | ød1 | ød2 | ød3 | SPECIFICATION<br>MATERIAL | WEIGHT<br>(KG) | VAR.<br>NO. |

TYPE OF PRODUCT  
OR  
NAME OF CUSTOMER/PROJECT


**BHARAT HEAVY ELECTRICALS LTD.**  
 HYDERABAD

|                 |                      |                                                                                       |    |
|-----------------|----------------------|---------------------------------------------------------------------------------------|----|
| DEPT.<br>I.T.D. | UNTOOL. DIMS.<br>GR. |  | SC |
|-----------------|----------------------|---------------------------------------------------------------------------------------|----|

|                                                   |  |  |     |
|---------------------------------------------------|--|--|-----|
| 415                                               |  |  | 1.5 |
| TITLE<br>INNER CASING N63<br>(ABN. HIGH PARAMETER |  |  |     |

|             | NAME  | SIGNATURE | DATE     | NO. OF<br>VAR. |
|-------------|-------|-----------|----------|----------------|
| LTD<br>DRN. | RAJIV |           | 10.09.04 |                |
|             | CHD.  | RAJIV     | 10.09.04 |                |

|            |                    |          |             |
|------------|--------------------|----------|-------------|
| APPD.      | C.N.V.R.           | 10.09.04 | N.A.        |
| EIGHT (KG) | REF. TO ASSY. DRG. | ITEM NO. | NO.OF ITEMS |

|              |               |        |  |                |  |        |  |
|--------------|---------------|--------|--|----------------|--|--------|--|
| N.A.         |               | -N.A.- |  | -N.A.-         |  | -N.A.- |  |
| CARD<br>CODE | DRAWING NO.   |        |  |                |  | REV.   |  |
|              | 0-30102-10045 |        |  |                |  | 00     |  |
| N.A.         | SHT. No 01    |        |  | NO. OF SHT. 01 |  |        |  |