

NTPC Ltd.

**Technical Specification for Procurement of
Wear Parts for XRP-1003 Type Coal Pulverisers at
NCPS - DADRI**

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TECHNICAL SPECIFICATIONS FOR PROCUREMENT OF WEAR PARTS FOR XRP TYPE COAL PULVERISERS

1.0.0 INTENT OF THE SPECIFICATION

The intent of the specification is to procure "Wear parts" (Grinding rolls and Bullring segments) for XRP-1003-Mill type coal pulverisers of M/S BHEL make operating at NTPC-DADRI STAGE-II.

It is not the intent to specify completely herein, all aspects of material selection and manufacturing process, nevertheless, the wear parts shall conform in all aspects to high standards of materials quality, manufacturing process and workmanship and shall be capable of performing in continuous commercial operation, in a manner acceptable to the owner, who will interpret the meaning of specification, drawings and shall have right to reject or accept any work or material which in his assessment is not complete to meet the requirement of this specification.

Bidder is requested to visit DADRI site to assess the operating conditions of XRP-1003 COAL MILL'S before submitting the offer. Bidder is also requested to carefully examine and understand the specification and seek clarifications, if required, to ensure that they have understood the specification. The bidder's offer should not carry any sections like clarifications, interpretations and / or assumptions.

2.0.0 PROJECT INFORMATION

Name of the station	NTPC- DADRI
No. and size of units	490 MW x 2 NOS.
Type of coal pulveriser	XRP-1003
Rated Capacity	67 T/Hrs.
Motor Out put	525 KW
Motor Speed	985 RPM
No. of coal pulverisers per unit	9 NOS.
Total number of pulverisers for which wear parts are to be supplied	2 x 7 NOS. = 14 NOS.

3.0.0 APPLICABLE DRAWINGS

The drawings listed below and forming part of the specification are for Bidder's information. All these drawings are indicative of Owner's requirement to enable the bidder to make a suitable offer. It shall, however, be responsibility of the Contractor to ensure fitment of the supplied material.

- i. Drawing No NCT/SPD/ST-2/BM-1697 Sheet (1 of 2)
- ii. Drawing No. NCT/SPD/ST-2/BM-1697 Sheet (2 of 2)

Any variation/alteration from the listed drawing shall be clearly brought out in the technical deviation schedule with implications, if any. Such variations may be acceptable, after assessment of its implication and shall be subject to Owner's approval.

4.0.0 SCOPE OF THE PROPOSAL

The scope of the proposal shall include manufacturing, testing, packing, transportation, delivery on F.O.R DADRI site basis of wear parts of XRP-883 type coal pulverisers comprising of the following.

- iii. Grinding rolls. NCT/SPD/ST-2/BM-1697 Sheet (1 of 2)
- iv. Bullring segments NCT/SPD/ST-2/BM-1697 Sheet (2 of 2)

Party to submit detail manufacturing drawing of all the wear components to NTPC for approval before start of manufacturing.

The scope of proposal shall also include supervision of installation (supervision of installation of 1st set of wear parts) of above wear parts.

- 4.1.0 The scope of supply of contractor shall include of mill wear parts, that is set of grinding rolls, set of bull ring segments for 14 numbers of coal pulverisers such that these wear parts are compatible with each other.

Note2:- Together three nos. Grinding rolls required for one pulveriser shall form "One set of grinding rolls" and Bull ring segment quantity required for one pulverizer shall form One set of Bullring segment".

- 4.2.0 The quality of wear parts shall be such that **20000 Hrs.** of operation of each mill can be achieved with pulveriser capacity not less than 75% of its rated capacity at rated fineness (refer note 3). The bidder shall guarantee the life of each type of wear part (i.e. grinding roll and bull ring segments) and this guaranteed life of respective wear parts shall be the basis for calculating the quantity of wear parts. The guarantee for wear parts life shall be in accordance with the guarantee requirement specified in subsequent sections.

Note 3: The rated fineness should not be less than 70% through 200 mesh.

- 4.3.0 In the bid proposal the bidder is required to offer the wear parts in such quantities that the cumulative wear life (based on guarantee provided by the bidder for wear life of wear parts) for each type of wear part (i.e. grinding roll and bullring segments etc.) is not less than the number of hours resulting from multiplication of "Number of coal pulverisers for which wear parts are being procured" X "20000 operating Hrs.". The required quantity / sets of wear parts shall be arrived at by rounding off the fractional part of the set to next higher whole number.

- 4.4.0 The wear life guarantee for each set and type of wear parts shall be from within the range of **2000 Hours to 10000 Hours**, and the **quantity of wear parts shall be calculated based on wear life from within above range only. Life of grinding roll set and bullring set shall be same.** An example for arriving at number of sets of wear parts of the purpose of bidders quotation is given below at table-1:

EXAMPLE

Table-1

S. No.	Description	Bidder A	Bidder B
1.	Number of coal pulveriser	10	10
2.	Guaranteed wear life of each set of grinding rolls	7000	10000
3.	Guaranteed wear life of each set of bull ring segment	7000	10000
4.	Number of sets of grinding rolls required to be quoted per Mill	$20000/7000=2.85$	$20000/10000=2.00$
5.	Number of sets of grinding rolls required to be quoted per Mill	3.00 (Rounded off to next whole no.)	2.00 (Rounded off to next whole no.)
6	Number of sets of grinding rolls required to be quoted for 14 Mills	$14 \times 3.0 = 42$ sets	$14 \times 2.0 = 28$ sets
7	Number of sets of BRS required to be quoted per Mill	$20000/7000=2.85$	$20000/10000=2.00$
8	Number of sets of BRS required to be quoted per Mill	3.00 (Rounded off to next whole no.)	2.00 (Rounded off to next whole no.)
9	Number of sets of BRS required to be quoted for 14 Mills	$14 \times 3.0 = 42$ sets	$14 \times 2.0 = 28$ sets

Note: (The wear life i.e. 20,000 hours/guaranteed wear life) should be first rounded off to the next whole number and then multiplied by 14, so that it satisfies the requirement of 14 mills.

5.0.0 **EVALUATION CRITERIA**

The bids guaranteeing wear life less than **2000 Hrs.** will not be considered for evaluation and shall be rejected. Further, no evaluation credit will be given for guaranteed wear life in excess of **10000 Hrs.**

The evaluation of the bids shall be based on the total price of (a) sets of bull ring segments and (b) sets of grinding rolls quoted by the Bidder in accordance with the clause 4.0.0 "Scope of the proposal".

6.0.0 **MATERIAL OF CONSTRUCTION:**

The material of construction of wear parts shall be selected such that wear part offer guarantee for wear life.

S. No.	Name of wear part	material
1.	Bullring segments	Ni Hard, High Chrome, Ceramic Insert, Sinter cast, etc.
2.	Grinding rolls	Ni Hard, High Chrome, Ceramic Insert, Sinter cast, etc.

Party to submit detail chemical composition and hardness of wear surface of his choice of material offered for making wear components.

The materials selected by the contractor for the mill wear parts and additional mill components (if required) must have been used satisfactorily in at least ten (10) numbers of coal pulverisers (10 x3 = 30 nos. of Grinding Rolls + 10 sets of Bull Rings) of XRP-1003 type & above rated capacity.

7.0.0 **GUARANTEES:**

The quality of wear parts shall be such that 20000 hours of operation of each mill can be achieved. The bidder shall guarantee the wear life and the fitment of the wear parts in the existing mills and furnish these guarantees in Schedule-I.

7.1.0 **GUARANTEED WEAR LIFE:** -The "wear parts", i.e. each set of grinding rolls and each set of bullring segments shall be guaranteed for wear life in number of hours of mill operation (as mentioned by manufacturer in offer). The guaranteed life of wear components shall be considered up to the wear as follows:

A. Hours of mill operation for wear of Grinding Roll element up to 65 mm at any portion in the set.

B. Hours of mill operation for wear of Bull ring up to 50 mm at any portion in the set.

If either ('A & B') or ('A or B') is not achieved both Grinding roll set and Bull ring set of same pulverizer will be considered for penalty.

NOTE: No other factors what-so-ever will be considered for demonstration of wear life.

7.1.1 The guarantee on wear life shall be provided for each type of wear part separately (i.e. Grinding rolls and bullring segments). The guaranteed wear life for each set of grinding rolls and each set of bullring segments shall be from within the range of 2000Hours to 10000 Hours. Bidders offering wear life guarantee less than 2000 operating hours shall not be considered for evaluation. Further, bidders offering wear life guarantee higher than 10000 operating hours shall not be given any evaluation credit beyond 10000 hrs

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- 7.2.0 **WEAR PART GUARANTEE:** The bidder shall guarantee the wear life of wear parts in number of mill operating hours (refer Note 4).

The guarantee on wear life shall be demonstrated on the pulverisers C, D, E, F, G, H, & J only. **Mill A&B (mill wear parts of bottom mill) will not be considered for demonstration of wear life.**

Note 4 : Operating Hours of mill for the purpose of wear part warrantee are defined as:

A. Hours of mill operation for wear of Grinding Roll element up to 65 mm at any portion in the set.

B. Hours of mill operation for wear of Bull ring up to 50 mm at any portion in the set.

If either ('A & B') or ('A or B') is not achieved both Grinding roll set and Bull ring set of same pulverizer will be considered for penalty.

NOTE: No other factors what-so-ever will be considered for demonstration of wear life.

7.3.0 **LIQUIDATED DAMAGE FOR SHORTFALL IN GUARANTEED WEAR LIFE**

- 7.3.1 Liquidated damages shall be levied for shortfall in wear life of wear parts for each type of wear part separately.

- 7.3.2 If it is found that any of the wear parts viz. Grinding rolls and/or bull ring segments have achieved life of 50% or less than the guaranteed wear life the Contractor shall replace the wear parts free of cost. For wear life between 50% and 100% the penalty of **one and half times the pro-rata landed cost of short fall in duration will be charged.**

Example-

Landed cost of 1.set of WC (wear component)= Rs 10,00000 (Rupee Ten Lakh)

Guaranteed life of each set of WC= 10,000 running hours.

Actual life obtained= 8,000 hours.

Short fall in life= 2,000 running hours.

Penalty for one set for short fall = Rs $1.5 \times 2000 \times 10,00000/10000$

= Rs 3,00000 (Rupees three lakh)

7.4.0 **Fitment Guarantee**

- 7.4.1 Fitment of the supplied material in the identified pulverisers is the responsibility of Contractor and same shall be guaranteed by the Bidder.

➤ **SAMPLE CLAUSE:** Bidder has to supply two sets of wear components as sample for fitment at site. After getting clearance of successful fitment & trail, clearance will be given for bulk supply.

1set of wear component = 01 set (=03 Nos.) Grinding roll + 01 set Bull Ring segment (No of segment to be as per approved drawing that will cover entire bowl with at least one tightening wedge)

8.0.0 QUALITY ASSURANCE & INSPECTION

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8.1.0 Bidder shall provide the necessary information on Quality Assurance Programme containing the overall Quality management and Procedures, which the Bidder proposes to follow during various stages of manufacturing of the specified wear parts. The Contractor shall also submit a detailed manufacturing quality plan in the format enclosed at Annexure-I detailing out the tests/checks carried out by the manufacturer, during various stages of manufacturing for NTPC approval. The quality plan shall be accompanied with all the plan standards, reference documents, acceptance norms, procedures and specifications. The indicative tests/checks which shall necessarily form part of the quality plan are as follows:

- i. Chemical composition and heat treatment.
- ii. Mechanical properties and measurement of hardness.
- iii. Wear-resistant parts shall be UT/RT tested to check soundness after suitable heat treatment. In case of bi-metallic casting, UT shall be carried out for ensuring the proper bonding.
- iv. Metallurgical test: Microstructure examination will be carried out on samples selected at random.
- v. Surface defects of the wear resistant parts shall be examined by DPT.
- vi. To ensure proper fitment at site each grinding roll shall be subjected to blue matching check for proper bore surface contact. In case of bullring segment trial assembly shall be carried out for each set on the test bowl.
- vii. Weldments on any other mill component shall be checked with suitable NDT.

8.2.0 The approved quality plan shall indicate NTPC witness points (Customer hold points) for which the contractor shall give 15 days inspection advance notice for undertaking inspection.

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