

BHEL- ISG, BANGALORE 	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) Technical Enquiry Specification for Mobile Coal sampling	DOCUMENT NUMBER RRVUNL/CHP PKG- H/001
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	Rev. no.: 0, Dtd: 25-04-17

PACKAGE-H

TECHNICAL ENQUIRY SPECIFICATION FOR

MOBILE COAL SAMPLER

	Prepared By	Checked by	Approved by
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1.0 PROJECT INFORMATION:

Coal handling plant for 2X660 MW Suratgarh Thermal Power Station (Unit-7 & 8) of Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL) proposed plant as described in the NIT specs. For Salient features of the Project site are,

1.1 GENERAL SITE CONDITIONS		
1.	Owner / Purchaser	: Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (RRVUNL)
2.	Engineer/consultant	: Tata Consulting Engineers Ltd (TCE) 73/1, St. Marks Road, Bangalore – 560 001
3.	Project Title	: 2 x 660 MW, Super-Critical TPS, Stage-V, Unit # 7 & 8 at Suratgarh, Rajasthan
4.	Project location	: Prabat Nagar, Suratgarh, Sriganganagar district, Rajasthan.
5.	Elevation (above Sea level)	: 186 m (approximate)
6.	Temperatures : Monthly basis	: Mean of daily max. 32.8 deg.C (in the month of May) Mean of daily min. 17.6 deg.C (in the month of Jan)
7.	Temperatures : Annual basis	: Mean of daily max. 32.3 deg.C Mean of daily min. 19.6 deg.C
8.	Highest temperature recorded	: 50 deg.C
9.	Lowest temperature recorded	: (-) 2.8 deg.C
10.	Design temperature	: 50 deg. C
11.	Relative humidity	: Varies between 21% and 81%
12.	Annual average rain fall	: 312 mm
13.	Annual mean wind speed : Calculations for wind effect shall be in accordance with IS:875-1987(Part-3) taking into account the following	: 4 km/hr Basic wind speed = 47 m/sec Factor K1 = 1.07 Category of terrain = Category 2 K3 – as per IS 875
14.	Seismic data (As per IS: 1893 latest issue)	: Zone II Designs & design coefficients will be based on IS 1893:2002
15.	Nearest railway station	: Suratgarh JN
16.	Nearest airport	: Jaipur
1.2 POWER SUPPLY SYSTEMS		
1.2.1 MV System		
1.	System Voltage	: 6.6 kV $\pm$ 10%, 3 Phase, 3 wire
2.	System Frequency	: 50 Hz $\pm$ 5%

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3.	Combined Variation	:	10% (absolute)
4.	System Fault level	:	40 kA for 3s
5.	System Earthing	:	Non effectively earthed
6.	Drives		161-1500kW
1.2.2	LV System		
1.	System A.C voltage	:	415 V $\pm$ 10%
2.	System Frequency	:	50 Hz $\pm$ 5%
3.	Combined Variation	:	10% (absolute)
4.	Phase	:	3 ph, 3- wire
5.	System fault level	:	50 kA for 1s
6.	System Earthing	:	Solidly grounded
7.	Panel space heater, lighting, AC Control & Protection Supply	:	240V, Single phase
8.	Drives		up to 160kW
1.2.3	DC System		
1.	System Voltage	:	220V, +10%, -15%, 2-wire
2.	Fault level	:	20 kA
3.	System Earthing	:	Unearthed

2.0 BROAD SCOPE OF MOBILE COAL SAMPLING EQUIPMENT BIDDERS:

The scope of work for Mobile coal sampling equipment near Wagon tippler area with arm, cutter and head assembly and collecting vessel with closed cabin.

Bidder scope includes design, supply including manufacturing, fabrication, inspection, testing at shop floor, shop floor painting, packing and transportation to site, custom / port clearance and assembling at site & commissioning, PG test at shop & trail running at site and handing over of safe reliable, efficient and trouble free operation of the equipment.

2.1 Scope of work

The design, manufacture, inspection and testing of the equipment's shall comply with all the currently applicable statutes, regulations and safety codes in the locality where the equipment is to be used and shall also confirm to the latest edition of Indian and other international standards and codes. Nothing in this specification shall be construed to relive the contractor of the required statutory responsibility. In case of any conflict & ambiguity in the standard to be followed the decision of the customer / BHEL shall be final and binding.

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The brief scope of work includes the following,

- 1) One (1) no of mobile coal sampling Wagon tippler area with arm, cutter and head assembly and collecting vessel with closed cabin
- 2) Supply of special tools & tackles and consumables like lubricants, oils etc. if any required for initial operation upto commissioning of the supplied equipment.
- 3) The above scope also includes the items, which are not specifically mentioned but required for the sound performance of the equipment
- 4) Preparation of protocols and getting signed from customer for all equipments/system in bidder's scope. Bidder to note and confirm that performance guarantee test for the complete system along with bidders supply shall be in the bidder's scope
- 5) Painting of all equipments / items before dispatch to site, commissioning, submission of O & M manuals, Training, operating procedures & as built documents shall be in the bidder's scope.
- 6) Supply of consumables (oil, grease and lubricants) for initial flushing, first fill and initial operation and top up during trial run
- 7) Bidder to submit recommended spares list for 3 years successful operation.
- 8) Provision of any temporary supports/platforms required for Erection & Commissioning of machine, shall be in the scope of bidder.
- 9) **Bidder shall give 15 days' advance written notice of equipment being ready for testing. Such tests shall be to bidder's account including for the expenses like to and fro journey, lodging, daily allowance (DA) and any other local conveyance of the inspector's for RRVUL / TCE / Third Party Inspector. The customer / Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within 15 days of the date on which the equipment is notified as being ready.**
- 10) Standard electrical items to full fill the functional requirement.
- 11) Supply of commissioning spare parts shall be in bidder's scope
- 12) During detail engg. package bidder to strictly adhere to BHEL/RRVUNL drg. formats, document numbering, QP & FQP formats.
- 13) Rust preventive after inspection at shop floor before dispatch shall be in bidder's scope.
- 14) Bidder shall submit a signed copy of BHEL's this tender enquiry specification along with all enclosures as technical offer along with the bid without any deviations / exclusions.

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2.2 GENERAL REQUIREMENTS:

Bidders to also consider following things in their scope apart from broad scope mentioned above and enclosures:

1. In case of any ambiguity, conflict in the standard& specification & /or interpretation of clauses in this enquiry spec. and its enclosures, the decision of BHEL shall be final and binding and any change due to this shall have no price implication on BHEL and shall have to be absorbed by successful bidder.
2. Bidder shall be responsible for commissioning, demonstration of performance guarantee parameters of the equipments/systems as laid down elsewhere in the specification. Equipments / systems offered by the bidder shall not be accepted for final handover till the demonstration of performance guarantee parameters of the equipments / systems and in case any changes required in machines to match the PG test parameters shall have to be done by the bidder without any cost implication to BHEL/RRVUNL.
3. Bidder to note that list above is not exhaustive and any work required completing the system and ensuring its satisfactory running shall also be in the scope of this package bidder.
4. Bidder shall submit the signed and stamped copy of all the pages which constitutes this technical enquiry specification signed by authorized signatory and clearly mentioning each clause under following two categories to avoid any ambiguity in scope understanding & the scope division as a technical offer during bidding.
 - a. **“accepted without deviation and considered in scope of work”**
 - b. **“Not considered in scope of work”**

3.0 DOCUMENTS/ INFORMATION TO BE FURNISHED ALONGWITH OFFER

- a) Confirmation on Scope of supply in line with Tender.
- b) Type and quantity of oil, lubricants & consumables for initial fill and till successful commissioning of equipment.
- c) List of recommended spare parts list for 3 years trouble free operation.
- d) Bidder shall duly fill in the technical data sheet given in the Annexure-1 and submit it as a part of the technical offer.
- e) Catalogues/ Leaflets of respective equipment's

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- f) Reference list of your Customers for the similar items / system supplied & executed already.
- g) Signed & stamped un-priced Copy and complete NIT documents
- h) Latest performance certificates, completion certificates etc obtained from end customer.

4.0 TECHNICAL REQUIREMENT

4.1 CODES AND STANDARDS:

The design, manufacture, inspection and testing of the equipments shall comply with all the currently applicable statutes, regulations and safety codes in the locality where the equipment in to be installed and shall also confirm to the latest edition of Indian and other international standards and codes. Nothing in this specification shall be construed to relive the contractor of the required statutory responsibility. In case of any conflict & ambiguity in the standard to be followed the decision of the customer shall be final and binding.

- a) IS – 436 , Section – I , Part – I .

4.2 Brief Technical Specifications

Mobile Coal Sampling Equipment should be as under:-

1. Diesel Engine :- 01 No. as a prime mover of minimum 45 HP capacity to take care of all Hydro Mechanical Operations and should have minimum 40 % Factor of Safety over & above optimum power requirement for all Drives .
2. Makes / Manufacturers of Diesel Engines :- TATA / Kirloskar / Escorts / Ashok Leyland /Simpson /Tata/Mahindra
3. Hydraulic Pump:- 01 No Reputed Make As per Requirement for all Drives / Operations.
4. Tyres & Tubes:- 04 Nos with 01 No Stephaney Reputed Make
5. Hydraulic Cylinders :- Repute Make As per Requirement for all Drives / Operations.
6. Hydraulic Motors:- Reputed Make As per Requirement for all Drives / Operations.
7. Battery:- 01 No 12 Volt, 180-200 AMPs Battery Exide / Equivalent Make.

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8. Auger Head Assembly:- 01 No Auger Head Assembly of 300 mm Dia. Screw cutter and Minimum 1500 mm Length. (Suitable for 400 mm occasional uncrushed coal)
9. Diesel Tank:- Minimum capacity 40 Litres suitable for Sampling at least 03 Nos Coal Rakes with 25 % random sampling method.
10. Hydraulic Oil Tank:- Minimum 75 Litres Capacity of Standard Hydraulic oil.
11. Can for collecting coal samples

Notes :-

- A. Wherever makes are indicated against some items, shall be subjected to RRVUNL/TCE approval during detail engineering and any changes in makes as per RRVUNL/TCE recommendation during detail engineering, same will be accepted by bidder without any price implication to BHEL.
- B. In case of items not covered in data sheet/ list, bidder shall consider reputed make only and which shall be subjected to approval during detail engineering from BHEL/RRVUNL/TCE without any price implication to BHEL.
- C. As mentioned above, the Mobile Coal Sampling Equipment should have extended Boom length sufficient to collect coal samples from all corners as well as centre of open Type Indian Railway Wagons.
- D. Sample Collection capacity should be minimum 25 to 30 kgs. per sample .
- E. All Controls will be brought into the Operator's Cabin.
- F. This will be used for moving, taking sample of the material specified. The Coaler will be capable of stable operation on dust laden atmosphere.
- G. All standard accessories as applicable.

The plant has been designed on the basis of the following assumptions:

Sl. No.	Description	Specification
1.	Maximum size of ROM coal	(-) 400 mm occasional (-) 250 mm Normal
2.	Size of crushed coal	(-) 20 mm
3.	Maximum moisture content Present in the coal	20%
4.	Hard Groove Index	45 to 55
5.	Bulk density of coal	0.8 & 1.2 T/m3 for volume and load calculation respectively
6.	Working hours for coal handling plant operation	24 hours per day

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5.0 TERMINAL POINTS:

1. Supply of the Equipment's as per the specifications.
2. Supply of Spares, tools & tackles
3. Performance Guarantee as per NIT

6.0 DRAWINGS & DOCUMENTS

6.1 The list of drgs. / documents to be submitted by the successful bidder shall be finalized with RRVUNL (or their consultant) / BHEL after award of the contract and the bidder shall furnish the drgs. / docs accordingly. Engineering drg/doc must essentially contain the following but not limited to these and any drg/ doc required desired by BHEL/RRVUNL shall be furnished by the vendor during detail engineering:

- a. General arrangements drgs. of equipments, etc.
- b. Various schedules
- c. Design calculations
- d. Data sheets
- e. Essential spare list
- f. Recommended spare list
- g. Commissioning spares list
- h. List of places of lubrication with lubricant properties with schedule
- i. Quality Assurance Plan
- j. O&M manuals
- k. Tools and tackles list
- l. PG test procedures

In addition to the no. of copies indicated and desired by RRVUNL, bidder to ensure submission of additional 06 sets of all engineering drg/doc/O&M Manuals to BHEL and for all such subsequent revisions in hard form along with a soft copy sent thru email addressed to Project manager and concerned project engineering team.

7.0 INSPECTIONS AND TESTING:

7.1 Bidder shall give 15 days' advance written notice of equipment being ready for testing. Such tests shall be to bidder's account including for the expenses like to and from journey, lodging and any other local conveyance of the inspector's for RRVUL / TCE / Third Party Inspector. The customer / Inspector, unless the witnessing of the tests is

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virtually waived, will attend such tests within 15 days of the date on which the equipment is notified as being ready.

7.2 Type & routine test report / certificates shall include details of standard to which the tests are performed, test parameters, acceptance criteria, test set up etc. used during the testing along with the test piece details / rating and the detailed test record and final test result.

7.3 All inspection, measuring and test equipment used by the bidder shall be calibrated. The supplier shall maintain all relevant records of periodic calibration, instrument identification and shall provide for inspection by supplier.

7.4 Quality plan indicating the details of the checks to be carried out for various components are to be submitted within 2 weeks from the date of LOI by the supplier for customer approval. However, some indicative checks on different items are given below which should necessarily form part of the Quality Assurance Plan to be agreed with the customer.

All plates above 20-mm thickness to be ultrasonically tested for laminations.
Following minimum NDT requirement to be ensured for weld.

Butt welds -- 10% UT / RT and 100% MP 1
Fillet welds -- 10% MP 1

7.5 The Bidder shall conduct the performance demonstration guarantee tests at shop to show the performance/guaranteed figures.

8.0 GUARANTEED PARAMETERS, TRIAL OPERATION, TAKING OVER & PG TEST:

- 1) The bidder shall guarantee that the equipment offered shall meet the ratings and performance requirements stipulated for equipment's covered in the specifications
- 2) These parameters / capabilities shall be demonstrated during guarantee tests of the respective system / equipment as per the detailed test procedure to be approved by the BHEL / RRVUNL.

1.	Noise level	Measured noise level produced by any rotating equipment, individually and collectively should not exceed 85 dBA at a distance of 1.5 metre from it in any direction under any load condition
2.	Net Power	Minimum 45 HP
3.	-	Emission level – As per pollution norms

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All the margins required for instrument inaccuracies and all other uncertainties shall be deemed to be included in the guaranteed figures. No tolerances or allowance on the test results will be permitted for instrument inaccuracies, the method of testing or any other cause when comparing the tested performance with the guaranteed value. All costs associated with the tests shall be included in the bid price.

9.0 LIST OF ENCLOSURES:

Following enclosures are an integral part of this technical enquiry and must be signed and stamped and submitted along with the offer:

ANNEXURE-1 – Technical Data Sheet to be filled by the bidder

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Annexure-1

DATA SHEET ON MOBILE COAL SAMPLING IN WAGON TIPPELR AREA

SI no	Description	Specification
1	Engine	
	Make	
	Model	
	Type	
	Horse Power	
	No of Cylinders	
	Operating weight	
	Governor	
	Lubrication system	
	1. Method	
	2 Filter	
2	Hydraulic Pumps	
	Type	
	Capacity	
	Relief Pressure	
	Make	
	QTY	
3	Hydraulic Cylinders	
	Make	
	Qty	
	Bore x Stroke	
4	Hydraulic Motors	
	Make	
	Qty	

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SI no	Description	Specification
5	Tank	
	Diesel Tank Capacity	
	Hydraulic Oil Tank Capacity & Oil Type	
6	Tyres & Tubes	
	Make	
	Dimension	
	Qty	
7	Auger Head Assy	
	Arm radius	
	Arm Length	
8	Steering	
	Type	
	Minimum Turning Radius	
9	Attachment	
	Overall dimension	
	Hydraulic Control Unit	
10	Electricals	
	Alternator - Volts, Amp	
	Starting Motor -Volts, Kw	
	Battery - No. Volts, Ah	
11	Filtration	
	Engine	
	Transmission	
	Steering & Brake	
	Hydraulic System	

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SI no	Description	Specification
12	Brakes	
	Type	
	Parking Brake	
13	Operating Weight (Approximate)	
	Operating weight	
	Shipping Weight	
14	Standard Accessories	
	Lighting system (including 2 nos Rear and 4 nos front lights)	
	Front Pull hook	
	In line Radiator	
	Tool Kit	
	Back up Alarm with Flasher Unit	
	Electronic Instrument Monitor Panel	
	Suspension seat	