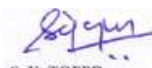


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		COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY. PURCHASE SPECIFICATION FOR RADAR OR ULTRASONICS TYPE – COAL BUNKER LEVEL MONITORING SYSTEM				
		REVISIONS: 00	APPROVED BY  S. K. TOPPO			
			PREPARED BY  D. Ghosh	ISSUED 416	DATE 05/01/2021	



A. SCOPE OF SUPPLY

1. Coal Bunker Level Measuring systems as per enclosed Technical requirement with Sensors, Electronics – Three (3) sensors per Bunker, for nine (9) Bunkers per Unit of Coal fired Thermal Power Plant projects.

Vendors to quote unit rates for all major components such as:-

- Ultrasonic sensor with cable
 - Aiming device
 - Transmitter unit
2. The electronic units (Transmitter unit) shall be mounted in a cubicle located in Control Equipment Room (CER). The Transmitter shall provide isolated 4-20mA DC output for DDCMIS and also to local indicators. Cabling distance from the Bunker floor to the CER is maximum up to 350 meters.
 3. Mandatory Spares for Coal Bunker Level Measuring System shall be as below:
Transmitters of all type, range and model number for the measurement of level = 10% of total quantity for four (4) Units.
 4. The Bunker design and dimension details are attached with this specification.
 5. In the event of ordering, a representative of vendor shall visit site for collection of drawings / details of the Coal Bunkers for detailed engineering of the system.
 6. Vendor to include one site visit of min. 3 man-days during Performance Availability Test.
 7. Vendor shall quote unit prices for each of the items offered as Main supply and Mandatory Spares supply as per Technical Requirements at clause C.
 8. Documents to be furnished
 - 8.1 Test Certificates and Calibration Reports, for approval, before dispatch of items.
 - 8.2 O & M Manuals - 2 sets to Site with consignment (soft-copy to BHEL EDN).
 9. Erection and Commissioning Training requirement for offered System
 - a. Erection of Transducer on Top of each Bunker.
 - b. Supervision of Erection of balance items
 - c. Total Commissioning and handing over of the offered systems to Owner / End user.
 - d. Three days of Training to Site Engineer/s at Site.



B. TECHNICAL REQUIREMENT

1. Type of Transmitter : Non-contact Microprocessor based 2 wire type.
2. Output Signal : Isolated 4-20mA DC
3. Sensor Accuracy : +/-0.5% of calibrated span
4. Sensor Repeatability : 10 mm or better
5. Temperature Compensation : To be provided within transducer.
6. Configuration : Sensor & Electronic unit shall be separate.
7. Housing : IP55 with durable corrosion resistant Epoxy coating.
8. Zero & Span adjustment : Continuous, Tamper proof, Remote as well as manual adjustability. Provision to calibrate the instrument without any level in the bunker.
9. Sensor Material : Corrosion resistant to suit the individual application.
10. False Signal Tolerance : Facility to be provided. Shall have adjustable damping circuitry.
11. Display : Min. 4 character display with integral key pad, access protection features.
12. Diagnostics : Loss of Echo alarm.

PREFERABLY ULTRASONIC TYPE CBLMS SHALL BE OFFERED. HOWEVER, RADAR TYPE CBLMS MEETING THE TECHNICAL REQUIREMENTS, IS ALSO ACCEPTABLE.

13. The transmitter shall have the capability to use statistical filtering techniques, wherever required, to compensate to suppress false signal due to heavy dust or fill-stream interference.
14. The transducer shall have suitable build-up compensation (i.e. repetitive, pulsating displacement at its face shall be used to remove the build-up of material).
15. The level measuring system shall consist of following (Minimum) in vendor's scope:
 - 15.1 Ultrasonic Sensor / Transducer: Three (3 nos.) per Bunker.
There are six (6) Bunker per Unit and total scope is for four (4) Units.
 - 15.2 Aiming accessories for measuring solid level: One set per Sensor / Transducer.



- 15.3 Ultrasonic Level Transmitter unit with local display & key pad and all required interconnecting cables between Transducer located at bunker top and Transmitter Unit located in the bunker floor platform. This unit shall be with IP 55 protection class.
 - 15.4 Local Bargraph Indicator (if not in-built with Transmitter unit): Digital bar graph LED indicator for level display shall be offered for each bunker. Power supply for indicators shall be AC 230V.
Approved Makes are: Gossen – Germany, ABB – Germany/Bangalore, Masibus – Gandhinagar, Yokogawa – Japan/Bangalore, Chino – Japan/Navi Mumbai, Pyrotech – Udaipur, Samson – Hamburg, M-System – Osaka.
 - 15.5 The local indicator / transmitters units at bunker floor, shall be mounted in a wall mounted arrangement.
 - 15.6 Vendor to supply interconnecting cables from each Transducer located at the bunker top up to the Transmitter Unit; cable shall be immune to environment, RFI and magnetic interference normally prevalent in the plant area. Cable shall be armoured type. The length of cable shall be minimum **25 meters** for each Transducer located at the bunker top up to the Transmitter Unit.
 - 15.7 Vendor to supply all necessary fixing / mounting plates / flanges along with other fixing / mounting hardware for Sensor / Transducer and Controller / Transmitter.
 16. Analog 4-20mA hardwired output from each ultrasonic transmitter shall be taken to DDCMIS located in the Control Equipment Room (CER) for the averaging the output of three transmitter to derive the bunker level; this scope will be with BHEL.
 17. Bidder shall furnish with the offer Clause-wise compliance / deviation list. This is a must for evaluating the offer.
 18. Any change in scope / specification, during technical evaluation of the offers, will be communicated only to the participating bidders for this tender.
 19. Documents to be furnished, with the offer:-
 - a. Bill of material
 - b. Datasheets / Drawings of offered items / system
 - c. Configuration diagram, if any.
 - d. Technical Literature / Catalogs
 20. Documents to be furnished, for Approval , in the event of order :-
 - a. GA drawing of Enclosure for mounting Transmitter showing overall dimension & layout of items housed inside.
 - b. Datasheets, Component Drawings and BOM of offered items.
 - c. Electrical Schemes with Termination details for Power & Signal Wiring.
 - d. Technical Literature
 - e. Manufacturers QA Plan.
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21. Quality Documents to be submitted for approval, in the event of order.

Test Certificates and Calibration Reports, for approval, before dispatch of items.
The calibration reports shall correspond to range of the Transducer as per the attached scope of supply.

22. O& M Manuals to be furnished – 2 sets to Site with consignment (soft-copy to BHEL).

23. Erection and Commissioning Training requirement for offered System

- a. Erection of Transducer on Top of each Bunker.
- b. Supervision of Erection of balance items
- c. Total Commissioning and handing over of the offered systems to Owner / End user.
- d. Three days of Training to Site Engineer/s at Site.

CHECK LIST FOR COAL BUNKER LEVEL INDICATION SYSTEM

NUMBER : CE/416/CBLMS/CL REVISION : 00

CONTRACTOR : M/s. BHEL-EDN

SL NO.	TESTS/CHECKS	QUANTUM OF CHECK	REFERENCE DOC. ACCEPTANCE NORMS.	AGENCY**				REMARKS
				M	C	N	D*	
1.0	SENSOR			P	V	V		COC/TC'S
1.1	TEMPERATURE						✓	
1.2	COMPENSATION							
2.0	OUTPUT ACCURACY							
2.1	TRANSMITTER UNIT			P	V	V		COC/TC'S
2.2	CHECK FOR POWER SUPPLY INPUT AND OUTPUT VALUES						✓	
3.0	LOCAL JUNCTION BOX: PROTECTION CLASS			P	V	V		COC FOR PROTECTION CLASS
4.0	BARGRAPH INDICATORS :CALIBRATION AND ACCURACY			P	V	V		CALIBRATION REPORT

LEGEND :

* RECORDS, IDENTIFIED WITH ' ✓ ' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION.

** M: MANUFACTURER/SUB CONTRACTOR, C: CONTRACTOR/NOMINATED INSP.AGENCY
N: CUSTOMER, "P" PERFORM "W" WITNESS "V" VERIFICATION

NOTE : 1) QUANTUM OF CHECK SHALL BE AS BELOW :

100 % - BY MANUFACTURER
NIL - BY CONTRACTOR
NIL - BY CUSTOMER

2) MANUFACTURER TO MAINTAIN CALIBRATED INSTRUMENT HAVING BETTER ACCURACY THAN THE ITEM UNDER TEST.

PREPARED BY

M/S BHEL

