

REQUEST FOR QUOTATION - ONLINE BIDDING

	BHARAT HEAVY ELECTRICALS LIMITED Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: NKRE000634 RFQ DATE : 30.08.2022	Due Date/Day: 12.09.2022 MON Time : 13:00 HRS
MMI:PU:RF:003			
Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. "Quotation to be submitted in E Procurement portal only"		(for all correspondence) Purchase Executive : Nilmani Kumar Phone : 26998663 Fax : E-mail: nilmanikumar@bhel.in	

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	SN0659420147 PROFIBUS ITEMS FOR NABINAGAR 4X250MW FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate PROFIBUS ITEMS FOR NABINAGAR 4X250MW as per PS4102099.IO Quantities as per Annexure-II.	1	NO	1	24.10.2022
2	SN0659420155 PROFIBUS ITEMS FOR NABINAGAR 3X660MW FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate PROFIBUS ITEMS FOR NABINAGAR 3X660MW as per PS4102099. IO Quantities as per Annexure-I.	1	NO	1	24.10.2022
3	SN0659420163 PROFIBUS ITEMS FOR RAMAGUNDEM STI,II FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate PROFIBUS ITEMS FOR RAMAGUNDEM STG-I,II (3X200MW+3X500MW) as per PS4102099. IO Quantities as per Annexure-IV.	1	NO	1	24.10.2022
4	SN0659420171 PROFIBUS ITEMS FOR BHILAI 2X250MW FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate PROFIBUS ITEMS FOR BHILAI 2X250MW as per PS4102099. IO Quantities as per Annexure-III.	1	NO	1	24.10.2022

Total Number of Items - 4

- 1.
- 2.

NOTES:

1. This RFQ is governed by:
 - a) INSTRUCTIONS TO BIDDERS/SELLERS and GENERAL CONDITIONS OF CONTRACT FOR PURCHASE available at <http://edn.bhel.com> (**RFQ-PO Terms & Conditions**)
 - b) Any other specific Terms and Conditions mentioned. of offers are required to furnish authorization letter for the same.
 2. Tender Result can be viewed in the website.
- * The HSN/SAC no mentioned against the line items in the RFQ are indicative only.

For and On behalf of BHEL.

Nilmani Kumar
Control Equipment



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PRE-QUALIFICATIONS REQUIREMENT

TW/410/03

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PRE-QUALIFICATIONS REQUIREMENT FOR PURCHASE OF FIELDBUS (PROFIBUS) SYSTEM COMPONENTS For FGD PROJECT

PROJECT : FGD PROJECT

CUSTOMER : M/s NTPC

CHECKED BY

MUKESH KUMAR

APPROVED BY

S B BANIK

PREPARED

DINAKARA P

RAVI KUMAR POGIRI

ISSUED

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DATE

22/08/2022



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PRE-QUALIFICATIONS REQUIREMENT

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REVISION HISTORY SHEET

REV NO.	DATE	NATURE OF CHANGE	REASON	PREPARED BY	CHKD BY	APPROVED BY
00	22/08/2022	FIRST ISSUE	-----	DP /RKP	MK	SBB

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CHECKED BY

MUKESH KUMAR

APPROVED BY

S B BANIK

PREPARED

DINAKARA P

RAVI KUMAR POGIRI

ISSUED

410

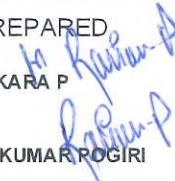
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DATE

22/08/2022

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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.		Pre-Qualification Requirements (PQR) of Bidders for FIELDBUS (PROFIBUS) BASED COMMUNICATION COMPONENTS as a part of offer as per PURCHASE SPECIFICATION PS4102099 - The bidder should have designed, manufactured, supplied FIELDBUS (PROIFIBUS) BASED COMMUNICATION COMPONENTS for either any power plant or any process industry satisfying the IEC61158 standard for Profibus communication. - The FIELDBUS (PROIFIBUS) BASED COMMUNICATION COMPONENTS should have formed part of any process control loop of power plant/process industry. - Further the components being offered should have been in successful operation for at least one year prior to the date of opening of techno-commercial bid. - Vendor shall submit the proven Performance Track Record (PTR) for the model offered by them and also submit satisfactory performance certificates for at least one year as on date of opening of bid from minimum one end user of a power plant or any process industry. - Along with the documents related to PQR above, following details shall also be submitted included in the Offer : - Technical literature / Manuals of offered system - Unpriced Purchase Order copies - Reports of successful commissioned systems of the offered components / Minutes of the meetings with the end user. - Vendor should necessarily have Indian branch office or Indian representative for support of Erection & Commissioning and after sales service, with Organization chart. Name & registered address of the details of Manufacturing, testing & inspection facility. - Bidder shall have facility in India for Engineering activities, preparation of Documents, Servicing of offered system, Stocking of Spares..etc.. Submit these details. - Bidder shall submit following Type Test Report for Solid state/ Electronic Cards of offered components. - Surge withstanding capacity (SWC) as per ANSI 37.90.1/IEEE-472/Suitable class of EN 61000-4-12 which is equivalent to ANSI 37.90.1/IEEE-472. - Dry Heat test as per IEC-68-2-2 or equivalent. - Damp Heat test as per IEC-68-2-3 or equivalent. - Vibration test as per IEC-68-2-6 or equivalent. - Electrostatic discharge tests as per EN 61000-4-2 or equivalent. - Radio frequency immunity test as per EN 61000-4-6 or equivalent. - Electromagnetic Field immunity as per EN 61000-4-3 or equivalent.		

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COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		PROJECTs:- (a) NABINAGAR (3X660MW) FGD (b) NABINAGAR (4X250MW) FGD (c) BHILAI (2X250MW) FGD (d) RAMAGUNDEM STG-I,II (3X200MW, 3X500MW) FGD TECHNICAL SPECIFICATION FOR PURCHASE OF FIELDBUS (PROFIBUS) SYSTEM COMPONENTS For FGD PROJECT			
		REVISION:01	APPROVED  S B BANIK		
		PREPARED  DINAKARA P RAVI KUMAR ROGIRI	CHECKED  MUKESH KUMAR	ISSUED 410	DATE 22/08/2022



PURCHASE SPECIFICATION FOR PROFIBUS
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00	12/08/2022	FIRST ISSUE		DP/RKP	MK	SBB
01	22/08/2022	SECOND ISSUE	General Revision	DP/RKP	MK	SBB

REVISION:01

APPROVED

S B BANIK

PREPARED

DINAKARA P

RAVI KUMAR ROGIRI

CHECKED

MUKESH KUMAR

ISSUED

410

DATE

22/08/2022

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		00	12/08/2022	FIRST ISSUE		DP/RKP	MK	SBB											
		01	22/08/2022	SECOND ISSUE	General Revision	DP/RKP	MK	SBB											
		REVISION:01	APPROVED S B BANIK <table border="1" style="width: 100%;"> <tr> <td>PREPARED</td> <td>CHECKED</td> <td>ISSUED</td> <td>DATE</td> </tr> <tr> <td>DINAKARA P</td> <td></td> <td>410</td> <td>22/08/2022</td> </tr> <tr> <td>RAVI KUMAR POGIRI</td> <td>MUKESH KUMAR</td> <td></td> <td></td> </tr> </table>					PREPARED	CHECKED	ISSUED	DATE	DINAKARA P		410	22/08/2022	RAVI KUMAR POGIRI	MUKESH KUMAR		
PREPARED	CHECKED	ISSUED	DATE																
DINAKARA P		410	22/08/2022																
RAVI KUMAR POGIRI	MUKESH KUMAR																		



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Scope of Supply

This specification is bifurcated in two broad sections, one is the “**Standard Section** and another is “**Project specific section-Annexure-I ,II , III & IV** ” which can vary project to project.

The scope of supply for **PROFIBUS system components /modules** as follows.

S1. No	Project	Main supply Qty including additional 5% spare of total Qty	Mandatory spares Qty (20% or 2 nos subject to max 40 nos)	Technical services
1	NABINAGAR 3X660MW FGD	TO BE CALCULATED BASED ON ANNEXURE -I	As per clause-3.2 of Tech spec.	As per clause-9.1 of Tech spec.
2	NABINAGAR 4x250MW FGD	TO BE CALCULATED BASED ON ANNEXURE -II	-do-	-do-
3	BHILAI 2X250MW FGD	TO BE CALCULATED BASED ON ANNEXURE -III	-do-	-do-
4	RAMAGUNDAM STG-I&II (3X200MW, 3X500MW)	TO BE CALCULATED BASED ON ANNEXURE -IV	-do-	-do-

Technical Conditions.

1. In case of any query on the Technical matter w.r.t. BHEL Specification, Bidder shall contact BHEL, within 1 week of receipt of Enquiry for seeking clarifications. This shall not be used for seeking bid submission due date extension. No query will be entertained after Bid submission is completed.

2. Offers with incomplete information will not be considered for evaluation and are likely to be rejected outright without any further interaction with the Bidder.

3. After Bid submission, in case Bidder proposes Unsolicited Tender Modifications such as typographical mistakes etc., such modifications will not be considered for evaluation.

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		COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY <u>Technical Requirement</u> <u>A : Standard Section</u> <u>1. GENERAL</u> The purpose of this specification is general technical requirement for procurement of PROFIBUS system components / modules. This specification specifies broadly the requirement of Design, Engineering, Manufacturing, Testing of various components at vendor works. The items pertaining to control room shall be mounted in BHEL-DCS panel and the field items shall be mounted in the field. Vendor to provide supervision during engineering, testing, FAT, Erection and Commissioning, site acceptance of integrated Test (SAT) and protocol to be signed with end customer. The FIELDBUS (PROFIBUS PA protocol) based I/O modules of proven technology PROFIBUS PA protocol complying to IEC 61158 to be supplied by the vendor. This includes all remote I/O modules, power supplies, communication module, housing for remote I/O modules, diagnostic software and any other component, modules etc. not specifically mentioned but required to make the system complete for meeting the requirements specified here in. The proposed items shall be installed in Safe Zone of power plants for which BHEL is supplying main control system. The project names and scope are as per “Project specific section” in Annexure-I, II,III & IV. <u>2. a. FIELDBUS (PROFIBUS) I/O SYSTEM TECHNICAL DETAILS</u> This specification covers broadly the requirement of FIELDBUS (PROFIBUS) based system component / modules with any 6/12/16 - segment protector, Segment Motherboard, Advanced Diagnostic Module, Fieldbus Power Hub, Gateway Motherboard, Gateway Module, Link cable between gateway motherboard and Power Hub motherboard., Surge Protector with base for field and control room, Stainless Steel(SS) JB (as per 2.b) along with Segment Protector mounted inside, Software user interface for Advanced Diagnostic Modules, configuration PC (Laptop) and any other component not specifically mentioned but required to make the system complete. It is the responsibility of the vendor to ensure that all the components other than those mentioned in Annexure -V(Exclusion) are considered in the offer to make the system complete.		

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COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		i. Compatibility with Profibus based Field Instruments : Press Txr, Diff Pr Txr, Temp Txr, Flow Txr ,Level Txr ii. Operating Temperature** : 0-70 Deg C or better (continuous operation) iii. Diagnostics: Wire Break monitoring, Power supply healthiness etc. iv. Mounting : DIN Rail Mounting v. Accessories : All required Accessories to make the system complete , shall be provided vi. EMC: EN61326 Standard. ** Control room mounted equipment shall be suitable for operating temperature up to 60 Deg C or better. (continuous operation) with all requirements of latest version of standards for FIELDBUS (PROFIBUS) viz. IEC 61158. All required libraries to execute various tasks like the design of fieldbus interfacing scheme, from field to Controller shall comply data acquisition, control/protection etc shall be provided. Redundant host/ master card and redundant power supply along with diagnostic module shall be provided. Vendor to provide Fieldbus devices specifications (maximum current drawn from bus, block execution speeds, power conditioner suitable for field barrier, etc.) Vendor to provide all standard functional blocks for all FIELDBUS (PROFIBUS) devices as per latest FIELDBUS (PROFIBUS) version and standard guidelines for engineering by purchaser. Fieldbus components including power supply, terminators, isolators, etc. provided by vendor shall comply to IEC 61158 and other standard Fieldbus guidelines. Redundant host/ master card and redundant power supply along with advance diagnostic module shall be provided. All required libraries to execute various tasks like data acquisition, control/protection etc. shall be provided.		
		5. <u>QUALITY REQUIREMENT</u> The items covered under this specification shall be subject to vendor's Quality Plan to be approved by M/s BHEL/ End user before start of manufacture. To ensure that quality is in-built in each equipment the Quality Assurance System		

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COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		manual & Quality Plan indicating the system followed by the vendor shall be submitted to purchaser for his review along with the offer. The vendor shall give at least 15 days written advance notice to purchaser for witnessing the tests/inspection at various stages. The expenses for all such test/inspection shall be to Manufacturer's account except for the expenses of purchaser's representatives witnessing the test. The purchaser shall attend such test/inspection or advice that the manufacturer may proceed with the test, which shall be deemed to have in purchaser's presence and shall furnish relevant test result and test certificates to the purchaser for his review who will then issue Material Dispatch Clearance Certificate (MDCC) enabling supplier to dispatch the equipment. <u>6.0 TYPE TEST REQUIREMENT:</u> The Vendor shall give the type test report for the offered items and the test requirement shall cover CMRR, NMRR Verification. Submission of type test results and certificate shall be acceptable provided. i) The same has been carried out by the Vendor on exactly the same model / rating of equipment. ii) There has been no change in the components from the offered equipment & tested equipment. iii) The test has been carried out as per the latest standards along with amendments as on the date of Bid opening and as indicated below: <u>SPECIAL REQUIREMENT FOR SOLID STATE EQUIPMENTS/ SYSTEMS</u> The minimum type test reports, which are to be submitted for each of the major C&I systems shall be as indicated below: i) Surge Withstand Capability (SWC) for Solid State Equipment Systems All solid state systems/equipment shall be able to withstand the electrical noise and surges as encountered in actual service conditions and inherent in a power plant. All the solid state systems/equipment shall be provided with all required protections that needs the surge withstand capability as defined in ANSI 37.90.1/ IEEE-472.Hence, all front end cards which receive external signals like Analog input & output modules, Binary input & output modules etc. including power supply, data highway		

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COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		data links shall be provided with protections that meets the surge withstand capability as defined in ANSI 37.90.1/ IEEE-472. Complete details of the features incorporated in electronics systems to meet this requirement, the relevant tests carried out, the test certificates etc. shall be submitted along with the proposal. As an alternative to above, suitable class of EN 61000-4-12 which is equivalent to ANSI /37.90.1/IEEE-472 may also be adopted for SWC test. ii) Dry Heat test as per IEC-68-2-2 or equivalent. iii) Damp Heat test as per IEC-68-2-3 or equivalent. iv) Vibration test as per IEC-68-2-6 or equivalent. v) Electrostatic discharge tests as per EN 61000-4-2 or equivalent. vi) Radio frequency immunity test as per EN 61000-4-6 or equivalent. vii) Electromagnetic Field immunity as per EN 61000-4-3 or equivalent. Test listed at item no. v, vi, vii, above are applicable for electronic cards only as defined under Item(i) above. Note: If Type Tests and other tests (as specified under 6.0) have been conducted with reference to standards different than what have been specified in the specification, then vendor to clearly indicate these specification with equivalent specifications in the offer. 7.0 <u>CONFIGURATION & DIAGNOSTIC SOFTWARE</u> 1.0 All software required for configuration of the offered FIELDBUS (PROFIBUS) system shall be considered and offered. Similarly, software for Diagnostics /Troubleshooting is also to be part of offer. Any license, if required, to be considered on Project/Site basis and not on Unit basis. System Configuration PC (Laptop) required to load these software will be provided by purchaser. Configuration of PC (Laptop) shall be carried out by vendors with latest configuration software with all the required basic software/operating system. All these software along-with necessary device description files to be supplied in CD or any other storage media only, even though it may be available in Supplier's Web Site or otherwise. Any cable required for communication during configuration also be considered in the offer. Supplier to provide all necessary technical support to establish communication between the offered system and BHEL's control system during FAT at		



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purchaser works and during commissioning at project site. Any software OR Configuration file etc. required for establishing meaningful communication shall be part of the Offered system

8.0 WARRANTY

The offered items shall be guaranteed for satisfactory operation of 18 months from the date of commissioning OR 24 months from the date of supply whichever is earlier.

All the products / components quoted for this tender shall carry three years warranty after the completion of the above period.

Equipment will be at BHEL/EDN for a period of two/three months for configuration and project engineering/demonstration to end customer. Subsequently it will be sent to respective project as mentioned in Annexure-I ,II III & IV depending on the projects as mentioned.

9.0 ENGINEERING, TESTING, ERECTION & COMMISSIONING (Technical services) SCOPE

9.1 Technical services:

A	Technical Services to be provided at BHEL/EDN, Bangalore.	* One Visit per project
B	Technical Services to be provided at Project location within India as per Annexure-I,II,III & IV as per projects site.	* Unit wise Visits

*Each visit is considered as minimum five working days.

Vendor to quote for Slno –A & B

NOTE: All Technical services shall be quoted with per project separate Lump-sum price in the offer.

9.2 Vendor has to depute their Engineer to BHEL-EDN during detailed engineering & FAT to establish communication with Host DCS system etc. Vendor to indicate per unit separate Lump-sum price for this activity in the offer as mentioned in clause 9.1

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COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		9.3 Vendor has to depute their Engineer to Project site located within India. Project details will be indicated by BHEL along with PO. Site visit should be inclusive of travel, stay and other expenses of vendor personnel. Vendor has to complete the activity by demonstration, documentation and making MOM with Customer / BHEL site Engineers. Vendor to indicate per unit separate Lump-sum price for this activity in the offer as mentioned in clause 9.1 10.0 <u>TRAINING</u> <u>Pre-engineering</u> : The Vendor shall provide training separately to employer's personnel and also separately to the end customer personnels on following aspects of fieldbus (i) Hardware & Software features (ii) System design, diagnostic and testing (iii) maintenance, troubleshooting and fault analysis. This training shall be provided by certified training personnel of Profibus foundation and it shall be provided before approval of basic design and engineering document. <u>On Site</u> : Vendor to provide Two days on-site training per unit to BHEL and End User's engineers on all aspects of the FIELDBUS (PROFIBUS) system being offered/supplied. Tentatively 10-15 Engineers will participate in this training. Training shall necessarily include Technical details of FIELDBUS (PROFIBUS) system, Operating principle, system configuration supplied, system trouble-shooting and maintenance, as minimum requirement 11.0 <u>DOCUMENTATION</u> <u>11.1 Documents to be furnished along-with offer (1 set)</u> ➤ Technical write-up(functional) ➤ Technical literature/catalog of each component ➤ Configuration drawing/Segment design including power supply and monitoring scheme. ➤ Detailed bill of material with make & model ➤ Data sheet of each component offered ➤ Clause-wise confirmation/deviation list ➤ Reference List/Operating experience ➤ Quality Plan ➤ List of Software to be supplied ➤ Calculation considering various distances between different components. ➤ Clear list of items/software etc. NOT CONSIDERED but required to complete the system		

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		<u>NOTES :</u>		
		a. Vendor must furnish, all documents, in line with specification along with offer. Clause-wise specific acceptance/deviations shall be furnished. Deviations, if any, must be clearly brought out in offer. Failure to provide Clause-wise acceptance/deviations may result in Technical disqualification.		

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ANNEXURE – I
(APPLICABLE NABINAGAR 3X660MW FGD)**B. Project specific section**

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SLNO	PROJECT NAME	LOCATION	Number of PA devices			DCS CONTROLLER NAME
			UNIT-1	UNIT-2	UNIT-3	
	NABINAGAR 3X660MW					
01		101	8	8	8	AP01
		103	36	36	36	AP01
		105	17	17	17	AP01
		107	50	50	50	AP01
		108	28	28	28	AP01
		109	11	11	11	AP01
	TOTAL		150	150	150	
02		102	8	8	8	AP02
		104	36	36	36	AP02
		105	4	4	4	AP02
		106	5	5	5	AP02
		107	72	72	72	AP02
		108	24	24	24	AP02
		109	11	11	11	AP02
	TOTAL		160	160	160	
COMMON SYSTEM						
03		2	12			ZP01
		15	9			ZP01
		17	19			ZP01
		21	24			ZP01
	TOTAL		64			
04		3	6			ZP02
		7	6			ZP02
		11	5			ZP02
		16	5			ZP02
		18	19			ZP02
		20	24			ZP02
	TOTAL		65			

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05		6	6	ZP03
		8	4	ZP03
		9	4	ZP03
		10	4	ZP03
		12	5	ZP03
TOTAL			23	
06		2	21	ZP04
07		3	21	ZP05
08		6	20	ZP06
09		6	56	ZP07

Total Instruments in NABINAGAR 3X660MW FGD = 1200



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ANNEXURE – II
(APPLICABLE NABINAGAR 4X250MW FGD)B. Project specific section

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SL NO	PROJECT NAME	LOCATION	Number of PA devices				DCS CONTROLLER NAME
			UNIT-1	UNIT-2	UNIT-3	UNIT-4	
	NABINAGAR 4X250MW						
01		101	8	8	8	8	AP01
		103	36	36	36	36	AP01
		105	17	17	17	17	AP01
		107	50	50	50	50	AP01
		108	28	28	28	28	AP01
		109	11	11	11	11	AP01
	TOTAL		150	150	150	150	
02		102	8	8	8	8	AP02
		104	36	36	36	36	AP02
		105	4	4	4	4	AP02
		106	5	5	5	5	AP02
		107	72	72	72	72	AP02
		108	24	24	24	24	AP02
		109	11	11	11	11	AP02
	TOTAL		160	160	160	160	
COMMON SYSTEM							
03		2	12				ZP01
		15	9				ZP01
		17	19				ZP01
		21	24				ZP01
	TOTAL		64				
04		3	6				ZP02
		7	6				ZP02
		11	5				ZP02
		16	5				ZP02
		18	19				ZP02
		20	24				ZP02
	TOTAL		65				

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05		6	6			ZP03
		8	4			ZP03
		9	4			ZP03
		10	4			ZP03
		12	5			ZP03
	TOTAL		23			
06		2	21			ZP04
07		3	21			ZP05
08		6	20			ZP06
09		6	56			ZP07

Total Instruments in NABINAGAR 4X250MW FGD = 1510



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ANNEXURE – III
(APPLICABLE BHILAI 2X250MW FGD)**B. Project specific section**

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SLNO	PROJECT NAME	LOCATION	Number of PA devices		DCS Controller NAME
			UNIT-1	UNIT-2	
	BHILAI 2x250MW				
01		101	8	8	AP01
		103	36	36	AP01
		105	17	17	AP01
		107	50	50	AP01
		108	28	28	AP01
		109	11	11	AP01
	TOTAL		150	150	
02		102	8	8	AP02
		104	36	36	AP02
		105	4	4	AP02
		106	5	5	AP02
		107	72	72	AP02
		108	24	24	AP02
		109	11	11	AP02
	TOTAL		160	160	
COMMON SYSTEM					
03		2	12		ZP01
		15	9		ZP01
		17	19		ZP01
		21	24		ZP01
	TOTAL		64		
04		3	6		ZP02
		7	6		ZP02
		11	5		ZP02
		16	5		ZP02
		18	19		ZP02
		20	24		ZP02
	TOTAL		65		

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05		6	6	ZP03
		8	4	ZP03
		9	4	ZP03
		10	4	ZP03
		12	5	ZP03
	TOTAL		13	
06		2	21	ZP04
07		3	21	ZP05
08		6	11	ZP06
09		6	56	ZP07

Total Instruments in BHILAI 2X250MW FGD = 890



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ANNEXURE – IV
(APPLICABLE RAMAGUNDAM 3X200MW + 3X500MW FGD)**B. Project specific section**

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SL NO	PROJECT NAME	LOCATION	Number of PA devices				DCS CONTROLLER NAME
			3X200 MW UNIT-1,2,3	500MW UNIT-4	500MW UNIT-5	500MW UNIT-6	
	RAMAGUNDAM 3X200MW + 3X500MW						
01		101	8	8	8	8	AP01
		103	36	36	36	36	AP01
		105	17	17	17	17	AP01
		107	50	50	50	50	AP01
		108	28	28	28	28	AP01
		109	11	11	11	11	AP01
	TOTAL		150	150	150	150	
02		102	8	8	8	8	AP02
		104	36	36	36	36	AP02
		105	4	4	4	4	AP02
		106	5	5	5	5	AP02
		107	72	72	72	72	AP02
		108	24	24	24	24	AP02
		109	11	11	11	11	AP02
	TOTAL		160	160	160	160	
COMMON SYSTEM							
03		2	12				ZP01
		15	9				ZP01
		17	19				ZP01
		21	24				ZP01
	TOTAL		64				

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04		3	6	ZP02
		7	6	ZP02
		11	5	ZP02
		16	5	ZP02
		18	19	ZP02
		20	24	
	TOTAL		65	
05		6	6	ZP03
		8	4	ZP03
		9	4	ZP03
		10	4	ZP03
		12	5	ZP03
	TOTAL		23	
06		2	21	ZP04
07		3	21	ZP05
08		6	20	ZP06
09		6	56	ZP07

Total Instruments in RAMAGUNDAM 3X200MW + 3X500MW FGD = 1510



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ANNEXURE-IV

EXCLUSION FROM VENDOR'S SCOPE

SLNO	DESCRIPTION	REMARKS
1	Fieldbus cable from field JB to field device.	
2	Cable between control room panel and field JB	
3	Cable between BHEL Master controller to DP/PA coupler.	
4	Profibus OLM - Multimode Glass Fiber	

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