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GENEREL INSTRUCTION TO BIDDER FOR FOR PURCHASE OF FIELDBUS (PROFIBUS) SYSTEM COMPONENTS For FGD PROJECT

PROJECT	: FGD PROJECT
CUSTOMER	: M/s NTPC

			CHECKED BY <i>S B Banik</i> S B BANIK	APPROVED BY <i>Vidya S</i> VIDYA S	
			PREPARED <i>Himanshu Krishna</i> HIMANSHU KRISHNA <i>Mukesh Kumar</i> MUKESH KUMAR	ISSUED 410 ENGG	DATE 07/07/2020



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APPROVED BY

S B BANIK

VIDYA S

PREPARED

HIMANSHU KRISHNA

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MUKESH KUMAR

		
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PRE-QUALIFICATIONS REQUIREMENT

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

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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 PS4102057 1. 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. 2. The FIELDBUS (PROIFIBUS) BASED COMMUNICATION COMPONENTS should have formed part of any process control loop of power plant/process industry. 3. 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. 4. 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. 5. Submit duly-filled Source Request Form (SRF), which shall be downloaded by Bidder from our website “www.bhel.com”. Complete credentials of the company shall be submitted along with the SRF form. This is not applicable for Vendors who are already registered with BHEL Electronics Division, Bangalore. 6. Along with the documents related to PQR above, following details shall also be submitted included in the Offer : I. Technical literature / Manuals of offered system II. Unpriced Purchase Order copies III. Reports of successful commissioned systems of the offered components & Minutes of the meetings with the end user. 7. 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. 8. Bidder shall have facility in India for Engineering activities, preparation of Documents, Servicing of offered system, Stocking of Spares..etc.. Submit these details. 9. Bidder shall submit following Type Test Report not more than five year old for Solid state/ Electronic Cards of offered components . If the type test certificates are not available during bidding, the bidder to confirm submitting the same within 30 days from the date of Technical Bid opening or before supply of the components. If the certificate is not furnished within the above period ,BHEL shall treat the offer as Technically not acceptable and the offer shall be rejected. I. 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. 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.		

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PROJECTs:-

- (a) MAUDA 2X500MW UNIT 1 & 2 FGD
- (b) BARH – STG I, 3X660MW, UNIT 1, 2 & 3 FGD
- (c) BARH – STG II, 2X660MW UNIT 4 & 5 FGD

**TECHNICAL SPECIFICATION
FOR
PURCHASE OF
FIELDBUS (PROFIBUS) SYSTEM COMPONENTS
For FGD PROJECT**

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APPROVED

VIDYAS

PREPARED

MUKESH KUMAR

HIMANSHU KRISHNA

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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** ” 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	MAUDA 2X500MW 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	BARH – STG I, 3X660MW FGD	TO BE CALCULATED BASED ON ANNEXURE -II	-do-	-do-
3	BARH – STG II, 2X660MW FGD	TO BE CALCULATED BASED ON ANNEXURE -III	-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.

4. Superior Technical features proposed if any by the Bidder, over & above BHEL enquiry specification requirements cannot be given any special preference w.r.t. price, delivery and comparison with other Bidders.

5. No Deviations are permissible. Any deviations proposed by the bidder, shall be considered withdrawn, without claiming any commercial implications.

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		6. In case of contradiction between any specification clause, vendor shall bring to BHEL's notice and BHEL's decision in this regard shall be final and binding. In the event of conflict, most stringent requirements shall be followed in general. 7. Vendor shall give clause wise compliance to all the clauses of this main specification along with sub-specifications for individual items. Otherwise it is presumed that supplier is fully complying with the specifications. Deviations/clarifications are not allowed after placement of P.O. (Purchase Order). 8. If any defect in the material during manufacturing process, transportation activities etc, Vendor is sole responsible for the replacement with in a period of 3 weeks from the supply/identified as defective. 9. <u>Vendor to consider multiple site-visits for Erection supervision and commissioning for each unit based on site readiness/customer requirements for the offered package on lump sum basis. Due to urgency of a project if the material supplied for one project is utilised in another project the terms and condition for warranty of material, services will remain unchanged and applicable to project under execution.</u>		
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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> 1. <u>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. 2. <u>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 Motherboard, segment protector , 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 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 -IV(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		System shall be capable to acquire signals from PA device like Pressure transmitter, Diff Pressure Transmitter, Temperature Transmitter, Flow Transmitter etc. Details of total signals are attached as Annexure-I,II & III as per the projects mentioned. These PA devices shall be terminated in Field Junction Box housing 6/12/16 channel Segment Protector, Surge protector and terminator. All these Field components shall have operating Temperature range from 0 – 70 Deg C or better. Other Communication components shall be housed in a control panel located in control room. All these Control Room components shall have operating Temperature range from 0 – 60 Deg C or better All Gateways, Power supplies, Power conditioners, diagnostic module, surge suppressors etc. shall be DIN rail mountable. The proposed items will be connected to BHEL's controller as master through interface module located in main control room. All communication cable from field and control room mounted panels are in the scope of BHEL however the vendor shall supervise the engineering of cabling and proper distribution to meet the intent of specification requirement. Cable route length between field Mounted items and Control room mounted are mentioned in Annexure – I ,II & III depending on the projects mentioned.		

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		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 manual & Quality Plan indicating the system followed by the vendor shall be submitted to purchaser for his review along with the offer.		

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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		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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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 comprehensive (parts + labour) on-site 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 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.	1 *Visit
B	Technical Services to be provided at Project location within India as per Annexure-I,II & III as per projects site.	3 *Visits

*Each visit is considered as minimum five working days.

Vendor to quote per visit cost for Sln0 -B and an optional quote may be given for additional site visits. This may be used based on site condition.

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		<u>11.2 Documents to be furnished after placement of order</u> <u>(for Approval by BHEL/ End User- 2 sets hardcopies + soft copy in PDF format) Technical write-up(functional)</u> ➤ Technical literature/catalog of each component ➤ Configuration drawing/segment design ➤ Detailed bill of material with make & model ➤ Data sheet ➤ Quality Plan ➤ List of Software to be supplied ➤ Type test reports for the Tests mentioned under clause 6.0 <u>11.3 Documents to be furnished before dispatch for review/ acceptance</u> <u>by M/s BHEL/End user (2 sets hardcopies + soft copy in .PDF format)</u> ➤ Visual/ Dimensional Test report ➤ Calibration report ➤ Test Report/Certificate/Type test reports <u>11.4 Final Operation & Maintenance Manual (O&M Manual) shall contain minimum of following:</u> ➤ Technical write-up(functional) ➤ Technical literature/catalog of each component ➤ Configuration drawing/segment design ➤ Detailed bill of material with make & model ➤ Data sheet ➤ Schematic diagram/Loop diagram including Termination details ➤ Details of Software being supplied ➤ Trouble shooting procedure and Maintenance guidelines ➤ O&M Manuals to be submitted at the Time of Dispatch. (2 sets hardcopies + 1 soft copy in .PDF format) <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,		

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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		must be clearly brought out in offer. Failure to provide Clause-wise acceptance/deviations may result in Technical disqualification. b. It is the responsibility of vendor to check for completeness of the offered system. If any additional component/software etc. is required during Engineering/Testing/Erection & Commissioning then same to be provided by the Vendor other than mentioned in exclusion IN Annexure-IV with NO EXTRA COST TO BHEL. c. <u>Vendor to validate the offered components with BHEL-DCS system by providing one set of each components on returnable basis at BHEL-Electronics division. The cost arising out of providing the components to be borne by vendor.</u> d. Any clarification required from BHEL side may be obtained during offer stage only.		



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COMPANYANNEXURE – I
(APPLICABLE FOR MOUDA 2x500MW (2 nos) Unit-1 &2 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	
	MOUDA 2x500MW				
01		101	8	8	AP01
		103	36	36	AP01
		105	17	17	AP01
		107	50	50	AP01
		108	28	28	AP01
		109	2	2	AP01
	TOTAL		141	141	
02		102	8	8	AP02
		104	36	36	AP02
		105	1	1	AP02
		106	5	5	AP02
		107	72	72	AP02
		108	24	24	AP02
		109	2	2	AP02
	TOTAL		148	148	
COMMON SYSTEM					
03		2	12		ZP01
		15	9		ZP01
		17	19		ZP01
	TOTAL		40		
04		3	6		ZP02
		7	6		ZP02
		11	5		ZP02
		16	5		ZP02
		18	19		



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TOTAL			41	
05		6	4	ZP03
		8	2	ZP03
		9	2	ZP03
		10	2	ZP03
		12	3	ZP03
TOTAL			13	
06		2	21	ZP04
07		3	21	ZP05
08		6	11	ZP06
09		6	56	ZP07

Total Instruments in MOUDA 2x500MW (2 nos) Unit-1&2 FGD = 781



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ANNEXURE – II
(APPLICABLE FOR BARH STG-I 3x660MW (3 nos) Unit-1,2 & 3 FGD)

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	
	Barh Stg-I Unit-1,2 & 3					
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	2	2	2	AP01
			141	141	141	AP01
02		102	8	8	8	AP02
		104	36	36	36	AP02
		105	1	1	1	AP02
		106	5	5	5	AP02
		107	72	72	72	AP02
		108	24	24	24	AP02
			2	2	2	AP02
			148	148	148	AP02
COMMON SYSTEM						
03		2	12			ZP01
		15	9			ZP01
		17	19			ZP01
			40			
04		3	6			ZP02
		7	6			ZP02
		11	5			ZP02
		16	5			ZP02
		18	19			
			41			

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

Total Instruments in BARH STG-I 3x660MW (3 nos) Unit-1,2 &3 FGD = 1070



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COMPANYANNEXURE – III
(APPLICABLE FOR BARH STG-II 2x660MW (2 nos) Unit-4 & 5 FGD)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-4	UNIT-5	
	MOUDA 2x500MW				
01		101	8	8	AP01
		103	36	36	AP01
		105	17	17	AP01
		107	50	50	AP01
		108	28	28	AP01
		109	2	2	AP01
	TOTAL		141	141	
02		102	8	8	AP02
		104	36	36	AP02
		105	1	1	AP02
		106	5	5	AP02
		107	72	72	AP02
		108	24	24	AP02
		109	2	2	AP02
	TOTAL		148	148	
COMMON SYSTEM					
03		2	12		ZP01
		15	9		ZP01
		17	19		ZP01
	TOTAL		40		
04		3	6		ZP02
		7	6		ZP02
		11	5		ZP02
		16	5		ZP02
		18	19		
	TOTAL		41		



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

Total Instruments BARH STG-II 2x660MW (2 nos) Unit-4 & 5 FGD = 781



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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	
5	DP connector	

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