



A4-10

Technical Specification of Lab Items (Electrical) BIFPCL
Maitree 2x660MW project

CE/416/GLAB(E)-2/Maitree

Rev. 00

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PROJECTS : M/s MAITREE 2x660MW

CUSTOMER : M/s BIFPCL

EQUIPMENT : LAB ITEMS- ELECTRICAL

**PREPARED BY:
AMIT KUMAR SHARMA**

**APPROVED BY
SHAIENDRA KUMAR KISAN**



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REVISION HISTORY SHEET

REV No.	DATE	NATURE OF CHANGE	REASON	PREPARED BY	REVIEWED BY
00	26-Oct-20	FIRST ISSUE	---	AKS	SKK

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SECTION-A : GENERAL INSTRUCTIONS TO BIDDERS:

Introduction: Bidders are required to submit technical offer for supply, installation and commissioning of electrical lab item for BIFPCL MAITREE 2x660MW project. All documents against this Tender/Specification shall be submitted in English only.

1. Makes of various items offered by bidders will be subject to approval of M/s BIFPCL. The make approval shall be reviewed by BIFPCL during drawing approval (after ordering). In case a make is acceptable to customer, bidder has to be offer alternate makes without any cost implication to BHEL.
2. If any deviations are accepted by BHEL during evaluation stage and subsequently not accepted by end customer during datasheet submission stage then vendor has to change the make/model without any financial implication to BHEL.
3. If required during evaluation of Technical offers/bids, bidder should be present at BHEL Electronic Division, Bangalore, for discussions on 3 day's notice. Further in the event of ordering, Bidder shall accompany BHEL representative for discussions with customer / consultant at their works for approval of the system documents.
4. This specification does not prohibit any bidder to submit their offer along with clause wise deviation from the specification. Changes in technical specification / Scope / approved makes etc. shall be informed to Participating bidders only.
5. All bidders, irrespective of their existing approval with BHEL / other units of BHEL / BIFPCL, should submit all documents called in this specification.
6. Consolidated Pre-Bid queries must be sought by Bidders through email within 07days from floating the tender. Clarification sought within 5 days from due date of bid submission may not be entertained and replied.
7. If a vendor does not quote for all the listed items, then his complete offer will be technically rejected. Please note that essence of this tender is packaging and hence all items within this project are to be offered so as to have one packaged vendor for this project/Projects.
8. Bidder shall be responsible for complete package supply, installation/commissioning and satisfactory demonstration and handing over to customer. Wherever OEM Representative to be deputed for commissioning bidder shall coordinate at his own cost and complete the work. Qualified technical persons shall only be deputed by the bidder for commissioning of the items in the package.
9. If a vendor does not quote for all the listed items, then his complete offer will be technically rejected. Please note that essence of this tender is packaging and hence all items within this project are to be offered so as to have one packaged vendor for this project.



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SECTION-B : Pre Qualification Requirements (PQR):

1.0 Vendor should have supplied Lab instruments (C&I Package) to process plant/ refinery/ power plants / testing Lab within last 4 year from bid opening date of this tender.

Purchase Orders issued in name of bidder to be submitted for substantiating above qualification requirement. In case Bill of material is not part of PO, bidder should submit other documents approved by user for ascertaining that the order was for C&I package.

2.0 Bidders has to mandatorily submit filled up vendor approval formats (Refer Annexure-1 & 2) of the technical specifications and submit it in their bid along with all required supporting documents.

3.0 Bidder should have a clean track Record, i.e the Bidder should not be under Hold or blacklist by any of the BHEL units/any Govt of india PSU/Govt of india as on bid submission date. To this effect, a declaration should be submitted by the bidder.

Note: Incomplete compliance to above PQR may result in rejection of offer of bidders. Hence, all bidders are advised to clarify their doubts on above during pre-bid stage and submit complete PQR complying documents.

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SECTION- B : TECHNICAL SPECIFICATION**SCOPE OF SUPPLY:**

1. Please note that if any item requires battery, same should be rechargeable type of same item make or equivalent good make. Then the corresponding charger is also to be provided. Also, please note that computer interface is to be provided with relevant pre-fabricated cable of 2 or 3 meters length for connectivity to computer.
2. Current Probe and High Voltage Probe as and where applicable for the individual instrument.
3. If any application software is required, same is also to be provided as and where applicable for that particular instrument.
4. Unit rates are to be provided for each item quoted which can be used for any addition/deletion during detailed engineering stage.
5. Erection supervision and commissioning is also to be offered with lump sum rates each project wise.
6. Please note that for products offered by bidder, BHEL may seek credentials like PO copies / commissioning Reports etc. to ascertain the provenness of the product. If the credentials are not submitted/not satisfactory, the product may not be acceptable and supplier will have to offer other suitable make /model without any cost implication. Hence, bidders are advised to quote reputed and proven products/
7. After order and datasheet submission to customer/consultant vendor has to visit Customer /consultant (if required) with BHEL for resolving any technical clarifications required by them.
8. The calibration standards of all M&C equipment's furnished under this sub-section shall be traceable to National Bureau of Standards, USA or NPL, India or to the applicable standards existing in the country where the equipment is manufactured.
9. Dispatch of items should be done in standard weather proof container.
10. **ERECTION SUPERVISION & COMMISSIONING:** Please note that Erection Supervision & Commissioning is to be offered project wise and same will be considered while evaluating lowest commercial tender. The commissioning will involve demonstrating the healthiness and working of all the items within the project to the satisfaction of BHEL site office/end-user. The handing over of the workshop and store equipment shall be done in one lot and accompanied by function check and demonstration of operation and all functions performed by the Contractor in presence of the O/E. Equipment that did not perform according to the requirement shall be replace by the turned to the Contractor for replacement to no expenses to the Employer. The necessary operational manuals are to be delivered by the Contractor before handing over workshop and store equipment.

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COPYRIGHT AND CONFIDENTIAL The information contained in this document is the property of BHARAT HEAVY ELECTRICALS LIMITED This must not be used directly or indirectly, in any manner detrimental to the interest of the company		TECHNICAL DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER: 1. Bill of material having make, model and quantity of each item offered 2. Catalogues of all the items 3. Clause wise compliance of technical specification of each item in tabular format 4. Letter of undertaking confirming that bidder will take care of service requirements till guarantee /warranty period or commissioning, Demonstration and handing over, whichever is later		



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Bill of material and technical specification:

Sl.no	ITEM	PARAMETERS	Qty	SPECIFICATIONS
1	IR Thermometer	Temperature range	12	(-)50°C ~ 650°C
		Wavelength		8 - 14u-m
		Resolution		0.1°C
		Distance to spot ratio		12:01
		Emissivity		Fixed at 0.95
2	Logic Analyzer	Channels	4	32
		Bandwidth		100/200MHz
		Data Skew		1-2ns
		Max. Input voltage		30V
		Threshold voltage		(-4V to +4V)
		Storage depth/channel		512 K
		PC/Laptop connection		USB
3	Spectrum Analyzer	Frequency range	4	9 kHz to 3.2 GHz
		Frequency span		1M-3MHz
		Average noise level		≤ -110dBm
		Sweep time		300ms ~ 8.4s
		Power source		100 V to 240 V (nom), 45Hz to 440Hz
		Conectivity		RS232/LAN/USB
4	Color spectrometers	Sensor	4	CMOS Linear image sensor
		Spectral wavelength		380nm to 780nm
		Power source		AA (1.5V)x 2 pcs, USB bus power
		Interface		USB 2.0 (mini B)
		Measuring mode		Ambient light, Cord flash, Cordless flash
		Measuring range		Ambient light: 1 to 200000lx Flash light: 20 to 20500lx
		Accuracy (Standard Illumination)		±5% (1 to 3000lx) ±7.5% (3000 to 200,000)
		Cosine response		within 6%
		Temperature drift		Illuminance ±5% of indicated value
		Measurement time		Ambient light: 0.5 - 15 sec Flash light: 1 - 1/500 sec
5	Wave synchronizer	Frequency range	4	35 - 70Hz
		Frequency difference		0.1 - 1.0Hz
		Voltage difference		2 - 10%
		C/B make time		20 - 200ms
		Max voltage		660V
		Replay outputs		2nos for speed control

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6	RF Video scanner	Frequency range	4	30KHz to 4GHz			
		Accuracy		± 0.7 ppm (spec) + aging			
		IF Bandwidth		3Hz to 100 Khz			
		Noise Figure		10 MHz to 4 GHz			
		IQA range		1 MHz to 4 GHz			
		Real-Time Spectrum Analyzer		1 MHz to 4 GHz			
		Tracking Generator		30 kHz to 4 GHz			
		Aging Rate		± 1 ppm/yr for 20 years			
		Scan mode		Range or Custom list			
		Internal Storage		Min 4GB (min 1000 traces)			
		Connectivity		LAN, USB			
		7		Radio System Analyser	Generator (Receiver Test)	4	
					Frequency Range		1 MHz to 1 GHz
Frequency Resolution	1 Hz						
Range FM	+5 dBm to -95 dBm						
Range AM	-1 dBm to -95 dBm						
Accuracy	±2 dB						
FM Modulation: Deviation Range	0 to 75 kHz						
AM Modulation: Deviation Range	0 to 90%						
Receiver (Transmitter Test)							
Frequency Range	250 kHz – 1 GHz						
SENSITIVITY- Narrowband FM	2.0 µV for 10 dB EIA SINAD						
Wideband FM	10 µV for 10 dB EIA SINAD						
AM	10 µV for 10 dB EIA SINAD						
Max Power	150 W Max and Continuous						
FM DEVIATION MEASUREMENT	Accuracy - ±5%						
AM modulation measurement	Demodulation Range- 0 to 100%						
	Accuracy: ±5%						
RECEIVE SIGNAL STRENGTH LEVEL METER: Frequency Range:	1 MHz to 1 GHz						
Accuracy:	±2 dB						
BROADBAND POWER METER (RF In/Out Port)- Frequency Range	1 MHz to 1 GHz						
Measurement Range	0.1 W to 150 W						
SINAD meter- Accuracy	±1 dB @ 12 Db						
SNR meter- Frequency Range	300 Hz to 10kHz						
8	RF Calibration source	Frequency range	4	9 kHz to 3 GHz			
		Frequency resolution		0.01Hz			
		Setting time		< 10 msec			
		Reference frequency		10Mhz			
		Frequency sweep range		Full frequency range			
		Max permissible DC voltage		50V			
		Waveform		Sine, Square			
		Communication interface		USB, LAN			



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9	Video pattern generator	Video test patterns	4	8
		Video output		1V p-p
		Audio test signals		2 (1khz & 10khz)
		Audio connector		2 x XLR-3 plugs
		Audio levels		0dBu & +4dBu

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COPYRIGHT AND CONFIDENTIAL The information contained in this document is the property of BHARAT HEAVY ELECTRICALS LIMITED This must not be used directly or indirectly, in any manner detrimental to the interest of the company		PACKING INSTRUCTIONS - All equipment and materials shall be suitably coated wrapped or covered and boxed or crated for export shipment and to prevent damage during handling and storage at the site. Cardboard containers shall be enclosed in a solid wooden container. - Equipment and process materials shall be packed and semi-knocked down, to the extent possible, to facilitate handling and storage and to protect bearings and other machine surfaces from oxidation. - Each container, box, crate or bundle shall be reinforced with steel strapping in such a manner that breaking of one strap will not cause complete failure of the packaging. - The packing shall be of best standard to withstand rough handling and to provide suitable protection from tropical weather while in transit and while awaiting erection at the site. - Equipment and materials in wooden cases or crates shall be properly cushioned to withstand rough handling, transportation and storage. Packing shall include preservatives suitable to tropical conditions. - All parts subject to damage when in contact with water shall be coated with suitable grease and wrapped in heavy asphalt or tar impregnated paper. - Each package or shipping unit shall be clearly marked or stenciled on at least two sides as follows: BANGLADESH-INDIA FRIENDSHIP POWER COMPANY (Pvt.) LIMITED 2x660 MW MAITREE SUPER THERMAL POWER PROJECT BANGLADESH BHARAT HEAVY ELECTRICALS LIMITED, ELECTRONICS DIVISION BENGALURU - In addition, each package or shipping unit shall have the symbol painted in red on at least two sides of the package, covering one fourth of the area of the side. - Each case shall contain a packing list showing the detailed contents of the package. - When any technical documents are supplied together with the shipment of materials no single package shall contain more than one set of such documents. Shipping papers shall clearly indicate in which packages the technical documents are contained. - The case number shall be written in the form of a fraction, the numerator of which is the serial number of the case and the denominator the total number of case in which a complete unit of equipment is packed. - Wherever necessary besides usual inscriptions the cases shall bear special indication such as "Top", "Do not turn over", "Care", "Keep dry", etc., as well as indication of the center of gravity (with red vertical lines) and places for attaching slings (with chain marks). - The individual pieces of crates / box etc shall be supplied in a metal container and shall be placed inside in a way that there is no free movement of the boxes while in land / sea transportation.	

ANNEXURE-1



SUB-VENDOR QUESTIONNAIRE
(Information marked with asterisk (*) is mandatory)
(APPLICABLE FOR SERVICE/ WORK CONTRACTS)

FICHTNER

Name of the proposed SERVICES/ WORKS * : Supply of lab items(Electrical)

1. **Name of Proposed Sub-Vendor *:** _____

Website *: _____

2. **Address of Regd. Office *:**

Details of contact person *:

Name_____

Mobile no._____

Desig._____

E-mail:

- **Country of Head Office ***

- **Field of activities ***

3. **Address of Works***

Details of contact person:

Name_____

Mobile no._____

Desig._____

E-mail:

4. **Branch / Liaison office in Dhaka***

Details of contact person:

Name_____

Mobile no._____

Desig._____

E-mail:



SUB-VENDOR QUESTIONNAIRE

FICHTNER

5. Annual Turnover * & Profit in past three years *:

#	Annual Turnover in Mn USD	Profit After tax in Mn USD
2017-2018		
2016-2017		
2015-2016		

6. Present & Peak Manpower Handled Status*:

Division Status	Permanent Manpower			Peak Manpower		Remarks
	Graduate		Diploma	Number	Project	
	Technical	Non-Technical				

- a) Enclose organization chart of the proposed works (Y / N)
- b) Enclose Organization chart of QA / QC Deptt. (Y / N)
- c) Enclose List of Qualified Welders with process etc. (Y / N)
- d) Enclose List of Qualified NDT personnel with area (Y / N)

7. Approval/ Certificates by National/ International standards/ accredited agency applicable for the proposed services/ works

8. Furnish Experience list of the proposed services/ works *

9. Enclose End User's operational feedback certificate for the proposed services/ works *.

10. Enclose list of equipment & machinery specific to the proposed services/ works*.

This should include name of equipment, capacity, year of manufacturing & nos. etc.:

11. Enclose list of Site Infrastructure & Services Available *

11. Quality management*

11.1 General

11.1.1 Work Instruction for different processes available. (Y / N)
if yes, furnish list.

11.1.2 Records generated during inspection maintained & available for review? (Y / N)

11.1.3 Statistical quality control techniques used? (Y/N)
If yes please furnish details.

11.1.4 ISO certificate for the works available? (Y / N)
If yes, enclose copy of the certificate.

11.1.5 Quality & HSE Manual for the works available (Y / N)
If yes, enclose copy of the manual.

11.2 Corrective action

11.2.1 Specifically confirm whether System for identifying & disposition of Non
Conformity in the process / product is available (Y / N)

11.2.2 Specifically confirm whether System for Customer complains & their satisfactory
disposal is available. (Y / N)

11.3 Documentation Control

11.3.1 Procedure available for documentation control (Y / N)

11.4 Control of Inspection, measuring & testing equipment.

11.4.1 Procedure for calibration of testing & measuring instrument available. (Y / N)

12. Certification of sub-vendor *

I CERTIFY THAT THE INFORMATION SUPPLIED HEREIN (INCLUDING ALL PAGES ATTACHED) IS CORRECT.

SEAL

Name

M/S.

SIGNATURE

DESIGNATION

MOBILE NO

EMAIL

PLACE

DATE

13. Certification by Main Supplier *:

ABOVE INFORMATION HAVE BEEN VERIFIED AND FOUND IN ORDER TO COMPLY WITH TECHNICAL SPECIFICATION AS PER EPC-CONTRACT.

SEAL

Name

M/S.

SIGNATURE

DESIGNATION

MOBILE NO

EMAIL

PLACE

DATE

NOTE:

1. COLUMN SHALL NOT BE LEFT UNFILLED. IN CASE OF NOT APPLICABLE / NOT AVAILABLE, THE SAME SHALL BE INDICTED IN THE PROVIDED SPACE.
2. IN CASE PROVIDED SPACE IS NOT ADEQUATE, INFORMATION SHALL BE PROVIDED AS AN ATTACHMENT.
3. PRODUCT CATALOGUE FOR THE PROPOSED EQUIPMENT / ITEM / PROCESS, IF AVAILABLE, SHALL BE ENCLOSED

ANNEXURE-2

Sl.no	ITEM DESCRIPTION	PO reference of same/equivalent items Supplied (Attach Relevant PO Copies)
1	IR Thermometer	
2	Logic Analyzer	
3	Spectrum Analyzer	
4	Color spectrometers	
5	Wave synchronizer	
6	RF Video scanner	
7	Radio System Analyser	
8	RF Calibration source	
9	Video pattern generator	