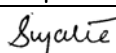
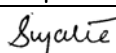
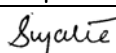


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<u>Specification for PLCs [BOP PLC + UB BMS PLC + HRSG BMS PLC]</u> 1. SCOPE This technical specification covers the Design, Engineering, Manufacturing, System integration, Assembly, testing at vendor works, inspection by purchaser, packing and transportation to site with necessary documentation like data sheets, statutory approvals, O&M manuals etc., as required and supervision of Erection, Commissioning till final handover of PLC system to End user. 2. Proven Track Record [PTR] 2.1 The system (with all its sub-systems) as being offered / supplied should have been installed and operating satisfactorily in a similar Unit application of hydrocarbon industry like Refinery, Petrochemical or Gas Processing Plant for <u>at least 4000 hours</u> (as collaborated by user certificate). 2.2 The system should be supplied, engineered, integrated, tested etc. from a factory from where the system / sub-systems as offered / supplied have already been supplied, engineered, integrated, tested etc. and meet the criteria 2.1 above. 2.3 All the activities including engineering should be carried out by the agency which have carried out the similar activity in the past and meets the criteria 2.1 above. However in case of systems specified for confirming to Safety Integrity level (SIL) certified by statutory authorities like TUV etc., the basic engineering for the system shall be carried out by the agency/ manufacturer on whose name TUV certification has been issued by the TUV authorities. 2.4 All the activities including engineering should be carried out by the agency which have carried out the similar activity in the past and meets the criteria 2.1 above. 2.5 The system should be supplied by the manufacturer in the fully engineered condition or should be supplied by the manufacturer's representative / subsidiary who have proper infrastructural facilities and meets the criteria 2.1 above. 2.6 In any case, the manufacturer whose system is being offered / supplied should have a local representation / subsidiary which have the proper infrastructural facilities like engineering, installation, maintenance, testing, spare part support, system fault diagnosis and other related logistic support. Systems, which don't have the local base, should be avoided. 3 INSTRUCTIONS TO BIDDERS 3.1 Bidders are advised to contact BHEL for essential technical queries in writing <u>within one week of issue of Enquiry</u>. In the event of any conflict between these specifications, data sheets, related standards, codes etc. the vendor shall refer the matter to the purchaser for clarifications before bid submission and the decision of Purchaser shall be final & binding on Bidder, without any cost & delivery implications. In the event of conflict, most stringent requirements shall be followed in general. 3.2 Offers with incomplete information will not be considered for evaluation, and are likely to be rejected outright without any further interaction with the Bidder. 3.3 Any technical features [over & above BHEL enquiry specification requirements] proposed by Bidder will not be given preference for the purpose of evaluation. 3.4 Bidder shall submit the "Duly filled & Signed copy of Check list" compulsorily along with technical offer without which offer is liable for rejection without any further interaction with the Bidder 4 Codes & Standards – Refer Annexure-[E] of this specification																
Revisions: Refer to record of revisions <table border="1"> <tr> <td>Prepared By:</td> <td>Checked By :</td> <td>Approved :</td> <td>Date :</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sujatha Sapavat</td> <td>Kamal Kumar</td> <td>Chandra Sekhar</td> <td>28.04.17</td> </tr> </table>					Prepared By:	Checked By :	Approved :	Date :					Sujatha Sapavat	Kamal Kumar	Chandra Sekhar	28.04.17
Prepared By:	Checked By :	Approved :	Date :													
																
Sujatha Sapavat	Kamal Kumar	Chandra Sekhar	28.04.17													

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5 CHECK LIST (To be filled by BIDDER and submitted along with Technical offer is compulsorily)

Vendor shall submit the following documents mandatorily as part of COMPLTE technical offer.

Enquiry No. / Date :

Name of the Bidder :

Project Name :

Item Description :

S. No	Document	Bidder confirmation (Yes/No)	Remarks
1	Technical offer complies with the specifications and its associated annexures, pre-bid clarifications in Toto and there are no technical deviations. Signed and stamped copy of this specification along with annexures enclosed along with technical offer.		
2	In case of deviation, vendor to confirm that these are technically not feasible deviations and same are submitted in BHEL format . In case technically feasible deviations are proposed by the bidder and subsequently withdrawn, <u>no commercial implications can be claimed by the bidder</u>		
3	All items are manufactured conforming to latest version of material grade standard and manufacturing standard mentioned in this specifications		
4	Bidder to quote as per BHEL price format only. No other format is acceptable. Bidder to attach un-priced price bid format by indicating "QUOTED" against each item and submit with technical offer duly signed & stamped.		
5	For addition/reduction of quantity, unit rate quoted in the present offer shall be considered during ordering and shall be valid up to execution of the contract to the extent of + 10% and -30% of order Value.		
6	Bidder to agree that Bill of materials / list of equipment furnished in the offer is only for information; Vendor shall supply all the material to meet the performance, sizing & technical requirement as per specification & its Annexures, scope matrix etc.		
7	Confirm that the quote includes training, commissioning spares, special tool & tackles, mounting hardware/ accessories, terminations, networking components etc. as required for commissioning activities.		
8	Bidder to confirm that all networking components/ hardware software, licenses as required for complete functional operation of the all systems are included.		
9	All the equipments / items / etc., supplied by bidder are having valid statutory approval certificates and same will be produced at any stage of contract execution to BHEL. The same were eligible to take local statutory regulatory body approval during commissioning of the system		

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 (Bidder's Signature and stamp with date)



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DEVIATION FORMAT

Enquiry No.:**Item:****Name of Bidder:****Offer Ref. No.:**

Sl. No.	Clause no. & Spec. no.	Description as per Specification	Deviation taken	Nature of Deviation	Remarks

NOTES:

1. Technical offer of the bidder will be evaluated only on the basis of Deviation Schedule. Deviation Schedule constitutes this sheet (with these Notes) duly signed and stamped.
2. Deviations, if any, shall be clearly brought out only in this format. Deviations mentioned / taken elsewhere or in any other format will be ignored.
3. Additional sheets in the same format can be attached by the vendor, if necessary.
4. Nature of Deviations shall only be of Design / Manufacturing constraints and non-availability of items / components / makes in market.
5. No price implications shall be entertained for deviations withdrawn during the technical scrutiny. If any deviations are accepted by BHEL during technical scrutiny then also there will be no price implication. Hence, in no case there will be consideration of Price implications.
6. Reasons for the deviations shall be specified in the Remarks column.
7. If there are no deviations from the specifications, bidder still has to submit the signed copy of this format by writing "NO Deviations" on this format.
8. If the "Deviation Schedule" is not submitted along with the offer, the bidder's offer is likely to be rejected without any further interaction with the bidder. Only the accepted deviations in conjunction with the original tender shall constitute the contract document for the award of job to the bidder

SIGNATURE OF THE BIDDER_____

NAME_____

DESIGNATION_____

DATE_____

COMPANY SEAL

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6 Project Introduction

- 6.1 RFCL intends to install Steam & Power Generation package in their fertilizer plant at Ramagundam in Telangana
- 6.2 Major equipments being executed by BHEL are - Gas turbine (1No's), Generators (1No's), Utility Boilers (1No's), Heat recovery Steam Generators (HRSG) (1No's), Common BOP, etc.
- 6.3 Entire plant is controlled by different control systems as listed below:
- 6.3.1 Centralized control system (DCS – supply by EIL / RFCL) is envisaged for central monitoring & control of entire CPP including sub- systems as required for the project. DCS is part of purchaser scope of supply. DCS is mainly envisaged for implementing closed loops, non-interlocked binary drives, and plant monitoring signals, alarms, data acquisition & logging, reports etc, of entire plant.
- 6.3.2 Mark-VI[supply by BHEL] is envisaged for Gas Turbine control & it's monitoring.
- 6.3.3 BOP PLC is envisaged for implementing the plant logics required for BOP operation such as binary drives, equipment shut down protection logic, plant sequential controls, etc.
- 6.3.4 HRSG BMS PLC is envisaged for implementation / operation of the HRSG BMS and their associated auxiliaries' logics.
- 6.3.5 UB BMS PLC is envisaged for implementation / operation of the HRSG BMS and their associated auxiliaries' logics.
- 6.4 All the binary drives, equipments etc, shall be operated [start, stop & shutdown] from Plant DCS even though their logics are residing in PLC through soft link. Each PLC data to be transferred to plant DCS via serial interface link for plant operation, data logging, etc.
- 6.5 Present scope includes supply of 3 PLCs [viz. BOP PLC, HRSG BMS PLC & UB BMS PLC] along with associated hardware /software.

7 List of Annexures (To followed along with this specification)

Document No.	Document Name	No. of pages
Annexure – [A]	Bill of material [for <u>Main Supply + Mandatory Spares</u>]	3
Annexure – [B]	I/O Count [Separate for each PLC]	2
Annexure – [C]	Price Bid format [for <u>Main Supply + Mandatory Spares</u>]	5
Annexure – [D]	PLC Configuration Diagram	1
Annexure – [E]	EIL Standard Specification for PLCs [Doc. No. 6-52-0040 Rev.2]	36
Annexure – [F]	Master Document Schedule [MDL]	5
Annexure – [G]	Quality Requirements	10

8 Scope Matrix for Supply, Engg and Installation & commissioning

S.No.	Description	Engineering by	Supply by	Erection by	Supervision of Erection by	Commissioning by	Remarks
[A]	All the PLCs [BOP PLC + HRSG BMS PLC + UB BMS PLC] including operation stations, Engg stations, softwares, etc. based on IO count	Bidder (Note-3)	Bidder	BHEL	Bidder (Note-1,2,4)	Bidder + BHEL (Note-2)	Note-(5)

Notes:

- Termination accessories and termination of all types of cables at bidder supplied items/panels shall be in Bidder scope.
- BHEL will provide the necessary man power (unskilled) required for erection work as well as commissioning. However system commissioning shall be done by bidder only.
- Design and Engineering of Panels, model selections, configuration of software, etc are part of Bidder scope.
- Any special activities involved in erection like FO cable splicing, termination, etc. shall be by bidder including special tools & tackles.
- PLC I/O List, Signal grouping, Logic diagrams & inputs for graphics shall be provided by BHEL after P.O. placement.



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9 Technical SPECIFICATIONS

S. No.	System	Technical specifications
1	Bill of material	Refer Annexure-[A] of this specification for <u>Main Supply + Mandatory Spares</u>
2	I/O Count + sizing criteria	Refer Annexure-[B] of this specification
3	Price bid format	Refer Annexure-[C] of this specification
4	PLC configuration	Refer Annexure-[D] of this specification
5	System Loading	Loading of controller shall NOT exceed 60% with installed spares; Also refer Annexure-[E] of this specification
6	System Redundancy	Triple Modular Redundant (TMR) / Quad Modular Redundant QMR – SIL-3 certified as per IEC 61511; All PLCs shall be TUV certified SIL3 <i>with TMR or QMR configuration for processors and I/Os</i> and redundancy in power supply and communication.
7	PLC Response time	100 msec
8	Installation Location	All PLCs shall be located in the Power Plant Central Control Room
9	Software	PLC software shall include the operating system and application program. The application program shall include software for performing functions like interlock and shutdown logic, programming/program modification, documentation etc. Two copies of application program and two sets of licensed system software shall be supplied. The program language shall be English. The licenses and application program shall allow: - Monitoring of system program for troubleshooting purpose. - Carrying out any modifications to the PLC/system program if need arises (engineering license with proper validity) - Troubleshooting of any system related failures. - Monitoring of the system healthiness The system shall be supplied with programming tools and related accessories. Software Licenses shall be valid for life time.
10	SOE	1) SOE shall be Integral to PLC 2) SOE resolution time :1 ms 3) Number of SOE points: refer Annexure-[B] of this specification. 4) Sequence of event recording facility shall be provided with resolution same as PLC scan time. At least 96 hours history for sequence of events should be available in SOE PC/ loader hard disk. It shall be possible to archive history data in CD/ tape. All necessary hardware and software shall be provided. The printout shall be from printer connected to SOE PC.
11	Other technical requirements	1) Failure of any redundant part of PLC should be properly alarmed in the local panel as well as in the purchaser DCS 2) Relays shall be certified SIL -3 and barriers shall be certified SIL-2 when used with SIL-3 PLCs. 3) The I/O cabinets and the marshalling cabinets of the BOP PLC system shall be separate and dedicated for each of the three packages i.e., UB, HRSG & BOP. 4) Interfaces if any between the three PLCs supplied by Package Contractor shall be taken care with regard to cabling, I/O points, termination etc by the Contractor. 5) All SMART (HART) inputs connected to PLCs shall be integrated with End user's Instrument Asset Management system (IAMS). Bidder shall provide necessary hardware (with HART Multiplexer and RS-485 connectivity) and software for HART communication transmitters / positioners with purchaser's IAMS. 6) All softwares provided shall necessarily include the cost for perpetual license(s) for use on all the machines and shall include software upgrades as & when released by the software agency for a period of three (3) years after warranty/guarantee period. 7) Time Synchronization: Station LAN shall also be used for time synchronization of PLCs connected on the LAN 8) This technical specification shall be read along with EIL standard specifications for PLCs [Doc. No. 6-52-0040 Rev.2]

10 Panel Specification

PLC Panels shall be designed & manufactured as per Annexure-[E] of this specification. Other requirements shall be as given below:

a)	Installation location	: Indoor in air-conditioned room
b)	Panel colour	: To be intimated during detail engineering
c)	Panel Cable entry	: From Bottom
d)	Removable gland plate at bottom	: Required

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11 POWER SUPPLY

11.1 Following power supplies shall be provided by purchaser at single point of PLC PDB.

a) UPS supply for control supply: 110 V AC ± 10%, 1-phase, 50 Hz – 3 No’s of redundant feeder.

b) Normal power supply [non-UPS] for panel lighting & utility supply: 240V AC ± 10%, 1-phase, 50 Hz - 1 No non-redundant feeder

11.2 Further conditioning & distribution within package shall be in vendor scope.

11.3 Vendor shall provide standalone PDB with necessary protections & metering for powering equipments under their scope. Power distribution scheme shall be approved by purchaser.

11.4 Vendor shall supply accessories (like cable glands, plugs, etc.) required for termination of purchasers’ as well as vendor power cables.

11.5 Spare feeders of 5A-15 nos, 16A- 5 nos 110V AC from PLC PDB (for purchaser use) – 20 No’s.

11.6 Vendor shall furnish above feeders capacity during bidding stage as well as detail calculations during order execution.

11.7 All internal distributions shall be designed such that a single power fault in any instrument branch system shall not cause a trip of the entire system. Each consumer shall be provided with separate switch & isolation fuse.

12 EARTHING

12.1 PLC system earthing shall be carried in-line with EIL Specs [Annexure-[E] of this specification; Doc. No. 6-52-0040 Rev.1].

12.2 Earth points of all panels shall be looped together and shall be terminated at ONE copper Earth bus (Start point – minimum size 50mm (W) x 6mm thick) located at control room floor. Copper earth bus shall be part of bidder supply. From Earth bus to Earth pit, cable supply shall be by BHEL.

12.3 BHEL shall provide the following:

a) Electrical earth connection for panel earthing – 1 No (redundant) at control room floor

b) Electronics earth connection at bidder supplied Copper bus for system earthing - 1 No (redundant) at control room floor

12.4 All hardware with in package required for earthing & connectivity up to BHEL’s earth points shall be in vendor scope.

12.5 Scheme for recommended earthing system/earth pit shall be furnished by vendor during order execution.

13 Bidder’s Scope of SERVICES

13.1 Supervision of erection & commissioning, performance guarantee testing & trial run and final handing over to end customer for the supplied systems.

13.2 Number of man days and number of visits as specified in the “Annexure-[A] of this specification” shall be considered. However, either or both of the number of man days or no of visits may increase / decrease based on the actual site requirement.

13.3 Bidder to mobilize concerned competent person for supervision of Erection & commissioning activities within a period of 6 working days of receipt of intimation in this regard from BHEL.

13.4 Following shall be the scope of work for services:

a) Services charges shall include the travel to & fro travel from vendors work to site, lodging, boarding & local travel. Vendors shall arrange their own lodging, boarding & traveling.

b) Vendors shall arrange their own Test equipment’s, commissioning tools, manpower etc as required.

13.5 Above services shall be ordered by BHEL Site at the time of commissioning. However vendor shall submit the price offer for services as per “Annexure-[A] of this specification” and same shall be considered for L1 evaluation.

14 MANDATORY SPARES

Spares requirement shall be as per enquiry & “Annexure-[A] of this specification”.

15 Erection & Commissioning SPARES

15.1 All commissioning spares as required during erection and commissioning of all the systems are included in bidder’s scope & shall be supplied along with the main supply/package.

15.2 Bidder to ensure that all the spares are procured from the original equipment manufacturers (as per their recommendation) and shall make them available at site well before the start of commissioning activities.

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16 TRAINING

16.1 Bidder shall arrange training for Owner’s personnel. Different type of courses shall be offered for operation / process engineers and operators, instrument maintenance engineers and technician.

16.2 Vendor’s works Training shall be provided at the place of manufacturing. Travel and living expenses of the Purchaser’s personnel shall be borne by the Purchaser.

16.3 Apart from the hardware and software maintenance training and site training, the site training shall also include bought out items.

16.4 Vendor shall offer operation training basically meant for operating personnel. The various facilities available in the system for operation, actions required during emergencies and identifying the various diagnostic messages shall be the main contents of the operation training.

16.5 The duration & location of the training shall be as per “Annexure-[A] of this specification”.

17 DOCUMENTATION

17.1 Information to be included with offer

Vendor shall make the offer in detail, with respect to every item of the Purchaser’s specifications. Any offer not conforming to this shall be summarily rejected.

a) Duly filled & Signed copy of Check list

b) Deviation list, if any (as per “No deviation format” given in this specification). If there are no deviations, bidders shall submit “Deviation format” by mentioning deviations “Nil”.

c) Unpriced price schedule (To be submitted compulsorily without fail)

d) Power consumption details (To be submitted compulsorily without fail)

e) Bill of materials (only for information)

17.2 Documentation after P.O. Placement

a) Submission of documents as per “Master documents schedule” (which will be finalized in Kick-off meeting after award of the contract) within 2 weeks of placement of LOI (for approval by BHEL and / or BHEL’s customer in 4 sets)

b) All vendor documents of PLC and its sub-items shall be submitted to EIL for approval during order execution. Any comment furnished by EIL / BHEL shall be taken care by vendor during ordering execution.

c) Further BHEL will provide comments on vendor submitted document within 25 working days for revision & resubmission. Vendor shall follow up with BHEL for non-receipt of comments/approvals.

d) Revised drawings / Documents shall be submitted by Bidder in 07 days of receipt of comments / observations from BHEL. BHEL shall revert within 25 days on receipt of these revised documents / drawings from vendor for approvals.

e) All the approvals required for manufacturing shall be completed with 2months from P.O to meet the P.O delivery schedule. Accordingly vendor shall ensure the submission of approval category documents (which are required for manufacturing) and obtain their approvals.

f) Vendor shall obtain final approvals on all technical + quality aspect documents before inspection dates.

g) It is vendor’s responsibility to obtain approvals from BHEL as earliest as possible to meet PO delivery schedules. Accordingly vendor to plan and execute the supplies in time.

17.3 Documents to be submitted during final shop testing and before equipment dispatch. (Note: submission of these documents are commercially linked) - all in 16 sets (2 sets to be included with item dispatch and balance to BHEL purchase department).

a) Complete O& M manual.

b) Approved Engg documents

c) As-Shipped documents

d) As-Built documents

e) Guarantee and all test certificates for review and acceptance by BHEL and / or BHEL’s Customer

3 sets of CD-ROM – containing O&M manual and Engineering documents (1 set to be included with item dispatch and balance to BHEL purchase department).

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COPYRIGHT 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.		18 MARKING, PACKING AND DESPATCH					
		18.1 All items shall be marked (stamped/etched) in accordance with the applicable code/standard/specification. In addition, the item code, if available, shall also be marked.					
		18.2 For ease of identification, the color of painted strip (wherever required) shall be as per the applicable standard.					
		18.3 Part number/Dispatch link-up of all the equipment's/items supplied and also their co-relation with system/drawing/approved BOQ.					
		18.4 Paint or ink for marking shall not contain any harmful metal or metal salts which can cause corrosive attack either ordinarily or in service. Special items/smaller items shall have attached corrosion resistant tag providing salient features.					
		18.5 The equipment shall be transported to site by the vendor in fully assembled condition. However, in case some components are liable to be damaged during transit, the same shall be dismantled and supplied separately, to be reassembled at site the vendor. Assembly of the item supplied loose at site and repairing of any item damaged during transport shall be in the vendor's scope. The vendor shall send each consignment to site with a detailed packing list.					
		18.6 All the equipment shall be divided into several sections for protection and ease of handling during transportation. The equipment shall be properly packed for transportation by ship/rail or trailer. The equipment shall be wrapped in polythene sheets before being placed in crates/cases to prevent damage to the finish. Crates/cases shall have skid bottom for handling.					
		18.7 Special notations such as 'Fragile', 'This side up', 'Center of gravity', 'Weight', 'Owner's particulars', 'PO Nos.' etc. shall be clearly marked on the package together with other details as per purchaser order.					
		18.8 The equipment/items may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage in areas with heavy rains/high ambient temperature, unless otherwise agreed.					
		18.9 The following minimum packing procedures shall be followed:-					
		a) All items shall be dry, clean and free from moisture, dirt and loose foreign material of all kinds.					
		b) All items shall be protected from rust, corrosion, and mechanical damage during transportation and handling.					
		c) Each variety and size of item shall be supplied in separate packaging marked with the purchase order no., item code (if available), and the salient specifications.					
		d) All electrical, instrumentation etc., shall be properly packed to prevent damage during transport, storage, handling at site.					
		e) All the items which the Bidders considered liable to be damaged during shipment or storage, shall be packaged for separate shipment. If instruments are removed from the panel, they and their connection shall be suitably tagged to ensure simple re installation at the job site. Each instrument shall be sealed in plastic bags containing moisture absorbing dessicants.					
		f) It shall be bidder's sole responsibility to protect all the material during period of dispatch, storage and erection against corrosion, incidental damage due to vermin, sunlight, rain, high temperature, humid atmosphere, rough handling in transit and including delays in transit.					
		g) Mandatory Spare parts shall be packaged separately and clearly marked as 'Mandatory Spares '.					
		h) Commissioning spares, Tools & tackles to be packed separately & suitably tagged.					
		18.10 <i>If mandatory spare items are ordered, same shall be sent in pre-decided lots in containers /secure boxes distinctly marked in Red color with boldly written "S "mark on each face of the containers /secure boxes</i>					
		18.11 <i>Loose vendor items sent by vendor to sites shall be quantified/numbered/tagged and not merely mentioned as ONE lot of loose items.</i>					
		18.12 <i>A packing list covering items having shelf life are to be intimated to site. Also, shelf life items shall be packed separately in black color painted box for easy identification at site.</i>					
		19 TESTING, INSTALLATION, COMMISSIONING & ACCEPTANCE – As per EIL Specs [Annexure-[E] of this specification; Doc. No. 6-52-0040 Rev.1]					
		19.1 Final Inspection including document verification as per approved QAP shall be carried out by CUSTOMER /CONSULTANT/ CUSTOMER's Third Inspection Agency & BHEL/BHEL's Third Party Inspection Agency at vendor works.					
		19.2 Inspection & Factory Acceptance Test at Vendor works – by BHEL + VENDOR + EIL + RFCL as per approved FAT procedure					
		19.3 Site Acceptance Test at site - by BHEL + VENDOR + EIL + RFCL as per approved SAT procedure					

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COPYRIGHT 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.		20 DEFECT LIABILITY PERIOD / WARRANTY The Defect Liability Period / warranty shall be valid for 36 calendar months commencing from date of supply (or) 24 calendar months commencing from the date of commissioning" whichever is earlier. 21 COMPREHENSIVE POST WARRANTY ANNUAL MAINTENANCE 21.1 The Vendors shall provide <u>five years</u> Comprehensive Annual Maintenance Contract (AMC) as part of their supply, installation and commissioning for the complete Steam & Power Generation Package. The offer for AMC shall be valid for five years from date of expiry of the defect liability period (or) April 2021 whichever is later. 21.2 Vendor shall provide total maintenance of the system including all hardware / software, workstations, networking equipment and any related accessories, peripherals etc. supplied by the vendor including all bought out items like interface devices, maintenance system etc. for complete system. System vendor shall also obtain AMC from OEM for all bought out items. The bid shall be made year wise up to 5 years. 21.3 The AMC order shall be placed separately by RFCL, after expiry of warranty period. 21.4 During warranty period, vendor shall carryout the regular, emergency and software maintenance services as per AMC [clause ii below]. Services provided during the warranty period shall be without any additional cost. Warranty shall cover replacement of any failure components / rectification of any defect at no extra cost and arranging requisite spare parts shall be entirely vendor's responsibility. Any failure to carry out the necessary replacement and rectify the defect during warranty period shall be at the risk and cost of the vendor. 21.5 The following are the minimum terms and conditions for the AMC. i) The AMC includes complete servicing, regular & preventive maintenance and breakdown maintenance whenever required for the complete system. This also includes all the maintenance spares, test equipments, tools and tackle as required, labours, spares parts which require routing replacement and all consumables (excluding paper, printer cartridge) required for repair or replacement of the all items supplied including bought out item. ii) VISITS: a) REGULAR VISIT The vendor's certified Field Service engineer shall visit the site once in three months for routine maintenance, providing guidance to operators as and when required, hardware / software checks/ inspections, full system checkouts, preventive maintenance adjustments and carry out corrective actions for the complete system. It shall include study and advice on daily maintenance, cleaning of cabinet filters, modification/addition related to system configuration/data base, if any problem is reported, running of test programs, on-line servicing and solving reported problems. Checks shall be conducted on running system. The software check shall include minor modifications to improve existing application performance, backup operations and application software updates (latest releases). Vendor shall take backup in 2 copies of last updated software also. The duration of stay of engineer shall be limited to 3 days (8 hours per day) per visit. However, if any problem reported is not solved during the visit, engineer shall visit again and the visit shall not be counted as a regular visit. Necessary visa for vendor's personnel shall be arranged by vendor themselves. Identification of any hardware / software modification carried out in the system from the date of last modification and updating of as-built documents, records for loop diagrams, I/O assignment, alarm, logic block, control programs etc., as and when any modification is carried out or identified shall be vendor's responsibility. b) PREVENTIVE MAINTENANCE VISITS The engineers of the suppliers shall visit once in a year for Preventive Maintenance of the complete system subject to availability of shutdown. Client will inform the vendor one month in advance for shutdown dates. The engineer shall carryout as a minimum complete overhaul of the system, inspection of hardware and software, fault prediction,	



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inspection of power supply quality, environmental and operating condition checks, major repairs / replacement and detailed reporting, manual cleaning of each card and cabinet filters. This visit is in addition to visit required for periodic maintenance. Necessary visa for vendor's personnel shall be arranged by vendor themselves.

c) EMERGENCY VISITS

The Engineers of the suppliers shall report to site with necessary spares within 24 hours after receipt of a written intimation / telephone call from RFCL for restoring the system. The engineers deputed shall be well qualified and experienced. The system must be brought back within 24 hours after reporting at site. Necessary visa for vendor's personnel shall be arranged by vendor themselves.

- iii) The vendor shall explicitly define in AMC offer, the various checks to be carried out by the engineer for the above listed items during various visit listed herein. Also a standard document consisting of standard procedures and formats for carrying out various activities of Annual Maintenance Contract shall be furnished. These lists of checks are subject to RFCL approval.
- iv) Owner personnel will work on system day-to-day basis and wherever possible, owner shall inform the type of failure of hardware /software to vendor based on diagnostic available with the system. However vendor shall be fully responsible to attend and rectify the root cause and the failure at the shortest possible time.
- v) Vendor to note that M/s RFCL engineers shall associate with the vendor while carrying out the Post Warranty Maintenance Contract activities. On-job training of these associated engineers shall be covered under this scope.
- vi) The service engineer shall maintain a Service Logbook at the site indicating the activities carried out during preventive & breakdown maintenance and also submit service / calibration reports based on the maintenance / repairs carried out, modules / parts repaired / replaced along with fault analysis.
- vii) The contract shall include detailed proposal related to Maintenance Services with necessary tools and tackles. Travel, boarding and lodging for service engineer shall be included in this package itself.
- viii) The supplier shall maintain at his premises or of the other agencies at a suitable nearest location at Ramagundam or its adjoining places, charged with maintenance a stock of necessary spares required and no space shall be provided at owner's premises. Vendor shall furnish a list of spares in the AMC offer which shall be maintained by them for owner's review. In event of breakdowns, repairing or replacement should be possible within 48 hours maximum without any lead-time for procurement of spares.

22 SUB VENDOR LIST

S NO.	Item Description	Approved make
1	Panel	Rittal
2	OPTICAL FIBRE CABLES & ACCESSORIES	APAR INDUSTRIES LIMITED / RPG CABLES LIMITED / FINOLEX CABLES LTD / BIRLA ELRICSSON OPTICAL LTD

Note:

- a. *If any component is not appearing in above the list, makes of the same shall be proposed by bidder during order execution for EIL's approval. Sub-vendor selected by the successful bidder to ensure adequate Proven Track Record as per industry practice & if vendor name is not listed in the EIL Master supplier list then vendor/ Sub-vendor has to take EIL/BHEL concurrence before supplying such items.*
- b. *"Vendors should not be part of EIL holiday List. Package vendors will not source the items from sub-vendors who are part of EIL' holiday list"*

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COPYRIGHT 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.	23 LOGISTIC SUPPORT 23.1 Bidder shall ensure and provide the following information/ details during detail engineering as part of purchase requisition for PLCs: a) Local service facilities in India is available or not from the manufacturer? b) If not available, where in the manufacturer's approved service facility presently located nearest to India? c) Instruments/ System shall be user serviceable. d) User reference list. e) When was quoted model introduced in the market? 23.2 Logistic support certificate shall be provided from the supplier for all PLCs 23.3 The logistic support certificate shall be signed by a corporate level person of the Vendor/ Vendor principal. 23.4 <u>Certificate For Logistics Support (by Principal)</u> (To be signed by Principal's corporate level signatory on company's letterhead) I, on behalf of M/s_____ confirm that the PLC quoted by M/s_____ for Steam & Power Generation Package of Revival of Ramagundam fertilizer Project shall continue to be supported by us. The quoted item shall not be withdrawn from Indian market in next three (3) years from the date of placement of order as a matter of our corporate policy. I further confirm that in case of placement of order by M/s Ramagundam Fertilizers and Chemicals Ltd on M/s _____ we shall continue to support M/s_____ in providing back-up engineering, maintenance support and spare part to RFCL for a period of 10 years from the date of expiry of warranty. SIGNATURE WITH SEAL AUTHORIZED, SENIOR MANAGEMENT LEVEL 23.5 <u>Certificate for Logistics Support (by Vendor)</u> (To be signed by Vendor's corporate level signatory on company's letterhead) I, on behalf of M/s_____ confirm that the PLC quoted by M/s _____for Steam & Power Generation Package of Revival of Ramagundam fertilizer Project shall continue to be supported by us and our principal(s). The quoted item shall not be withdrawn from Indian market in next three (3) years from the date of placement of order as a matter of our corporate policy as supported by attached certificate from our principal(s) M/s_____ I further confirm that in case of placement of order by M/s_____ on us, we shall continue to support RFCL in providing back-up engineering, maintenance support and spare part to RFCL for a period of 10 years from the date of expiry of warranty. SIGNATURE WITH SEAL AUTHORIZED, SENIOR MANAGEMENT LEVEL SIGNATORY										



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RECORD OF REVISIONS

Rev. No.

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Revision Details

Revised By

Approved By

00

28.04.2017

Original issue

Chandra Sekhar

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