Bid Number: GEM/2021/B/1256324
Dated: 03-06-2021

Bid Document

Bid Details	
Bid End Date/Time	24-06-2021 11:00:00
Bid Opening Date/Time	24-06-2021 11:30:00
Bid Life Cycle (From Publish Date)	90 (Days)
Bid Offer Validity (From End Date)	60 (Days)
Ministry/State Name	Ministry Of Petroleum And Natural Gas
Department Name	Oil India Limited
Organisation Name	Oil India Limited
Office Name	Oil India Limited
Total Quantity	2
Item Category	PLC System and its accessories
Minimum Average Annual Turnover of the Bidder	5 Lakh (s)
Years of Past Experience required	3 Year (s)
MSE Exemption for Years of Experience and Turnover	No
Startup Exemption for Years of Experience and Turnover	No
Document required from seller	Experience Criteria,Past Performance,Bidder Turnover,OEM Authorization Certificate *In case any bidder is seeking exemption from Experience / Turnover Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer
Past Performance	50 %
Bid to RA enabled	No
Time allowed for Technical Clarifications during technical evaluation	7 Days
Inspection Required (By Empanelled Inspection Authority / Agencies pre-registered with GeM)	No
Estimated Bid Value	1000000
Evaluation Method	Total value wise evaluation

EMD Detail

Required	No

ePBG Detail

Advisory Bank	AXIS BANK LTD
ePBG Percentage(%)	3.00
Duration of ePBG required (Months).	21

(a). EMD & Performance security should be in favour of Beneficiary, wherever it is applicable.

Beneficiary:
CHIEF MANAGER
Oil India Limited, OIL INDIA Limited, OIL INDIA Limited, Ministry of Petroleum and Natural Gas
(Balen Bharali)

Splitting

Bid splitting not applied.

MII Purchase Preference

MII Purchase Preference	No

Competent Authority Approval for not opting Make In India Preference : View Document

MSE Purchase Preference

MSE Purchase Preference	Yes

1. The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as indicated above in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
2. Experience Criteria: In respect of the filter applied for experience criteria, the Bidder or its OEM {themselves or through reseller(s)} should have regularly, manufactured and supplied same or similar Category Products to any Central / State Govt Organization / PSU / Public Listed Company for number of Financial years as indicated above in the bid document before the bid opening date. Copies of relevant contracts to be submitted along with bid in support of having supplied some quantity during each of the Financial year. In case of bunch bids, the category of primary product having highest value should meet this criterion.
3. Purchase preference to Micro and Small Enterprises (MSEs): Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference, the bidder must be the manufacturer of the offered product in case of bid for supply of goods. Traders are excluded from the purview of Public Procurement Policy for Micro and Small Enterprises. In respect of bid for Services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered product or service. If L-1 is not an MSE and MSE Seller (s) has/have quoted price within L-1+ 15% (Selected by Buyer)of margin of purchase preference /price band defined in relevant policy, such Seller shall be given opportunity to match L-1 price and contract will be awarded for 100%(selected by Buyer) percentage of total QUANTITY.
4. Estimated Bid Value indicated above is being declared solely for the purpose of guidance on EMD amount and for determining the Eligibility Criteria related to Turn Over, Past Performance and Project / Past Experience etc. This has no relevance or bearing on the price to be quoted by the bidders and is also not going to have any impact on bid participation. Also this is not going to be used as a criteria in determining reasonableness of quoted prices which would be determined by the buyer based on its own assessment of reasonableness and based on competitive prices received in Bid / RA process.
5. Past Performance: The Bidder or its OEM {themselves or through re-seller(s)} should have supplied same or similar Category Products for 50% of bid quantity, in at least one of the last three Financial years before the bid opening date to any Central / State Govt Organization / PSU / Public Listed Company. Copies of relevant contracts (proving supply of cumulative order quantity in any one financial year) to be submitted along with bid in support of quantity supplied in the relevant Financial year. In case of bunch bids, the category related to primary product having highest bid value should meet this criterion.

PLC System And Its Accessories (2 pieces)

Brand Type	Unbranded

Technical Specifications

Buyer Specification Document	Download

Consignees/Reporting Officer and Quantity

S.No.	Consignee/Reporting Officer	Address	Quantity	Delivery Days
1	Kamal Das	851114,Oil India Limited, Barauni, Pump Station 10, PO Barauni Refinery, District Begusarai	2	60

Buyer Added Bid Specific Additional Terms and Conditions

1. Scope of supply (Bid price to include all cost components) : Supply Installation Testing Commissioning of Goods and Training of operators and providing Statutory Clearances required (if any)

Disclaimer

The additional terms and conditions have been incorporated by the Buyer after approval of the Competent Authority in Buyer Organization. Buyer organization is solely responsible for the impact of these clauses on the bidding process, its outcome and consequences thereof including any eccentricity / restriction arising in the bidding process due to these ATCs and due to modification of technical specification and / or terms and conditions governing the bid. Any clause incorporated by the Buyer such as demanding Tender Sample, incorporating any clause against the MSME policy and Preference to make in India Policy, mandating any Brand names or Foreign Certification, changing the default time period for Acceptance of material or payment timeline governed by OM of Department of Expenditure shall be null and void and would not be considered part of bid. Further any reference of conditions published on any external site or reference to external documents / clauses shall also be null and void. If any seller has any objection / grievance against these additional clauses or otherwise on any aspect of this bid, they can raise their representation against the same by using the Representation window provided in the bid details field in Seller dashboard after logging in as a seller within 4 days of bid publication on GeM. Buyer is duty bound to reply to all such representations and would not be allowed to open bids if he fails to reply to such representations.

This Bid is also governed by the General Terms and Conditions

In terms of GeM GTC clause 26 regarding Restrictions on procurement from a bidder of a country which shares a land border with India, any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. While participating in bid, Bidder has to undertake compliance of this and any false declaration and non-compliance of this would be a ground for immediate termination of the contract and further legal action in accordance with the laws.

---Thank You---

ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
Oil India Limited
(A Government of India Enterprise)

PO : Udayan Vihar
Guwahati – 781171, Assam (India)
Phone: +91-361-2595681
Email: balen_bharali@oilindia.in
erp_mm@oilindia.in

TECHNICAL SPECIFICATION

Procurement of PLC System and its accessories including engineering, assembly, integration, installation and commissioning, site testing, FAT, SAT along with supply of spares.

The Bidder to carry out the installation and commissioning of the PLC system at PS-10 Barauni and IOCL Barauni).

ANNEXURE

Procurement of PLC System and its accessories including engineering, assembly, integration, installation and commissioning, site testing, FAT, SAT.

CONTENTS

Procurement of PLC system and its accessories including engineering, assembly, integration, installation and commissioning, site testing, FAT, SAT.

A. INTRODUCTION

Oil India Limited, a Public Sector Undertaking of Govt. of India, engaged in exploration, production and transportation of hydrocarbon materials in India and abroad, is proposing to procure PLC system for data sharing of Balance Tank and its valve status at PS10 Barauni with IOCL Barauni

A.1 DESIGN OBJECTIVES AND GUIDE LINES

A.1.1 SYSTEM AVAILABILITY: The System availability shall be greater than 99 % excluding logistics (i.e. availability of power supply and signal cable).

A.1.2 STANDARDS APPLICABLE: The equipment and the system provided shall conform to the latest editions of standards like API, IEC, ISO, EIA, OISD etc. In case of any conflict between the above standards and the specifications, the specifications given in this document shall proceed, however in case of further confusion; the matter shall be referred to OIL. Decision of OIL shall be final and binding.

A.1.3 ENVIRONMENTAL SPECIFICATIONS: All equipment, test instruments, special tools and tackles, etc shall be capable of maintaining the guaranteed performance with operational lifetime of 10 years minimum when operating continuously under the following environmental conditions:

a) Operating Temperature: 0 deg C to 60 deg C guaranteed and
b) Humidity: At any relative humidity upto 95% within the temperature range
   Of 0 deg C to 50 deg C.
c) Altitude: At any altitude upto 600 m above sea level.
d) Sand and Dust:
   With a build-up of dust on operational surface to a level such as may occur because of imperfections in the sealing of equipment, housing and conditions prevailing in sub-tropical desert conditions.
e) Shock and vibration:
   Shall withstand transportation and handling by air, sea and road under packed conditions.
f) Electromagnetic Compatibility: Shall meet the requirements as per IEC standard

A.2 POWER SUPPLY SYSTEM

a) Necessary AC to DC (230 V AC 50 Hz to 24 V DC +/- 10% variation) converter of required rating shall be provided by the bidder. This converter shall be installed in the control room and the 230 V, 50 Hz supply shall be provided from OIL's UPS. Space for installation of the same shall be provided by M/S OIL.
b) Bidder shall provide Equipment–wise Power Consumption details per station for each system and sub-system in the offer.
c) All equipment shall be provided with Over-voltage, Under-voltage protection.
d) All equipment shall be provided with Short-Circuit and reverse power protection.
e) The installations shall be provided with lightning strike arrestors, suitable to divert the resultant transients/ surges safely to earth thereby protecting the electronic component and the system itself.

A.3 BIDDER TO OBTAIN OWN INFORMATION

1. In their own interest, bidders may visit the sites, prior to submission of BID, to acquaint himself with the site data, availability of facilities etc.
2. During such visit, bidder shall interact with the OIL engineer and obtain information regarding exact requirement of proposed system.

3. During such visit following may be contacted: -

i. Partha Proteem Roy
DyCE (T) I PHQ
Phone: 7002137268

ii. Kamal Das
DyCE(T) PS-10
Barauni

B. GENERAL INFORMATION

B.1.1 This specification, together with the data sheets attached herewith covers the requirements for the design, materials, nameplate marking, inspection, testing and shipping of PLC system and its accessories

B.1.2 The related standards referred to herein and mentioned below shall be of the latest editions prior to the date of the purchaser's enquiry: -

EN European Standard
EN 50014 Electrical apparatus for potentially explosive atmospheres General Requirements
EN 50039 Electrical apparatus for potentially explosive atmospheres Intrinsic Safety Requirements
EN-10204 Inspection documents for metallic products
IS/IEC Indian Standards/International Electro-Technical Commission
IS/IEC 60079 Electrical Apparatus for Explosive Gas Atmospheres.
IS/IEC 60529 Degree of Protection provided by Enclosures.
IS 13947 Degree of Protection provided by Enclosures for low Voltage Switchgear and Control gear.
IS 2148 Flameproof enclosures for electrical apparatus
IEC61000-4 Electromagnetic compatibility for Industrial Process Measurement and Control Equipment.

B.1.3 In the event of any conflict between these specifications, data sheets, related standards, codes etc., the following order of priority shall govern:

a) Statutory Regulations
b) Data sheets
c) Standard specifications
d) Codes and standards

B.1.4 In addition to compliance to purchaser's specifications Bidder's extent of responsibility includes the following:

a) Purchaser's data sheets indicate PLC system and its accessories namely the CPU, Analog and Digital IO modules, software license and the HMI.
b) Coordination and approvals from statutory authorities like CCOE etc, wherever required.

B.2 BIDS

B.2.1 Bidder's quotation shall be strictly as per special instruction to bidder and as per this PR.

B.2.2 Bidder's quotation shall include submission of statutory approval certificates & type test certificates and a detailed specification sheet for each PLC system.

B.2.3 A detailed technical offer is required; bidder's quotation shall include the following: -

a) Compliance to Specification
b) A detailed specification sheet for each item shall provide information described as under.
   i) All details regarding PLC systems, IO modules, Power supply unit and software protocols
   ii) Cable specifications required, maximum permissible cable length
   iii) All design characteristics and performance characteristics.
c) Proven reference for each offered model in line with successive clause **B.2.4**.

d) Catalogues in English giving detailed technical specifications, model decoding details and other information for each type of PLC system and its accessories covered in the bid.
e) A copy of approval for flameproof enclosure/intrinsically safety, from local statutory authority such as Petroleum & Explosives Safety Organization (PESO) for electronic instruments installed in electrically hazardous area, along with the following:

- Test certificate from recognized house Central Institute of Mining & Fuel Research (CIMFR)/ Electronics Regional Test Laboratory (ERTL) etc. for flame proof enclosure/ intrinsic safety as specified in the datasheets, as per relevant Indian Standard for all Indian manufactured equipments.
- Certificate of conformity from agencies like LCIE, ATEX, PTB, CSA, UL etc. for compliance to ATEX etc. for all equipments manufactured outside India.

f) Deviations on technical requirements shall not be entertained. In case bidder has any valid technical reason, they may include a list of deviations tag number wise, summing up all the deviations from the purchaser's data sheets and other technical specifications along with the technical reason for each of the deviation.
h) Overall estimated dimensions in millimeters of the PLC system and its accessories.

B.2.4 All items, as offered, shall be field proven and should have been operating satisfactorily individually for a period of minimum 4000 hours in the process conditions similar to those as specified in the purchaser s data sheets. Items with prototype design or items not meeting proven criteria specified above shall not be offered.

B.2.5 All documents submitted by the bidder including their quotation, catalogues, drawings, operating and maintenance manuals etc. shall be in English language only.

B.2.6 Bidder shall also quote for the following:
a) Two years' operational spares for each PLC system and its accessories covered in the bid.
b) Bidder shall also quote for any special tools and software needed for maintenance work on the PLC system and its accessories.

C. DOCUMENTS & DATA REQUIREMENTS

Item	Documents and Data	Along with the Bid	Upon Placement of PO for Owner's Approval (Within 2 weeks)	After Inspection for Despatch Clearance	Along with Material (2 sets)
1.	Technical proposal in conformity with the specifications as mentioned in clause **B.2.3**	1 set			
2	Model and Make of offered PLC system and Deviation statement.	1 set			
3	BOM as per proposed system, Catalogues, References, Complete Product Literature and List of accessories envisaged to be associated with the system.	1 set			
4.	Technical Checklist as provided in section **Appendix 2**	1 set			
5	Proven track record for the same as per clause **B 2.4.**	1 set			
6.	Valid Hazardous Area certification as per **B.2.3**	1 set			

7	Functional Design Specification after completion of Engineering. This comprises of the following but not limited to: - 1. Detailed GAD 2. CA Diagram 3. System Details 4. Interconnection diagram 5. Detailed installation diagram for offered skid. 6. Bill of Materials considering the clause **E.** 7. Material of conformity 8. Details of all the ancillary electrical items.		2 sets		Also to be included in the final technical document.
8.	Inspection & Test reports. Inspection Release Note			2 Sets	
9	Guarantee and Warranty Certificates				2 Sets
11	Material Test Certificate				2 Sets
12	QAP of all the items.		1 Set		
13	Approved Drawing				2 Sets
14	Maintenance and operating manuals.				2 Sets
15	Packing/shipping list with weights and dimensions.				2 Sets
11	FAT as in **clause G.6** & SAT procedure as in **clause I.4**		1 Set Each for approval from Owner.		
12	Final technical file				2 Sets

NOTES:

1. Durations are 2 weeks after Purchase Order date for approval.
2. Final technical file 3 copies to be handed over after completion of SAT and FAT.

Bidder shall provide test certificates for all tests indicated in clause E of this specification. In addition, bidder shall also provide the certificate of compliance to purchaser's specification as per clause EN 10204

D. SCOPE OF SUPPLY AND SERVICES

D.1 Detailed Engineering, Manufacture, Procurement of material and bought out components, assembly at shop, system engineering, integration, internal testing, FAT, Packing including the supply & delivery of material of material at sites, installation and commissioning, Site Acceptance Test, warranty, extended warranty and detailed documentation as per specifications for PLC System and its accessories mentioned in Tender document.

D.2 Scope Matrix:

Station: PS-10 Barauni

Sr. No	Equipment/Packages	Contractor's Scope of work	Free issue items/ OIL /Other Scopes
1.	PLC System	Supply & commissioning of PLC along with required accessories.	1. Space for AC /DC converter inside the cabinet installed at

		Supply of cables (Power, signals, control and communication) from PLC System to field instruments to junction box and junction box to cabinet including cable glands. Integration with PLC /RTU. Installation & Commissioning shall include all activities except cable laying from field jb to control room. Supervision of installation work. Modbus communication with existing RTU (Make Yokogawa)	control room at NDT. 2. UPS supply (230 V, 50Hz) up to the input of AC/DC converter. 3. Physical cable laying job from field JB to control room (only laying part). 4. Radio Link between two sites.

D.3 Bidder is requested to carefully examine and understand the specifications and seek clarification, if required, to ensure that they have understood the specifications. The authorized representative of the prospective bidders shall be able to visit the sites for initial assessment so that they can submit a detail offer.

D.4 DETAILED SCOPE OF SUPPLY AND SERVICES

Detailed scope of supply and services shall include but not be limited to the following:

1. Gathering of information for complete system design and detailed engineering to meet the overall system availability objectives.
2. Supply and installation of all items as required for PLC System for data sharing between IOCL to PS-10 Barauni;
3. The PLC system at PS-10 end will be connected to the PS-10 PLC system through hardwire. The Tank and valve status will be acquired from the station PLC (Yokogawa) using hardwire to the PLC IO modules.
4. The PLC system at IOCL Barauni end will be connected to the IOCL through hardwire.
5. Both the PLC system will be communicating through RF Antenna installed at PS-10 and IOCL Barauni end.
6. The Bidder to supply all the configuration software and the required license for easy maintenance of the systems.
7. The supply of power and instrument cable is under the scope of the bidder
8. The bidder to visit the sites to access the location and for detailed engineering of the PLC system.
9. Bidder's scope shall include any software up gradation (providing the software including installation, testing of software etc. all complete) till warranty period, free of charge.
10. Carrying out the Factory Acceptance Tests of the overall system, various subsystems, equipment as per the approved specifications and procedures in the presence of OIL's representatives.
11. Supply of the technical literature, drawings, software & licenses and documentation for the complete system.
12. Bidder shall Provide Commissioning and warranty spares. The bidder shall utilize their spares of all the equipment that may be required during commissioning and warranty period separately. Any other spares required within warranty period shall be in bidder's scope.
13. Quality assurance, Site Acceptance Testing, trial run & commissioning of the complete system at site to the complete satisfaction of OIL.
14. Bidder shall separately quote for Post Warranty Comprehensive Maintenance Contract for five (5) years. The quote shall be considered for bid evaluation.
15. **Proneness Requirements:** The system/sub-system/bought out items and services offered should have been supplied and working satisfactorily for a period of minimum one (01) year on the bid due date for similar application.
16. **Certificate for Logistic Supports:** Bidder shall provide back-up engineering, maintenance support and spare parts for a period of ten (10) years for the system, sub-system, bought out items and services

offered, being supplied. Logistic support certificates shall be furnished by bidder for providing necessary support services as per format attached with the bid document. Certificates from sub-bidders (if any) for items shall be furnished.

CERTIFICATE FOR LOGISTICS SUPPORT

(To be signed by Manufacturer's corporate level signatory on company's letterhead)

I, on behalf of M/s_____ confirm that the _____Model No._____ for quoted by M/s_____ for M/s OIL shall continue to be supported by us for a period of minimum 10 years. The quoted system shall not be withdrawn from Indian market as a matter of our corporate policy.

I further confirm that in case of placement of order by OIL on us, we shall continue to support OIL in providing back-up engineering, maintenance support and spare part support for a period of 10 years from the date of placement of order.

SIGNATURE WITH SEAL

AUTHOURIZED, SENIORMANAGEMENT LEVEL SIGNATORY.

E. BILL OF QUANTITY (BOQ) (Not limited to):

i	**PLC System**				
1	PLC CPU		2	Nos.	
2	DIGITAL INPUT MODULE (CAPABLE OF HANDLING 32 INPUTS)		FOR BOTH ENDS	Nos.	
3	DIGITAL OUTPUT MODULE (CAPABLE OF HANDLING 16 OUTPUTS)		FOR BOTH ENDS	Nos.	
4	ANALOG INPUT MODULE (CAPABLE OF HANDLING 16 INPUTS)		FOR BOTH ENDS	Nos.	
5	ANALOG OUTPUT MODULE (CAPABLE OF HANDLING 8 OUTPUTS)		FOR BOTH ENDS	Nos.	
6	SPIKE BOARD		2	No.	
7	SWITCH (8 PORT) UNMANAGED		2	No.	
8	6U Rack		2	No.	
10	DC POWER SUPPLY		2	No.	
11	HMI		1	No	
12	SOFTWARE (DIAGNOSTIC, CONFIGURATION, GRAPHICAL INTERFACE) AND LICENSE		As per requirement		
13	Hooter		2	No.s	
ii	**Training at Bidder's Site**		1	AU	
Iii	**Training at On- Site**		1	AU	
iii	**3 Year Post Warranty AnnualMaintenance Contract (AMC)**				
1	1st Year AMC		1	Year	
2	2nd Year AMC		1	Year	
3	3rd Year AMC		1	Year	

NOTE: Number of Analog and Digital I/O modules should be as per the following required IO points:

List of I/O points for PS-10
Analog Inputs: 16
Digital Inputs: 32
Digital Outputs: 16
Analog Inputs: 8
List of I/O points for IOCL Barauni
Analog Inputs: 16
Digital Inputs: 32
Digital Outputs: 16
Analog Inputs: 8

F. DATASHEET OF PLC SYSTEM AND ALL OTHER ACCESSORIES

System Requirements for the PLC System

1. Modbus TCP/IP
2. Programming language IEC 61131- 3
3. CPU hardware as per IEC
4. Memory capable for storing 1000 events. Extendable Memory Support.
5. The systems shall be capable for extending hardware modules in future.
6. Software License for Programming, Engineering, Graphics Editing and Diagnostic Tools.
7. The HMI should compatible to Windows 10 (OS) with support for (Chrome, Edge and Firefox). The pictures and other requirements shall be provided by the PLC CPU.

REFER TO APPENDIX 1.1 and APPENDIX 1.2 in order to understand the system and network diagram.

F.1. PLC CPU:

SL NO.	Specification
1	Configurable: Programming in acc. with IEC 61131-3 or OEM specific programming platform for which all kind of supporting soft wares to be provided by the bidder.
2	Temperature of Operation: -25 °C ... 55 °C
3	Protocols: Support Modbus/TCP and PROFINET Ethernet-based protocols
4	SD Card : 500 Mbyte (min) Shall be included
5	Inbuilt Digital Input and Digital Output: Shall be present With 24 V as logic '1' And 0V as logic '0'
6	Work Memory : Minimum 125 Kbyte
7	Integrated Load Memory: 4 Mbyte
8	Clock : Hardwire Clock (Real-time) with maximum deviation of 60 s / months at 25 degC
9	Interface Type : RJ 45
10	Transmission Rate: 100 Mbps
11	Support Services : Web server and OPC server
12	Supply Voltage: 24 V DC -15 % / +20 % 0.5 A DC (observe derating)
13	Supply Voltage Range: 20 V DC ... 30 V DC (including all tolerances, including ripple)
15	Current Draw: max. 8 A DC 6 mA (without sensors)
16	Degree of Protection IP20
17	Potential Separation of digital outputs
18	Mounting Type : DIN rail mounting
19	Conformance with EMC directives: Valid supporting documents to be provided.
20	Connection Data: Spring-cage connection (Connecting conductor cross section 1.5 sq.mm (flexible), 2.5 sq.mm (flexible)
21	Approvals : IECEx/ATEX/PESO (valid supporting documents to be provided)
22	Supports Modbus TCP/IP Communication with existing RTU (Make Yokogawa).

F.2. POWER SUPPLY UNIT

SL NO.	Specification
1	Input Voltage Range - 90-250 VAC

2	Input current consumption: max 0.9 amps at 230VAC
3	Input frequency range: 50 Hz +/- 5%
4	Input fuse shall be present for circuit protection
5	Nominal Output Voltage - 24V DC± 1%
6	Output Current rating - 5 Amps(DC)
7	Residual output Ripple shall be less than 50 mVpp
8	Adjustable output Voltage
9	Buffer Time Facility
10	Fast Tripping Facility
11	Operating Temperature : 0ºC to + 70ºC
12	Diagnostics: Indicator LED, 24 VDC signal output and Potential free contacts for monitoring the health of Power Supply units as well as suitable for Diagnostic annunciation.
13	Parallel Connection - Possible without any external component for redundancy application and increasing performance.
14	Mounting: - DIN Rail Mounted for Easy operating & Maintenance.
15	Insulation Voltage Input/ Output :-2kV minimum
16	Shall be EN / VDE / DIN VDE / UL Listed / CE & EMC Compliant
17	Degree of protection: IP20 or better
18	The electronic unit and sensors should have inbuilt protection against EMI / RFI and any external surge voltages and currents due to lightning strikes.

F.3 ANALOG INPUT MODULE

SL NO.	Specification
1	Supply Voltage 24 V DC (via voltage jumper when connected to CPU directly or via bus coupler)
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)
3	Temperature of Operation: -25 °C ... 55 °C
4	Current draw: max. 200 mA
5	Mounting Type : DIN rail
6	No. of Channels : 8 (minimum inputs)
7	Input Current Signal: 4 mA ... 20 mA In case of different range bidder to provide compatible converter to read 4-20 mA analog input signals.
8	Measured Value Resolution : 16 bits
9	Connection Details: Spring-cage connection
10	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)
11	Configurable and compatible to the quoted CPU of the PLC system

F.4 ANALOG OUTPUT MODULE

SL NO.	Specification
1	Supply Voltage 24 V DC (via voltage jumper when connected to CPU directly or via bus coupler)
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)
3	Temperature of Operation: -25 °C ... 55 °C
4	Current draw: max. 100 mA
5	Mounting Type : DIN rail
6	No. of Channels : 8 (minimum outputs)
7	Output Current Signal: 4 mA ... 20 mA In case of different range bidder to provide compatible converter to generate 4-20 mA analog signal output

8	Measured Value Resolution : 16 bits
9	Connection Details: Spring-cage connection
10	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)
11	Configurable and compatible to the quoted CPU of the PLC system

F.5 DIGITAL INPUT MODULE

SL NO.	Specification
1	Supply Voltage 24 V DC (via voltage jumper when connected to CPU directly or via bus coupler)
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)
3	Temperature of Operation: -25 °C ... 55 °C
4	Current draw: max. 10 mA
5	Mounting Type : DIN rail
6	No. of Channels : 8 (minimum inputs)
7	Input Voltage: 24 V DC Input voltage “0" signal for 0 V Input voltage "1" signal for 24 VDC
8	Nominal Current Input: 5 mA
9	Connection Details: Spring-cage connection
10	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)
11	Configurable and compatible to the quoted CPU of the PLC system

F.6 DIGITAL OUTPUT MODULE: This is required as future provision

SL NO.	Specification
1	Supply Voltage 24 V DC (via voltage jumper when connected to CPU directly or via bus coupler)
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)
3	Temperature of Operation: -25 °C ... 55 °C
4	Current draw: max. 10 mA
5	Mounting Type : DIN rail
6	No. of Channels : 8 (minimum Outputs)
7	Output Voltage: 24 V DC Output voltage “0" signal for 0 V Output voltage "1" signal for 24 VDC
8	Maximum Output Current : less than 5A
9	Nominal Output Voltage: 24 VDC
10	Connection Details: Spring-cage connection
11	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)
12	Configurable and compatible to the quoted CPU of the PLC system

F.7 HMI

SL NO.	Specification
1	Power Supply: 24 V DC ±15 %
2	Typical current consumption: 0.5A
3	Dimension : 10 inch display
4	Mounting Type: Front Installation
5	Interfaces: USB 2.0 Type A, USB 2.0 Type B and Ethernet (10/100 Mbps) RJ45
6	Temperature (Operation): 0 °C ... 50 °C
7	Display type: 10” TFT
8	Screen resolution: 800 x 480 Pixel(s) or better
9	Touch Screen: Available
10	Display lighting type: LED / LCD

11	Configurable and compatible to the quoted CPU of the PLC system
12	Bidder to provide all the requisite graphical configuration tools and software along with license in order to configure the HMI with the PLC system.
13	Capable of Storing 1000 events
14	Mounting Type : Panel

F.8 8 Port Switch Un-Managed

SL No	Parameter	Technical Specifications
1	Make	Vendor has to clearly mention
2	Model	Vendor has to clearly mention
3	Interface	8 x 10/100/1000BASE-T ports PoE: ports 1 to 4
4	Standard	•IEEE 802.3 10BASE-T Ethernet • IEEE 802.3u 100BASE-TX Fast Ethernet • IEEE 802.3ab 1000BASE-T Gigabit Ethernet • IEEE 802.3az Energy Efficient Ethernet (EEE) • ANSI/IEEE 802.3 NWay auto-negotiation • IEEE 802.3x Flow Control
5	PoE Standards	IEEEE 802.3af IEEEE 802.3at 68 W (30 W max per PoE port)
6	Safety	• cUL • BSMI • LVD
7	EMI/EMC	• CE Class B • BSMI • FCC Class B • VCCI Class B • RCM • KCC
8	Power Consumption	• 80.2 W maximum (PoE on) • 0.26 W maximum (PoE off)

F.9 SOFTWARE

SL NO.	Specification
1	Configuration, Diagnostic, Graphical and Interfacing software should be provided in order to configure the PLC system and its accessories
2	License: Requisite license key (where ever applicable) to be provided so that easy maintenance of the PLC system can be done. Also any provision can be carried out in future in term of increasing the number of modules.
3	All the software should be compatible to Windows 10 O.S.

F.10 6U Rack Cabinet

S/N	Specifications and Requirement
1	Make: Vendor has to clearly mention
2	Model: Vendor has to clearly mention
3	Racks shall be manufactured out of steel sheet punched, formed, welded and Powder coated

4	Rack should be from ISO 9001:2008 Certified Company & UL Listed
5	Standard for Racks configuration will be welded frame and vented
6	Rack should have Front Toughened Glass Door with lock & Key
7	Rack should be 650 MM in Height, 600 MM Width, 500MM Depth
8	Rack should Conforms to DIN 41494 or Equivalent EIA /ISO /
9	Rack should have Adjustable mounting depth,
10	Rack 4 No Adjustable, verticals with Punched 10mm Square Hole and Universal 12.7mm-15.875mm-15.875mm alternating hole pattern offers greater mounting flexibility, maximizes usable
11	Powder coated finish with seven Tank pre-treatment process
12	Rack should have Proper Grounding & Bonding
13	Rack should have one cantilever self
14	Rack should have Fan module Mount Provision on top Cover
15	1Ph, 230V, 8A, 2U standard rack mount power distribution unit with 6 X Indian Round Pin 5A, Inlet Plug type 6A Indian Round Pin,
16	Rack should have 1 No Horizontal Cable Organizer with Plastic
17	Rack should have 1 No Cantilever shelf
18	Rack should have minimum 2 Nos of FANs
19	Rack should have provision for cable entry Exit from Both top &
20	Rack should have 1 Packet of Mounting hardware

Bidder to supply Two number of Hooter along with the system which can be driven by the Digital Output module.

Any other modules which is not mentioned here, but may be required for the successful installation and commissioning of the PLC system shall also be included and provided by the Bidder.

G. INSPECTION, TRAINING AND TESTING

G.1. TRAINING

Training shall have to be provided by the bidder to OIL personnel as per following details:

1. **Training at site:**Owner's personnel shall be fully associated during Engineering, Installation, Testing and commissioning activities and bidder shall impart on-the-job training to OIL personnel on all aspects of System Engineering, Equipment operation and functional details, theory of operation of equipment, trouble shooting and familiarization with the equipment at card and component level, operation of equipment and system including testing of equipment/subassembly, preventive breakdown, trouble shooting and normal maintenance activities. The training imparted shall cover all aspects of equipment incorporated in the system.
2. **Training at OEM's facility**: Bidder shall train personnel of OIL in all aspect of PLC system at **OEM's facility** at a time to be mutually agreed upon with the successful bidder. Number of owner's personnel shall be 03 (three) engineers in one batch for training to be conducted. Bidder shall mention the number of days and place of training for each batch. Bidder shall quote the training charges. Charges like transport, accommodation etc shall be in the scope of OIL.
3. Bidder shall provide comprehensive documentation, course material, manuals, literature etc as required for proper training of personnel at his own cost. Consolidated and comprehensive documentation shall be available to each participant. After the completion of course, all such materials shall become the property of the owner. Bidder shall update the course material of manuals in case there are changes owing to revisions/modifications in equipment/system specifications.
4. Bidder shall send complete training program for approval of Oil India Ltd including details of each course, subject matter, etc Thirty (30) days prior to start of training.

G.2.TEST CATEGORIES, INSTALLATION, TESTING & COMMISSIONING

G.2.1 TEST CATEGORIES

G.2.1.1. The following tests (in the same sequence) shall be conducted for acceptance of the equipment and the system before final acceptance of the system:

G.2.1.2. Factory Acceptance Testing (FAT)

G.2.1.3. Pre-commissioning test (after installation) for total integrated system

G.2.1.4. Site Acceptance testing (SAT)

G.3. TEST PLAN

Bidder shall submit to OIL `Test Plans' well in advance of commencement of actual testing in each of the above mentioned test categories. The plans shall include:

1.1 System, Equipment functional and performance description (in short) and Tests to be conducted and purpose of test.

1.2 Test procedures (including time schedule for the tests) and identification of test inputs details and desired test results.

G.4. TEST REPORT

The observations and test results obtained during various tests conducted shall be compiled and documented to produce Test Reports by Bidder. The Test Reports shall be given for each equipment/item and system as a whole. The report shall contain the following information to a minimum:

1.3 Test results

1.4 Comparison of test results with anticipated (as per specifications) test result as given in test plans and reasons for deviations if any.

1.5 The data furnished shall prove convincingly that:

1.5.1 The system meets the guaranteed performance objectives.

1.5.2 Mechanical and Electrical limits were not exceeded.

1.5.3 Failure profiles of the equipment during the tests are well within the specified limits.

G.5. FAILURE OF COMPONENTS

- Till the system is accepted by OIL, a log of each and every failure of components shall be maintained. It shall give the date and time of failure, description of failed component, circuit, module, component designation, effect of failure of component on the system/equipment,

cause of failure, date and time of repair, mean time to repair etc. Repair/modification done at any point of time at one site shall be carried out by bidder at all the sites. Detailed documentation for the same shall be submitted to OIL for future reference.

- If the malfunctions and/or failures of a unit/module/sub-system/ equipment repeat during a test, the test shall be terminated and Bidder shall replace the necessary component or module to correct the deficiency. Thereafter, the tests shall commence all over again from the start.
- If after the replacement the equipment still fails to meet the specifications, Bidder shall replace the equipment with a new one and tests shall begin all over again. If a unit/subsystem/module has failed during the test, the test shall be suspended and restarted all over again only after the Bidder has placed the Equipment back into acceptable operation. OIL's approval shall be obtained for any allowable logistics time required to replace the failed component/unit/module/sub-system.

G.6. FACTORY ACCEPTANCE TEST

1. Factory acceptance tests shall be carried out after review and approval of FAT procedures / documents / Engineering drawings, etc as per bid requirements. FAT procedures /documents / Engineering drawings etc. shall be submitted to OIL at least 30 (thirty) days prior to FAT date.
2. Bidder shall invite OIL, at least 30 days in advance, of the date at which system shall be ready for Inspection and Testing.
3. Two nos. of OIL engineers shall visit OEM's site for the inspection.
4. Factory Acceptance Test shall be conducted in the presence of the OIL personnel.
5. The FAT shall include but not be limited to System Integration Testing. Functional and performance test should be conducted for the complete system including the equipment supplied by sub-bidders, simulating the complete network. All equipment shall be connected using the same cables (interfaces/components) as will be used during final installation so that the system can be tested in its final configuration. This testing shall be conducted at the manufacturing facility of the main equipment. All instruments and test gadgets shall be made available by the supplier during this inspection.
6. The equipment, system and sub-systems shall be cleared for dispatch only after it is found to have met with the various technical specifications and requirements. After successful completion of FAT, OIL shall approve material for dispatch and factory acceptance certificates shall be issued. The factory tests shall include but not be limited to:
   a) Mechanical checks to the equipment for dimensions, inner and outer supports, finishing, welds, hinges, terminal boards, connectors, cables, painting etc.
   b) Electrical checks including internal wiring, external connections to other equipment etc.
   c) Check for assuring compliance with standards mentioned in the specifications.
   d) Individual check on each/module/sub-assembly in accordance with the modes and diagnostics programs of the bidder.
   e) Checks on power consumption and heat dissipation characteristics of equipment.
   f) Environmental testing
   g) Functional tests
   h) Any other test not included in FAT document but relevant to the project as desired by OIL at the time of factory acceptance testing.

H. INSTALLATION AND COMMISSIONING

H .1 INSTALLATION

a. The whole project is required to be completed on Turn-Key basis. Accordingly, supplier is understood to have assessed and quoted for all the items required for successful completion of the Project. It will be the responsibility of the bidder to provide free of charge such items, not quoted in the bid, but otherwise required to have been provided at the time of installation for completion and successful commissioning of the project.
b. The systems shall be installed & commissioned in PS-10 Barauni, Bihar of Pipeline Department of Oil India Limited.
c. After successful completion of Factory Acceptance Testing, equipment shall be sent to site for installation. Equipment without factory acceptance certificates shall not be acceptable at site.
d. Prior to installation, all equipment shall be checked for completeness as per the specifications of equipment required for a particular station. Installation shall be carried out in accordance with the installation manuals and approved installation drawings in the best workmanship.
e. Bidder shall indicate the number of teams and the list of equipment for each team to be deployed for installation of the total system in order to complete the work within the stipulated time frame.
f. Bidder shall engage installation experts to take up the job of installation of all equipment at various stations.
g. Interconnection of various equipment including various PLC accessories, electrical barriers, lightning protectors shall be done as per scope of work.
h. Bidder shall bring all installation tools, accessories, special tools, test gears, spares parts etc at his own cost as required for the successful completion of the job. A list of all such items, equipment wise shall be submitted to OIL for review.
i. If during installation and commissioning any repairs are undertaken, the maintenance spares supplied with the equipment shall not be used for the repair. Bidder shall arrange its own spare parts for such activities till such time the system has been finally accepted by OIL. A detailed report & log of all such repairs shall be made available by the bidder to OIL and shall include cause of faults and repair details, within 2 weeks of fault occurrence.
j. A detailed time schedule for these activities shall be submitted by Bidder to OIL to enable their representatives to be associated with the job.
k. Bidder shall include all installation materials required for proper installation of the equipment. These shall include but not be limited to, all connectors, inter-bay and inter equipment cables, power supply cables and connectors, power distribution boxes, anchoring bolts, nuts, screws, junction boxes etc.
l. The installation of equipment shall be done as to present neat and clean appearance in accordance with approved installation document. All inter bay, power supply and other cables shall be routed through wall mounted cable trays. No cable shall be visible. All through wall openings, trenches, etc. shall be properly sealed to prevent the entry of rodents, insects and foreign materials.

I. SITE ACCEPTANCE TEST (SAT) AND SPARES

I.1. MANDATORY SPARES

1. Bidder shall supply the mandatory spares as listed in BOM (Spares). Bidder shall also bid for any other item required.

2. The major BOM of the system including spares shall be freezed with bidder. Further requirement of hardware or software required if any shall be the scope of bidder without any price implication.

I.2. COMMISSIONING AND WARRANTY SPARES AND CONSUMABLES

1. The Bidder shall provide all the commissioning and warranty spares and consumables, if required, as part of Lump sum quote. It is bidder's responsibility to ensure the adequacy & completeness of the commissioning and warranty spares & consumables and supply the spares & consumables as required during the commissioning and warranty period.
2. The spares & consumables shall be arranged by the bidder to cater to the requirement during installation, pre-commissioning, site acceptance testing, trial-run, and commissioning and warranty. It shall be obligatory on the part of bidder to modify/ upgrade, rectify any hardware problems in the system or replace any hardware component in the supplied equipments during installation and commissioning and operation & maintenance of the system during warranty. The spares and consumables shall be readily available with the bidder and the bidder shall build-up the cost for spares & consumables required for complete system as part of initial bid itself and no separate list of these spares is required to be provided as part of their proposal.
3. The consumables during installation & commissioning and warranty shall be adequate and complete.
4. These spares are different from mandatory spares and bidder shall not use mandatory spares as commissioning and warranty spares.

I.3 PRE-COMMISSIONING

1. On completion of installation of equipment, the correctness and completeness of the installation as per Manufacturer's manual and approved installation documents shall be checked by the bidder on his own.
2. A list of Pre-commissioning tests and activities shall be prepared by bidder and the tests shall be carried out by the bidder on his own. After the tests have been conducted to the Bidder's own satisfaction, the bidder shall provide the test results for review by OIL and then offer the system for Site Acceptance Testing.
3. During pre-commissioning, if any fault occurs to any equipment or system, bidder shall identify the same and provide report/history of all faults to OIL.
4. During installation and pre-commissioning of the system, bidder shall ensure enough number of commissioning spares so that the installation is not held up because of non-availability of commissioning spares.

I.4 SITE ACCEPTANCE TESTING (SAT)

On completion of Pre-commissioning, Site Acceptance Testing shall be conducted on the system as per the approved SAT procedures and its constituents by the bidder under the presence of OIL personnel. SAT procedure shall be submitted to OIL for approval minimum ten (10) days prior to SAT. The tests shall include, but not be limited to the following:

1. Checks for proper installation as per the approved installation procedure for each equipment/item and system as a whole.
2. Guaranteed performance specifications of individual equipment/item
3. Self-diagnostics test on individual equipment
4. System tests END TO END for the system, all complete.
5. The complete record of site acceptance tests results shall be maintained by the Bidder. The records shall be maintained in a logical form and shall contain all the relevant information and provided to OIL by the bidder in hardcopy. The test reports shall be signed by the testing engineer and the engineer witnessing the tests. A field test report to be produced by the bidder with a standard format. The format to be cleared by OIL before field acceptance starts.

I.5 FINAL ACCEPTANCE OF THE SYSTEM

a. Upon successful completion of the `TRIAL RUN', any shortfalls when compared to the contract shall be made good by the Bidder. After this, OIL shall notify the Bidder in writing within reasonable time, pre-warrantee acceptance of the system.

b. Nothing herein provided above, inclusive of the `Pre-Warrantee Acceptance Certificate; shall absolve bidder of his full liabilities under the contract inclusive of and relative to the system performance and material Warranty.

J. SHIPPING

1. All equipment shall be individually packed in suitable containers/crates designed to avoid damage to the equipment during transit and storage in accordance with best commercial practice and with the requirements of applicable specifications. The materials used for packaging, wrapping, sealing, moisture resistant barriers, corrosion preventers, etc shall be of recognized brands and shall conform to best standards in the areas in which the articles are packaged. The packing shall protect the equipment from impact, vibration, rough handling, rain, dust, dampness, insects, rodents, etc. Each container/crate shall be subjected to impact, vibration and other mechanical tests. Each container shall be clearly marked with the following information at prominent places (provided as sample):

OWNER: M/s OIL
PROJECT: PLC System
DESCRIPTION:
SERIAL NO. OF EQUIPMENT:
ADDRESS (Location): PS-10 OIL INDIA LIMITED, BARAUNI, BIHAR

Location wise distribution list shall be provided by OIL to the successful bidder.

2. All equipment shall be tested for damage after their receipt at respective sites by bidder. If any equipment, part, subsystem, component, accessory is found to be damaged during the transit, the same shall be replaced by the Bidder, free of all costs to OIL. The bidder shall replace such item as shall be found damaged by bidder or as indicated to bidder, within 30 days of receipt of intimation.

K. QUALITY ASSURANCE

Contractor shall be fully responsible for their Quality Assurance and associated Quality Control process. Unless otherwise agreed by the PURCHASER, the Contractor's quality system shall meet the requirements of ISO 9001:2015 Quality System and shall be accredited by a recognized authority

Contractor is required to establish an acceptable Quality Plan, inclusive of quality manual and procedures that cover all activities of the order, in order to comply with the Quality System requirements.
Contractor shall be responsible for arranging/liaising with the Third Party Inspection Agency and other agencies for design appraisal, inspection, survey and certification requirements as required by the specification/requisition.
When required, waiver and acceptance of non-conformances shall be subjected to Third Party Inspection. Agency approval before COMPANY endorsement. These concession records shall be included in the Manufacturer's Final Documentation.

L. WARRANTY AND POST WARRANTY AMC

L.1. WARRANTY

Warranty period shall be of 18 months from the date of supply or 12 months from the date of successful completion of SAT whichever is earlier.

L.2. SCOPE OF WORK DURING WARRANTY PERIOD

1. Any software, firmware supplied under this tender shall be covered in the Scope of Preventive and Breakdown maintenance during warranty period. Bidder to provide support in case of any upgradation of software and firmware related to the supplied PLC system.
2. Routine check and maintenance of the accessories pertaining to the PLC system shall be carried out.
3. Competent maintenance Engineer of Bidder shall carry the required tools, programming diagnostic terminal (PDT), equipment, software. During the visits to PS-10 as per requirement. Replacement of any faulty modules is under the scope of the bidder during the warranty period.
4. Mandatory periodical preventive maintenance one visit per year. Periodical preventive maintenance works shall be carried out once in a year accordance to a planned schedule drawn in consultation with M/s OIL authorities as per their convenience. During the periodical preventive maintenance, competent/experienced maintenance engineer shall carry out the following jobs:
   - Verification of electrical connections for their tightness, verification of earthing connections for their tightness in the equipment including verification of voltages for healthiness at various equipment end, carrying out general housekeeping/cleaning of the panels/equipment, checking all the displays, checking all the fuses, checking healthiness of all the contactors/relays, checking the printed circuit board for any discolouration /abnormal smell.
   - Checking of PLC system and its modules for their functionalities.
   - Updating of firmware / software as per requirements.

5. Breakdown maintenance (As and when necessary):
   - For any breakdown of PLC system at any site Bidder has to send competent maintenance engineer to attend breakdown maintenance calls a within 48 hrs from the time it is reported. The maintenance engineer shall visit the site along with necessary items to rectify the fault and make the system operational.
   - In case of replacement of the any faulty module(s), bidder to provide the replacement spares for the faulty modules.
6. All the services or replacement of modules shall be free of cost; no extra payment shall be made separately for providing the warranty services during the warranty period.

L.3. POSY WARRANTY ANNUAL MAINTENANCE CONTRACT (PWAMC):

- The Bidder shall also quote separately for post warranty maintenance of the total system year wise. The PWAMC shall commence after completion of warranty period. The bidder to quote for man-days as per the following format:

SL NO	LINE ITEM DESCRIPTION	UNIT PRICE QUOTATION PER MAN-DAYS*		
		FIRST YEAR	SECOND YEAR	THIRD YEAR
1	PREVENTATIVE MAINTENANCE AT PS-10 BARAUNI			
2	BREAKDOWN MAINTENANCE AT PS-10 BARAUNI			

*Man-days rate shall be inclusive of travelling and lodging of the service engineer.

- The PWAMC quote will be used along with the base quote during the bid evaluation.
- The Bidder to quote the list of mandatory spares separately.

L.4 SCOPE OF WORK DURING POST WARRANTY AMC

1. Any upgradation of software, firmware supplied under this tender shall be covered in the Scope of Preventive and Breakdown maintenance during the Post Warranty annual maintenance contract (AMC) period.
2. Routine check and maintenance of the accessories pertaining to the PLC system shall be carried out under the Post Warranty annual maintenance contract (AMC) period.

3. Competent maintenance Engineer of Bidder shall carry the required tools, programming diagnostic terminal (PDT), equipment, software. During the visits to PS-10 as per requirement. Spares shall be provided by the client i.e. Oil India Limited and the list of spares required shall be intimated to the client by the bidder.
4. Mandatory periodical preventive maintenance one visit per year:
   Periodical preventive maintenance works shall be carried out once in a year accordance to a planned schedule drawn in consultation with M/s OIL authorities as per their convenience. During the periodical preventive maintenance, competent/experienced maintenance engineer shall carry out the following jobs:
   - Verification of electrical connections for their tightness, verification of earthing connections for their tightness in the equipment including verification of voltages for healthiness at various equipment end, carrying out general housekeeping/cleaning of the panels/equipment, checking all the displays, checking all the fuses, checking healthiness of all the contactors/relays, checking the printed circuit board for any discolouration /abnormal smell.
   - Checking of mechanical parts of PLC systems and modules for their functionalities.
   - Updating of firmware / software as per requirements.

5. Breakdown maintenance (As and when necessary):

   - For any breakdown of PLC system at any site Bidder has to send competent maintenance engineer to attend breakdown maintenance calls a within 48 hrs from the time it is reported. The maintenance engineer shall visit the site along with necessary items to rectify the fault and make the system operational.
   - The vendor shall recommend spares required to be kept for maintenance of the system for procurement by M/S OIL. In case of replacement of the any faulty module(s), M/S Oil shall supply the same. All the mandatory spares shall be procured and maintained by M/S Oil.
   - Bidder jointly with M/s OIL shall prepare a specific checklist for the jobs to be completed during preventive maintenance and Bidder's engineer shall obtain signature of the respective users on same check list after completing the Preventive Maintenance. Preventive maintenance report shall also be submitted in the approved format of M/s OIL along with the above mentioned checklist of Bidder.

6. Payment Term:

Payment shall be made on actual basis. Separate invoices to be submitted in case of any visit pertaining to breakdown maintenance.

M. DELIVERY SCHEDULE

1. **Supply of all items: Within TWELVE (12) weeks from the date of issue of firm purchase order.**
2. **Installation, configuration, Integration testing and commissioning of entire project: Within TWENTY (20) weeks from the date of issue of handing over the site.**
3. **Delivery shall be made at Pump Station-10 as per the following:**
   a) **STATION INCHARGE, PS-10**
      OIL INIDA LIMITED
      P.O. BARAUNI OIL REFINERY
      DIST BEGUSARAI, BIHAR
      PIN-851114 PH- 06243-242014/245792

N. BEC/BRC

BEC/BRC (TECHNICAL):

N.1 BID EVALUATION CRITERIA (BEC)

1. Bidder's Eligibility:

1.1. The bidder shall be an Original Equipment Manufacturer (OEM) of the tendered item(s)

OR

1.2. An authorized agent / dealer / distributor / supply house of an OEM of the tendered item(s) having valid authorization letter / dealership certificate with warranty/ guarantee back up from the principal (OEM). Copy of authorization letter / dealership certificate with warranty/ guarantee back up from the principal (OEM) must be submitted along with the technical bid and should have experience of supplying the tendered item(s).

a. Bidder's Experience:

b. a) Bidder must have experience of supplying and installing PLC systems for reputed PSUs and Oil and Gas Industries in India, in previous 5 (five) years from the bid closing date of the tender.

b) The bidder must have experience of successfully executing at least 1(one) order for supply and installation of atleast one PLC system for PSUs or reputed Oil and Gas Industries in India, in preceding 5(five) years from original bid closing date of the tender.

Documentary evidence needs to be submitted in order to substantiate above two clauses, clause 2.1(a) and 2.1(b).

c) The bidder shall the submit following documentary evidence in support of his previous supply experience as applicable under clause 2.1 a) and 2.1 b) above-

(i) Copy) of Purchase Order(s) /Contract document(s),

And

(ii) Any one or combination of the following documents that confirms the successful execution of the purchase order(s) / contract(s) -

- Completion report / performance certificate from the clients,

- Bill of landing,

- Delivery challan / invoice etc.

- Any other documentary evidence that can substantiate the successful execution of each of the Purchase Order(s) / contract(s) cited above.

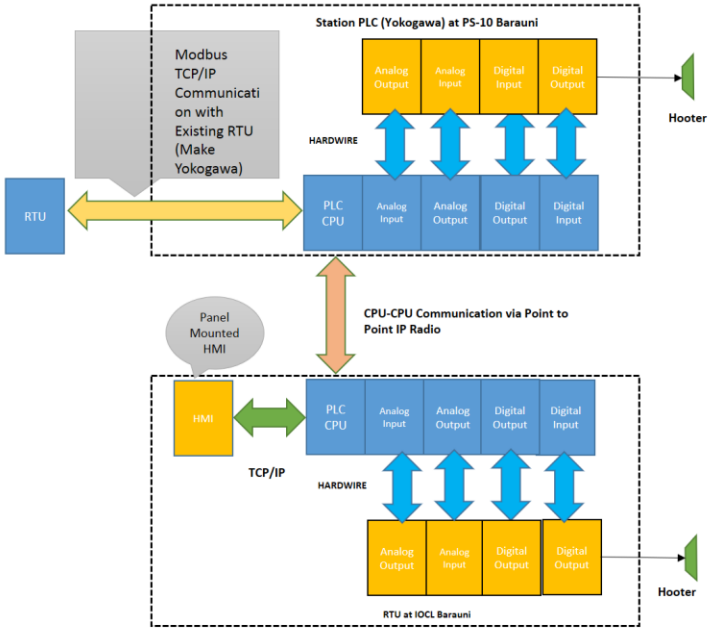
BID REJECTION CRITERIA(BRC):

The bidder should categorically confirm in the technical bid that the tendered items will be supplied within the delivery period, if mentioned in the tender, without which the bid will be rejected."

BEC/BRC (COMMERCIAL):
As per OIL’s standard contract & purchase manual.

APPENDIX 1.

1.1 SYSTEM ARCHITECTURE:



NOTE: The number of Analog and Digital IO modules vary as per the IO points requirements for both ends.

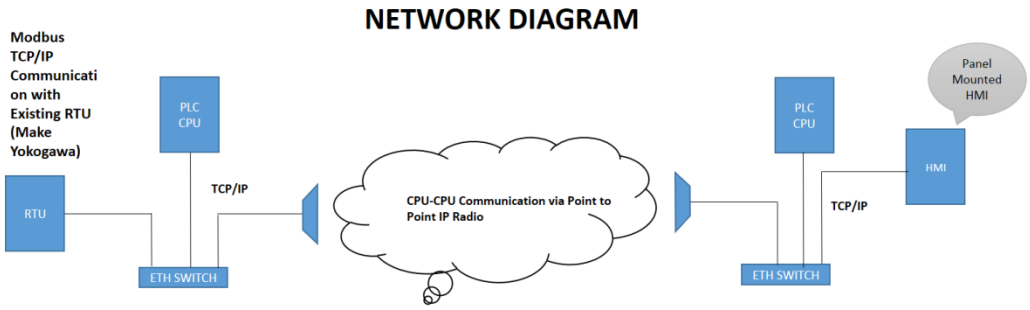
List of I/O points for PS-10

Analog Inputs: 16
Digital Inputs: 32
Digital Outputs: 16
Analog Inputs: 8

List of I/O points for IOCL Barauni

Analog Inputs: 16
Digital Inputs: 32
Digital Outputs: 16
Analog Inputs: 8

1.2 NETWORK DIAGRAM



APPENDIX 2. TECHNICAL CHECKLIST

2.1. PLC CPU:

SL NO.	Specification	**Bidder to specify/confirm**
1	Configurable: Programming in acc. with IEC 61131-3 or OEM specific programming platform for which all kind of supporting soft wares to be provided by the bidder.	
2	Temperature of Operation: -25 °C ... 55 °C	
3	Protocols: Support Modbus/TCP and PROFINET Ethernet-based protocols	
4	SD Card : 500 Mbyte (min) Shall be included	
5	Inbuilt Digital Input and Digital Output: Shall be present With 24 V as logic '1' And 0V as logic '0'	
6	Work Memory : Minimum 125 Kbyte	
7	Integrated Load Memory: 4 Mbyte	
8	Clock : Hardwire Clock (Real-time) with maximum deviation of 60 s / months at 25 degC	
9	Interface Type : RJ 45	
10	Transmission Rate: 100 Mbps	
11	Support Services : Web server and OPC server	
12	Supply Voltage: 24 V DC -15 % / +20 % 0.5 A DC (observe derating)	
13	Supply Voltage Range: 20 V DC ... 30 V DC (including all tolerances, including ripple)	
15	Current Draw: max. 8 A DC 6 mA (without sensors)	
16	Degree of Protection IP20	
17	Potential Separation of digital outputs	
18	Mounting Type : DIN rail mounting	
19	Conformance with EMC directives: Valid supporting documents to be provided.	
20	Connection Data: Spring-cage connection (Connecting conductor cross section 1.5 sq.mm (flexible), 2.5 sq.mm (flexible)	
21	Approvals : IECEx/ATEX/PESO (valid supporting documents to be provided)	
22	Supports Modbus TCP/IP Communication with existing RTU (Make Yokogawa).	
23	The systems shall be capable for extending hardware modules in future.	
24	The system shall be modular in nature.	
25	CPU hardware as per IEC	

2.2. POWER SUPPLY UNIT

SL NO.	Specification	**Bidder to specify/confirm**
1	Input Voltage Range - 90-250 VAC	
2	Input current consumption: max 0.9 amps at 230VAC	
3	Input frequency range: 50 Hz +/- 5%	
4	Input fuse shall be present for circuit protection	
5	Nominal Output Voltage - 24V DC± 1%	
6	Output Current rating - 5 Amps(DC)	
7	Residual output Ripple shall be less than 50 mVpp	
8	Adjustable output Voltage	
9	Buffer Time Facility	
10	Fast Tripping Facility	
11	Operating Temperature : 0ºC to + 70ºC	
12	Diagnostics: Indicator LED, 24 VDC signal output and Potential free contacts for monitoring the health of Power Supply units as well as suitable for Diagnostic annunciation.	
13	Parallel Connection - Possible without any external component for redundancy application and increasing performance.	
14	Mounting: - DIN Rail Mounted for Easy operating & Maintenance.	
15	Insulation Voltage Input/ Output :-2kV minimum	
16	Shall be EN / VDE / DIN VDE / UL Listed / CE & EMC Compliant	
17	Degree of protection: IP20 or better	
18	The electronic unit and sensors should have inbuilt protection against EMI / RFI and any external surge voltages and currents due to lightning strikes.	

2.3 ANALOG INPUT MODULE

SL NO.	Specification	**Bidder to specify/confirm**
1	Supply Voltage 24 V DC (via voltage jumper when connected to CPU directly or via bus coupler)	
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)	
3	Temperature of Operation: -25 °C ... 55 °C	
4	Current draw: max. 200 mA	
5	Mounting Type : DIN rail	
6	No. of Channels : 8 (minimum inputs)	
7	Input Current Signal: 4 mA ... 20 mA In case of different range bidder to provide compatible converter to read 4-20 mA analog input signals.	
8	Measured Value Resolution : 16 bits	

9	Connection Details: Spring-cage connection	
10	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)	
11	Configurable and compatible to the quoted CPU of the PLC system	

2.4 ANALOG OUTPUT MODULE

SL NO.	Specification	**Bidder to specify/confirm**
1	Supply Voltage 24 V DC (via voltage jumper when connected to CPU directly or via bus coupler)	
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)	
3	Temperature of Operation: -25 °C ... 55 °C	
4	Current draw: max. 100 mA	
5	Mounting Type : DIN rail	
6	No. of Channels : 8 (minimum outputs)	
7	Output Current Signal: 4 mA ... 20 mA In case of different range bidder to provide compatible converter to generate 4-20 mA analog signal output	
8	Measured Value Resolution : 16 bits	
9	Connection Details: Spring-cage connection	
10	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)	
11	Configurable and compatible to the quoted CPU of the PLC system	

2.5 DIGITAL INPUT MODULE

SL NO.	Specification	**Bidder to specify/confirm**
1	Supply Voltage 24 V DC (via voltage jumper when connected to CPU directly or via bus coupler)	
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)	
3	Temperature of Operation: -25 °C ... 55 °C	
4	Current draw: max. 10 mA	
5	Mounting Type : DIN rail	
6	No. of Channels : 8 (minimum inputs)	
7	Input Voltage: 24 V DC Input voltage “0" signal for 0 V Input voltage "1" signal for 24 VDC	
8	Nominal Current Input: 5 mA	
9	Connection Details: Spring-cage connection	
10	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)	
11	Configurable and compatible to the quoted CPU of the PLC system	

2.6 DIGITAL OUTPUT MODULE: This is required as future provision

SL NO.	Specification	**Bidder to specify/confirm**
1	Supply Voltage 24 V DC (via voltage jumper	

	when connected to CPU directly or via bus coupler)	
2	Supply voltage range: 20 V DC ... 30 V DC (including all tolerances, including ripple)	
3	Temperature of Operation: -25 °C ... 55 °C	
4	Current draw: max. 10 mA	
5	Mounting Type : DIN rail	
6	No. of Channels : 8 (minimum Outputs)	
7	Output Voltage: 24 V DC Output voltage “0" signal for 0 V Output voltage "1" signal for 24 VDC	
8	Maximum Output Current : less than 5A	
9	Nominal Output Voltage: 24 VDC	
10	Connection Details: Spring-cage connection	
11	Conductor Detail: 1.5 sqmm (flexible), 2.5 sqmm (flexible)	
12	Configurable and compatible to the quoted CPU of the PLC system	
13	Bidder to supply Two number of Hooter along with the system which can be driven by the Digital Output module.	

2.7 HMI

SL NO.	Specification	**Bidder to specify/confirm**
1	Power Supply: 24 V DC ±15 %	
2	Typical current consumption: 0.5A	
3	Dimension : 10 inch display	
4	Mounting Type: Front Installation	
5	Interfaces: USB 2.0 Type A, USB 2.0 Type B and Ethernet (10/100 Mbps) RJ45	
6	Temperature (Operation): 0 °C ... 50 °C	
7	Display type: 10” TFT	
8	Screen resolution: 800 x 480 Pixel(s) or better	
9	Touch Screen: Available	
10	Display lighting type: LED / LCD	
11	Configurable and compatible to the quoted CPU of the PLC system	
12	Bidder to provide all the requisite graphical configuration tools and software along with license in order to configure the HMI with the PLC system.	
13	The HMI should compatible to Windows 10 (OS) with support for (Chrome, Edge and Firefox). The pictures and other requirements shall be provided by the PLC CPU.	
14	Capable of Storing 1000 events	
15	Mounting Type : Panel	

2.8 8 Port Switch Un-Managed

SL No	Parameter	Technical Specifications	Bidder to specify/confirm
1	Make	Vendor has to clearly mention	
2	Model	Vendor has to clearly mention	
3	Interface	8 x 10/100/1000BASE-T ports PoE: ports 1 to 4	

4	Standard	•IEEE 802.3 10BASE-T Ethernet • IEEE 802.3u 100BASE-TX Fast Ethernet • IEEE 802.3ab 1000BASE-T Gigabit Ethernet • IEEE 802.3az Energy Efficient Ethernet (EEE) • ANSI/IEEE 802.3 NWay auto-negotiation • IEEE 802.3x Flow Control	
5	PoE Standards	IEEEE 802.3af IEEEE 802.3at 68 W (30 W max per PoE port)	
6	Safety	• cUL • BSMI • LVD	
7	EMI/EMC	• CE Class B • BSMI • FCC Class B • VCCI Class B • RCM • KCC	
8	Power Consumption	• 80.2 W maximum (PoE on) • 0.26 W maximum (PoE off)	

2.9 SOFTWARE

SL NO.	Specification	**Bidder to specify/ confirm**
1	Configuration, Diagnostic, Graphical and Interfacing software should be provided in order to configure the PLC system and its accessories	
2	License: Requisite license key (where ever applicable) to be provided so that easy maintenance of the PLC system can be done. Also any provision can be carried out in future in term of increasing the number of modules.	
3	All the software should be compatible to Windows 10 O.S.	

2.10 6U Rack Cabinet

S/N	Specifications and Requirement	Bidder to specify/confi
1	Make: Vendor has to clearly mention	
2	Model: Vendor has to clearly mention	
3	Racks shall be manufactured out of steel sheet punched, formed, welded and Powder coated	
4	Rack should be from ISO 9001:2008 Certified Company & UL	
5	Standard for Racks configuration will be welded frame and	
6	Rack should have Front Toughened Glass Door with lock &	
7	Rack should be 650 MM in Height, 600 MM Width, 500MM Depth	
8	Rack should Conforms to DIN 41494 or Equivalent EIA /ISO /	
9	Rack should have Adjustable mounting depth,	

10	Rack 4 No Adjustable, verticals with Punched 10mm Square Hole and Universal 12.7mm-15.875mm-15.875mm alternating hole pattern offers greater mounting flexibility,	
11	Powder coated finish with seven Tank pre-treatment	
12	Rack should have Proper Grounding & Bonding	
13	Rack should have one cantilever self	
14	Rack should have Fan module Mount Provision on top Cover	
15	1Ph, 230V, 8A, 2U standard rack mount power distribution unit with 6 X Indian Round Pin 5A, Inlet Plug type 6A Indian	
16	Rack should have 1 No Horizontal Cable Organizer with	
17	Rack should have 1 No Cantilever shelf	
18	Rack should have minimum 2 Nos of FANs	
19	Rack should have provision for cable entry Exit from Both	
20	Rack should have 1 Packet of Mounting hardware	

APPENDIX 3
PRICE SCHEDULE:

Sr No	Description	INR
1.	SUPPLIES	
1.1	Engineering, Manufacture, Procurement of material and bought out components, assembly at shop, system engineering, integration, internal testing, FAT, Packing including the supply of material including mandatory spares, warranty, detailed documentation as per tender specification	
2.0	Training As per Section G	
2.1	Lump sum price as per tender	
	a) At vendor's site	
	b) At site	
3.0	Installation and commissioning as per tender document section H of tender document including SAT	
4.	Post warranty Maintenance contract for 3 years after completion of warranty period, with year wise break up as per requirement specified in the clause no L.3 of Section L of the tender document.	
4.1	Lump sum charges of PWMC for 1st year	
4.2	Lump sum charges of PWMC for 2nd year	
4.3	Lump sum charges of PWMC for 3rd year	
4.4	Per diem rate for unplanned calls as per clause. This will be paid as and when required	
5	Any other items that is required not mentioned above.	

Note for Sl No 4.4: Maximum of 4 days per year shall be considered for bid evaluation. The price shall include travelling and lodging. Separate Invoice to be submitted in case of any unplanned calls due to break down maintenance.