

# Municipal Corporation Jodhpur South

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## Municipal Corporation Jodhpur South Invites Tender for



**Supply, installation, testing & commissioning of Online Continuous Effluent Monitoring System (OCEMS) at outlet with data transfer to CPCB, RSPCB server & STP server for 50 MLD Sewage Treatment Plant phase1 at Salawas Jodhpur including three year operation and maintenance with Defect Liability Period of 3 years.**



# कार्यालय नगर निगम जोधपुर दक्षिण

[नगर निगम भवन] पोलिटैक्निक कॉलेज के अंदर, रेजिडेंसी रोड, जोधपुर 342004  
फोन नं. :- 0291-2651464 फेक्स 0291- 2651464 ईमेल :- ceo\_nnj@rediffmail.com

Sr. No:- 18581

DLB2223GSOB18187

Date:- 7/10/22

## ON LINE NOTICE INVITING TENDER

Online Tender is hereby invited by Municipal Corporation Jodhpur South for the following work in two envelope from eligible/experienced contractors as per bid conditions. Tender to be submitted duly digitally signed in electronic format only on website <http://eproc.rajasthan.gov.in> and [www.sppp.rajasthan.gov.in](http://www.sppp.rajasthan.gov.in). The tender document shall be available for downloading from above mentioned website from Date:- 13/10/2022

Sr. No.	Name of Work	Estimated Project (Rs.)	Earnest Money (Rs.) 2% of estimated project cost	Cost of Tender form (Rs.)	Processing Fee (Rs.)	Duration of Contract
1	Supply Installation, Testing & Commissioning of online Continuous Emission & Effluent Monitoring System (OCEMS) At 50 MLD Sewage Treatment Plant at Salawas Phase - I and connect to CPCB/RSPCB Portal including 3 Years Operation & Maintenance.	700000/-	14000/- or as per latest govt. Rules	1000/-	500/-	One Month


### 1. Important Dates

S. No.	Events	Date and Time
A.	Availability of tender document	13/10/2022 at 3:00pm
B.	Last date and time of online submission of tender	27/10/2022 upto 6:00pm
C.	Submission of tender fee, RISL Charges and EMD in physical form through DD/ BC only	28/10/2022 upto 3:00pm
D.	Date and timing of Opening of Technical Bid	28/10/2022 at 4:00pm
E.	Date and timing of Opening of Financial Bid	will be informed later

## Terms and conditions


1. Bidders who wish to participate in online bidding will have to procure digital Certificate as per IT Act 2000 to sign their electronic bids. Offers which are not Digitally signed will not be accepted.
2. The cost of tender document and EMD as mentioned against NIT is to be paid in the form of DD/ BC in the name of "Commissioner, Municipal Corporation, Jodhpur South" payable at Jodhpur Separately in the manner prescribed in the tender document and processing fee as mentioned against NIT is to be paid in DD in the name of "Managing Director, RISL" payable at Jaipur.
3. Eligibility Criteria: As per tender conditions.
4. Tender fee and process is not refundable.
5. The bid validity period is up to 120 days from the date of opening of tender.
6. Tender will not be opened without following documents.  
(A) Processing fee, tender fee & EMD fee  
(B) Self attested Certificate regarding no black listing/debarment form any govt./Semi. Govt. deptt./ULB
7. Self attested Certificate regarding no blood relation Certificate.

Other details can be obtained from website <http://eproc.rajasthan.gov.in>,  
[www.jodhpurmc.org](http://www.jodhpurmc.org) & [www.sppp.rajasthan.gov.in](http://www.sppp.rajasthan.gov.in)

  
**Commissioner**  
**Municipal Corporation Jodhpur South**  
Date:-

Sr.No:-  
Copy to:-

1. PA to Mayor, Municipal Corporation, Jodhpur South
2. Add. Chief Engineer, Municipal Corporation, Jodhpur South
3. Executive Engineer, Municipal Corporation, Jodhpur South
4. Assistant Account Officer, Municipal Corporation, Jodhpur South
5. Assistant Engineer, Municipal Corporation, Jodhpur South
6. Gaurd file.

  
**Commissioner**  
**Municipal Corporation Jodhpur South**

## **MUNICIPALCORORATION JODHPUR SOUTH**

**Name of work:- Supply, installation, testing & commissioning of Online Continuous Effluent Monitoring System (OCEMS) at outlet with data transfer to CPCB, RSPCB server & STP server for 50 MLD Sewage Treatment Plant phase1 at Salawas Jodhpur including three year operation and maintenance with Defect Liability Period of 3 years.**

### **Eligibility Criteria and Fees**

The bidder should see the site and fully understand the condition of the site before tendering .The work shall be carried out in accordance with the RSPCB/CPCB and MCJS ( Municipal Corporation Jodhpur South) detailed specification and to the entire satisfaction of the Engineer Inchargeof the work.

#### **The bid will be opened only of those bidders:-**

- > The bidder should have completed/executed at least two STPs/CETPs similar nature work in last five year (including current year, if opted by the bidder).**
- > Copy of work orders and Successful completion/execution Certificate issued in this regards by Govt. of India, State Government Department/Local Body/Board/ Development Authority & Union Territory shall only beconsidered.**
- > Deposit proper bid security, processing fee, tender fee, GST registration, and copy of registration of contractor are found to be in order. The Bid security, tender fee and processing money shall be as per NIT.**

### **Time of Completion**

The work should start within 15 days of issue of work order and work complete within 01 months.

Perfomance Security shall be as per latest rules of Government and RTPP act and Rules.

## **SPECIAL CONDITIONS OF THE CONTRACT**

### 1.1 Type of Contract

The work described in this tender documents consist of Two parts;

Part “A” Supply, installation, testing & commissioning of Online Continuous Effluent Monitoring System (OCEMS) at outlet with data transfer to CPCB, RSPCB server & STP server for 50 MLD Sewage Treatment Plant phase1 at Salawas Jodhpur including  
Part “B” Three year Annual operation and maintenance with Defect Liability Period of 3 years.

### 1.2 Third Party Inspection :

Pre dispatch inspection shall be carried out by contractor or. In addition to representative of MCJS contractor has to arrange third party such as RITES, SGS, EIL or any other agency approved by Engineer In-charge for the inspection. All the charges towards lodging, boarding, to & fro for the deputed representative of MCJS along with inspection charges for TPI agencies shall be borne by the contractor The agency will be same for all items of supply in this contract requiring 3rd party inspection.

The manufacturer should be required to call for inspection to the agency under instructions of the Contractor and Engineer In Charge. The Engineer in Charge may depute a representative to witness the inspection. The inspection agency should furnish copies of Inspection Certificate to the manufacturer, Contactor and to the Engineer In Charge directly. All material tested and found satisfactory as per specifications shall be marked distinctly.

### Cost for Inspection

The cost of inspection shall be borne by the contractor.

### Approval of Material and Equipment

The specifications and drawings of each item to be supplied shall be individually scrutinized and its conformity with the technical specifications and conformity with the latest standards of RSPCB / CPCB shall be verified by the Engineer In Charge.

Prior to ordering the equipments the Contractor has to supply the detailed specification, drawings, performance curves and data, operation instructions etc., to the Engineer In-Charge. If the Contractor has any doubts about the required specifications as prescribed in the Contract, he has to clarify them with the Engineer In Charge.

If equipment or material which the Contractor submitted first is refused in the approval process he has to submit documents of such equipment which corresponds to the specifications of the Tender Documents and which is likely to be approved.

Only after approval of the material and equipment, the Contractor can place the order or start the manufacturing or purchasing procedures.

Two weeks prior to packing and shipping the Contractor must inform the Engineer In Charge when the material/equipment is ready for inspection and testing.

If the Contractor packs and ships material/ equipment without approval or authorization of the Engineer In Charge-in- Charge, it can be refused if it is not matching with the specifications of the Contract. All costs resulting from this are to be borne by the Contractor. The Contractor has then to provide the material/ equipment, which is matching with the Contract.

### 1.3 COMPLETION OF THE WORK

#### 1. Time for completion

The whole of the work, including mobilization, reconnaissance, construction, installation, testing, commissioning and trial runs, and demobilization has to be completed within a period of 1 months calculated from the commencement date, which is 07 days after the issue of work order to commence the Work.

#### 2. Completion of work and fully commissioning

Once the entire system has been successfully tested and commissioned, and removal of all defects to the satisfaction of Engineer In Charge-in-Charge, the work shall be treated as “Completed”.

#### 3. Defects liability period

The defect liability period shall be of 3 year, from the date of the completion. The contractor shall be responsible for satisfactory performance of the work under all design and operation for the duration of the defects liability period.

#### 4. Documents Required For Payment:

The contractor shall submit the following documents in duplicate along with the invoice/bill.

- (i) Invoice indicating details of equipment's, material manufactured, supplied and installed or work carried out, supply value of such material or equipment or value of such work carried out and amount claimed.
- (ii) Inspection reports/ test reports/ reports certifying completion of activity with acceptable results.
- (iii) Report/certificate of inspections /tests carried out by the supplier of the contractor or by the contractor himself.
- (iv) Any other such details/documents as may be reasonably specified by the Engineer In

- Charge-in-Charge from time to time during execution of the contract.
- (v) Other documents required by the Engineer In Charge-in-charge.

#### 4 Payment Terms

- 70 % on supply & installation and successful commissioning of complete system  
10% after successful completion of First year O&M work.  
10% after successful completion of Second year O&M work.  
10% after successful completion of Third year O&M work.

#### 5. Price Variation Clause:

No Price Escalation shall be payable in work.

6. Price quote shall be including all types of Taxes.
7. For any litigation Jurisdiction of court shall be Jodhpur.
8. Client ( MCJS ) reserves the rights to cancel the tender at any stage without giving any reason.
9. Bidder must submit with bid documents a certificate issued by manufacturer stating that they will provide after sales service and supply of spare parts for 5 years from date of supply of the instruments and machineries.
10. Penalties as decided by Engineer in charge for not proper O&M and not repairing any instrument or its part as per time line mentioned in this tender or given by Engineer incharge shall be imposed on Bill amount.

#### Brief Scope Of Work & Supply

The salient features of the project are mentioned below:

1. Supply, installation, testing & commissioning of Online Continuous Effluent Monitoring System (OCEMS) at outlet with data transfer to CPCB, RSPCB server & STP server for 50 MLD Sewage Treatment Plant phase1 at Salawas Jodhpur including three year operation and maintenance with Defect Liability Period of 3 years.
2. A dedicated graphic page shall be developed for displaying all data in prescribed format for online monitoring.
3. Bidder shall ensure to supply all necessary software for editing, new tag addition etc. to MCJS with no extra price implication.
4. Establishing communication with CPCB & RSPCB, MCJS server and

integration with the respective servers to meet all statutory requirements.

5. Supply & laying of interconnecting cables in conduits and termination in the newly installed cabinets/panels with analyzer and server systems to be installed, will be in the scope of the bidder.
6. Installation, integration, configuration as per the requirement of MCJS and commissioning of supplied EQMS system in totality within the stipulated time period.
7. No hardware from any existing system shall be used in the new system, it shall be vendor's responsibility to envisage and supply all the hardware required to ensure the complete functionality of the system.
8. During pre-mobilizing Meeting, Vendor shall visit the site and collect all required data for successful installation and commissioning. Vendor shall take approval for all the bought out items from Engineer In Charge at the time of kick-off meeting.
9. Lodging, Boarding to and fro travel expenses, local conveyance and other miscellaneous travel and living expenses of inspection officials/TPI shall be in vendor's scope.
10. Vendor to depute sufficient manpower including erection and commissioning engineers, technicians, electricians, etc. with necessary tools and tackles to complete the job in minimum possible time. Intimation for starting the job shall be communicated to MCJS.
11. Distribution of Power supply and stepping up or down of Power as per system requirement shall be in vendor's scope MCJS shall provide 220V AC power supply at one place for the system. Vendor shall provide current consumption details for the new system and provide redundant power supplies with reverse current protection diode as required. UPS required for uninterrupted power supply will be arranged by vendor.
12. Bidder shall supply mandatory spares like pH Electrode, buffer solution (for one year operation), standard solution (one year operation), one number of all installed cards, proprietary cable, along with offered system.
13. Bidder shall also submit price list including for all spare parts and consumables along with bid.
14. Prices as submitted in Jump sum shall not be evaluated, however bid received without the detailed of each item pricelist as above shall be summarily rejected.
15. Additionally modbus and Ethernet communications capability shall also be available. Provision must also be kept for addition of any future parameters into the system that may be incorporated into the OCEMS monitoring System.



16. Vendor shall arrange own wireless transmission through Sim cards of mobile network operators. Bidder to use the same for data transmission up to local server kept at MCJS/CPCB/RSPCB Office. However, the hardware components required for enabling connectivity as well as ensuring that transmission of all data shall be in Bidder's scope.
17. The offered system must also be compatible with other forms of data transmission such Broadband/Dongle as provided by ISP in case of complete breakdown/inaccessibility of LAN for data transmission.
18. Bidder shall submit complete Bill of Material (BOM), system architecture and technical literature of offered system along with the bid.
19. Bidder shall submit all As-Built documentation pertaining to the bid and shall also impart operational and maintenance training to MCJS personnel.
20. Any other work not defined under the above but which are required for the completion of the system shall be in the scope of the bidder.
21. At least one registered office of manufacture shall be located in India.
22. Any arrangement related to installation of OCEMS such as civil/mechanical/fabrication cost etc. required for proper installation shall be on bidders part.

### **Detailed Scope of Supply and Work :-**

The bidder's scope includes Design, Manufacture, Supply, Installation, Integration, Testing, Commissioning of a offered complete analyzer system as per System Specifications contained in guidelines of CPCB/RSPCB for online continuous monitoring system for effluent and in the subsequent sections of this document, for the purpose intended to and does include all the parts/components, may or may not listed herewith, for smooth operation, maintenance, satisfactory performance of the system and does not limit only to the mentioned requirements in this document, but includes all that is required for ensuring the delivery of the system totally capable of providing the required functions and quality. It will be single point responsibility of bidder to supply, install, commission the analyzer and communication setup up to MCJS, RSPCB and CPCB. The job shall be considered as complete when correct data is displayed at CPCB, MCJS and RSPCB. All hardware, license, media and software for establishing seamless communication shall be in the scope of bidder.

### **Basic requirement of an efficient online continuous Effluent Quality Monitoring System (OCEMS)**

The major pre-requisites of efficient online analyzers are:

1. Should be capable of operating unattended over prolonged period of time.
2. Should produce analytically valid results with precision and repeatability.
3. The instrument/analyzer should be robust and rugged, for optimal operation under extreme environmental conditions, while maintaining its calibrated status.
4. The analyzer should have inbuilt features for automatic water matrix change adaption.
5. Should have data validation facility with features to transmit raw and validated data to central server.
6. Should have Remote system access from central server provisioning log file access.
7. Should have provision for Multi-server data transmission from each station without intermediate PC or plant server.
8. Should have provision to send system alarm & SMS to central server in case any changes made in configuration or calibration
9. Should have provision to record all operation information in log file.
10. For each parameter there should be provision for Independent analysis, validation, calibration & data transmission
11. Must have provision of a system memory (non-volatile) to record data for at-least one year

of continuous operation.

12. Should have provision of Plant level data viewing and retrieval with selection of Ethernet, wireless, Modbus & USB.
13. The correlation/interpretation factor for estimating COD and BOD using UV-Visible Absorption Technique shall be regularly authenticated/validated and details provided.
14. Record of calibration and validation should be available on real time basis on central server from each location parameter.
15. Record of online diagnostic features including sensor status should be available in database for user friendly maintenance.
16. Expandable program to calculate parameter load daily, weekly or monthly basis for future evaluation with flow rate signal input.
17. Should have facility to send SMS and email/mail alerts to designated MCJS's officials for any deviation from permissible effluent discharge standards limits. The facility to be provided for updating mobile No./email for any change in contact details/Mobile No./email due to transfer, retirement etc.
18. Must have low operation and maintenance requirements with low chemical consumption and recurring cost of consumables and spares.

### **Reporting:**

1. The Real Time (RT) Effluent Quality Monitoring System (EQMS) suppliers have to provide central server at RSPCB and CPCB, MCJS with latest software to view the data in graphical/ tabular format and also to compare the data features.
2. One minute data average must be transmitted/retrieved to servers every 15 minutes. In the event of transmission loss the time stamped data in the data logger memory must be transmitted to fill from the last transmission break with a stamp of time delay.
3. Two way communications, so that data from the system can be seen whenever desired and remote of controller/data logger can be taken to visualize the immediate status of the System.

### **Method of analysis to be considered:**

1. pH: Electrode Method.
2. BOD, COD, Total N, Total P : UV – Vis Spectro-photometry (Entire spectrum scanning) of wavelength range 200-720 nm.
3. TSS : UV – Vis Spectro-photometry (Single Wavelength).

### **Parameter accuracy: Allowed Variability as per CPCB guidelines.**

The relative difference between online and laboratory measurements has to be between

1. pH accuracy  $\pm 0.2$ pH
2. BOD,COD,TSS, Total N, Total P:- accuracy  $\pm 5\%$  or RSPCB/CPCB guidelines

### **System Validation**

Online Instrument operation will be evaluated using the known buffers, traceable standards and laboratory techniques. When the variance is outside of the set points, this can be an indication the monitor requires calibration and service.

### **Instrument Calibration:**

The following frequency has to be used for calibration of analyzer

1. pH , COD, BOD, TSS, Total N, Total P- As specified by RSPCB/CPCB specifications.

The software must keep all calibration data points in memory for interpretation of matrix change adaption.

### **Operation & maintenance.**

Contractor has to submit a comprehensive O&M manual for carrying out systematic operation & maintenance. All the costs towards replacement/repair of the system including the cost of spare parts, Labour Charges, Consumables, Electrodes, Statutory fee etc. during the DLP and O&M period shall be borne by the contractor. Following minimum checks for the system shall be required :-

1. Weekly Check - GPS Transmission, System Diagnostic alarms.
2. Monthly Check - Sensors & system cleaning, data backup, Parameter Calibration as specified in calibration schedule.
3. Periodic Check - System validation with known standards, Laboratory & Online parameters Comparative.

Periodic calibration of the system as recommended by the manufacturer/regulating body/CPCB etc. whichever is earlier shall be got done by the contractor at his own cost. Electrical installation shall be in accordance with the latest prevailing standards.

Bidder shall provide a technical person at site within 24 hours for any repair and maintenance purpose and replacement time for instrument should not be more than 7 days.

### **Data Management:**

Considering the heterogeneity of real time monitoring system industries are required to

submit real time data through their respective instrument suppliers. This mechanism has helped in consolidating the data avoiding the complexity of different technologies and availability of monitored data in different data formats and at the same time involving the instrument suppliers in data transferring mechanism. The system enables two way communication required to manage such real time systems.

The basic functional capabilities of such software system shall include:-

1. The system should be capable of collecting data on real basis without any human intervention.
2. The data generation, data pick up, data transmission data integration at server and should be automatic.
3. The submitted data shall be available to the MCJS, RSPCB and CPCB for immediate corrective action.
4. Configurations of the systems once set up (through remote procedure) and verified, should not be changed. In case any setting change is required it should be notified and recorded through the authorized representatives only.
5. The data submitted electronically shall be available to the data generator through internet, so that corrective action, if any, required due to submission of erroneous data can be initiated by the industry.
6. The software should be capable to verify the data correctness which means at any given point of time the regulatory authorities/data generator should be able to visualize the current data of any location's specific parameter.

## **Specifications for Online water Monitoring System for Sewage water Treatment Plant :**

### **1. FUNCTIONAL REQUIREMENT:**

In compliance of RSPCB/CPCB guidelines Real time water quality monitoring system for Sewage Treatment Plants to measure Online Parameters BOD/COD/TSS/PH/Temperature/T-N/T-P/ Flow etc. need to be installed at outlet point of Sewage Treatment Plant 50 MLD phase 1 at Salawas Jodhpur. The system should be user friendly that operates & analyze every minute (minimum interval) without any need of reagents, chemicals, consumables with low maintenance and calibration requirement.

Online multi-parametric pH, COD, BOD, DO, Temp., TSS, T-N, T-P and Flow are needed. The system should also have capability to show flow of effluent in the controller system. The system proposed should have adequate channels to accommodate above measurements along with capacity to display extra sensors/parameters to future-proof the system, accordingly transmit the measured data of effluent to RSPCB and to CPCB as per CPCB

guidelines.

Online monitoring system should be based on UV visible full wavelength Spectrometry System Measurement Principle: Measurement of full wave lengths spectra (UV-VIS Spectrometry) from 200–720 nm.

## 2. BASIC REQUIREMENT OF EFFICIENT ONLINE ANALYSER:

The major prerequisites of efficient online analyser are as follows: -

- Should be capable of operating unattended over prolonged period of time.
- Should produce analytically valid results with precision and repeatability.
- The instrument/analyzer should be robust and rugged, for optimal operation under extreme environmental conditions, which maintaining its calibrated status.
- The analyzer should have inbuilt features for automatic water matrix changeadaptation.
- The instrument / analyzer should have onboard library of calibration spectra's for different industrial matrices with provision of accumulating further calibrationmatrices.
- Should have data validation facility with features to transmit raw and validated data to central server.
- Should have Remote system access from central server provisioning log file access.
- Should have provision for Multi-server data transmission from each station without intermediate PC or plant server.
- Should have provision to send system alarm to central server in case any changes made in configuration or calibration.
- Should have provision to record all operation information in log file.
- For each parameter there should provision for independent analysis, validation, calibration and data transmission.
- Must have provision of a system memory (non-volatile) to record data for at- leastone year of continuous operation.
- Should have provision of plant level data viewing and retrieval with selection of Ethernet, wireless, Modbus and USB.
  
- The correlation / interpretations factor for estimating COD and BOD using.

UV-Visible Absorption Technique shall be regularly authenticated / validated and details provided.

- Record of calibration and validation should be available on real time basis on central server from each location / parameter.
- Record of online diagnostic features including sensor status should be available in database for user friendly maintenance.

- Expandable program to calculate parameter load daily, weekly or monthly basis for future evaluation with flow rate signal input.
- Must have low operation and maintenance requirements with low chemical consumption and recurring cost of consumables' and spares.

### 3. Technical Detail of Multi-Parameter Controller System

It should be equipped with the following minimum features:

1. USB-interface for data transfer, upgrading software etc.
2. Backup controller function to increase reliability (in terminal mode)
3. Control unit with keys and toggle switch for the quick selection of software

#### Functions

4. With large graphic display with backlight
5. With integrated backup controller function
6. Input voltage 90 - 260 VAC 50 Hz. Inbuilt arrangement for voltage fluctuation 90 - 260 VAC 50 Hz.
7. Line power consumption should be minimum .
8. Integrated lightning protection.
  - Should have the capability to be operated as Controller (having programmability feature) or just a terminal (that can display the data without any way to make changes).
9. Display should be with improved reading precision through special backlit graphic display
10. Easy User Intuitive operating keys: including keys for functions such as: Measurement, calibration, set/system settings, additional keys for: confirmation/switching menu O.K. (OK), Escape (ESC) etc.
11. The Controller should be able to power all the sensors and terminals or accessories attached to it without having to need any additional power sources in the system for increased protection against lightning and possible electromagnetic interference.
12. The system should start automatically after the power is reset to the system (in case of power failure).
13. The controller should be low power consuming with consumption .
14. Sensors connected to the system shall be automatically detected and initialized.
15. No extra system configuration should be needed for substitute /replacement sensors.
16. The system should have Service mode for cleaning /calibration / maintenance activities
17. It should be possible to download the data via the USB interface an extremely fast data exchange to USB memory stick.
18. The system should be fully programmable with multiple levels of access control with help of Electronic- Key for data security and protection against non- authorized

access to avoid any tampering or changes to the system configuration by unauthorized access.

19. The controller should store the sensor configurations and calibrations
20. The controller should have a Logbook to record the data
21. The supplier should provide the software update free of cost as and when they are available for the life time of the system.
22. The system should have a status LED that gives reliable and fast information regarding function and status of system. And the Controller/controller should show a LED for diagnostic purposes on the front. This LED should show normal and malfunctions of the system at a glance.
23. Data Output to Control System: The System should have the capability to transmit the required 4-20 mA Analog Outputs as a minimum.
24. In addition to above, the system should have ability to output Profibus, Modbus/RS 485, RS 232, LAN, GPRS, GSM compatible signals in future with addition of respective module as and when required.
25. The system should be able to operate on AC Power (100-240 AC)
26. Ambient Conditions Operating temperature: -4 °C ... +55 °C
27. Storage temperature: -10 °C ... +65 °C
28. Housing Material – Non corrosive e.g. Acrylonitrile-Styrene-Acryloesterpolymer or better
29. Protection Rating IP 66 / equivalent to NEMA 4X for controller
30. Electromagnetic Compatibility: EN 61326, Class B; FCC Class A, EMC for indispensable operation
31. Integrated Lightning Protection: According to EN 61326 enhanced overvoltage protection for the entire system, implemented in each component

### **Specification Overview:**

The system should be user friendly that operates & analyze in minimum interval) without any need of reagents, chemicals, consumables with low maintenance and calibration requirement.

Online multi-parametric pH, COD, BOD, TSS, Flow, T-N, T-P, Temp. at the outlet of STP

The system should have capability to accommodate any additional sensors viz. ORP, Turbidity, Conductivity, TDS, Phosphate, Nitrite, Sludge Level etc. as may be required by client from time to time.

Parameters will be monitored at different location as mentioned below:

- Should have the latest features of highly advanced Multiparameter Controller having



capability of handling at least 4 sensors in a single controller

- The Controller should be able to power all the sensors and terminals or accessories attached to it without having to need any additional power sources in the system for increased protection against lightening and possible electromagnetic interference.
- The system should start automatically after the power is reset to the system (in case of power failure)
- Sensors connected to the system shall be automatically detected and initialized.
- No extra system configuration should be needed for substitute / replacement sensors.
- The system should have Service mode for cleaning/calibration/maintenance activities.
- The controller should store the sensor configurations and calibrations.
- The supplier should provide the firmware update free of cost as and when they are available for the life time of the system.
- The system should have a status LED that gives reliable and fast information regarding function and status of system. And the Controller/controller should show a LED for diagnostic purposes on the front. This LED should show normal and malfunctions of the system at a glance.
- Data Output to Control System: The System should have the capability to transmit the required 4-20 mA Analog Outputs as a minimum.
- The system should be able to operate on AC Power (100-240 AC)
- Integrated Lightning Protection: According to EN 61326-I- enhanced overvoltage protection for the entire system, implemented in each component

### **Spectrometry based Sensor for Outlet parameters of STP-**

- Measurement Principle: Measurement of full wave lengths spectra (UV-VIS Spectrometry) from 200 – 720 nm. The system should show absorption of all wavelength i.e. 200-720 nm on the controller in a well manner.
- The Sensor should not use any reagents and spare parts like WIPERS and should be easy to use and operate without any running costs.
- Multiparameter probe ideal for monitoring of parameters.
- The Sensor should have optimized referencing for excellent zero point and long term stability.
- The Sensor should provide compensation of interferences by evaluation of the whole measured spectrum.
- Direct in-situ measurement in outlet of STP.
- The sensor shall be with efficient integrated ultrasonic /air cleaning facility.
- The MoC should be Titanium or better to sustain the sensor in highly corrosive wastewater environment.
- The sensor should be completely reagent free for operation.
- System should be in conformity with latest CPCB/RSPCB guidelines in this regard and

certified by agencies permitted by CPCB/RSPCB /MCJS.

### **Specifications:**

Ambient Conditions: Operating temperature: 0 °C to +45 °C;

Storage temperature: -10 °C to +50 °C

#### **pH Sensor Specifications for Outlet of STP:**

- Automatic temperature measurement and compensation should be provided in the pH sensor.
- Sensor check function to detect broken glass of the pH electrode.
- The pH sensor should have galvanically separated input.
- Calibration history should be stored automatically in the sensor.
- Sensor calibration can be done in the laboratory or field.
- The pH combination electrodes should require very little maintenance and there should be no electrolyte replacement.

#### **Technical Specifications:**

- Measuring Range: pH – 4.00- 14.00 at least considering the wastewater environment
- Signal Output –Digital
- pH Accuracy :  $\pm 0.2$  %
- Sensor Check function should be available in the pH sensor
- Temperature Sensor should be integrated in the pH sensor
- Temp Compensation: -5 to +50 Deg C
- Transient Voltage Protection should be integrated in the sensor
- Sensor body: Stainless Steel or better
- protection type : IP 68 for both Sensor and Cable
- Sensor Cable Length: 15 meter or as per site requirement bidder should provide.

#### **Communication and Data Presentation/Display**

The controller or display of the system should be interfaced with a GSM/GPRS communication modem to seamlessly transmit the data from remote plants to a central location over a pre-defined interval.

The communication to the system should be two ways for ability to view settings and make changes to the configuration over the air, as and when required.

The system shall be able to transmit real time effluent quality data to RSPCB, MCJS and to CPCB via cloud based system on a regular interval as per guidelines of CPCB/RSPCB/MCJS.

#### **Data Logger**

The controller should be interfaced with a GSM/GPRS communication modem to seamlessly transmit the data from remote plants to a central location over a pre-defined interval.

The communication to the system should be two way for ability to view settings and make changes to the configuration over the air, as and when required.

The data should be received at a central location and should be displayed there in real-time in graphical and tabular format. The software as a minimum should have ability to print reports, archive data and make it available for exporta. The system should also have facility to generate alarm when set points are exceeded.

### Specifications-

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Connectivity Ethernet & GSM/GPRS (4G) Quad Band FDD LTE, TDD LTE, TDSCDMA, WCDMA CDMA2000 1x/EVDO, GSM (900/1800MHz)

Logging 1 min - 24 hours / reading Transmission Real-time

Storage 256MB (Industrial microSD)

Interface(s) 2 x EIA RS485, 1 x Rs232, 8 x 4-20mA ( $\pm 1\%$  FS)

USB Host1 (USB 2.0)

Voltage 9-24 VDC  $\pm 10\%$  (Nominal 12VDC) Power 5W (peak)

Protection Surge protection on sensor inputs, Over voltage and reverse polarity protection on Power Input

Clock Internal (Stability 1ppm/yr) with 1 yr backup Configuration Web UI (Local LAN), Cloud, USB

### STATUS INDICATION

Power/RUN, Internet/Cloud, Modem, 4G, MODBUS TX/RX

### ENVIRONMENTAL

Operating Temperature 0 to 55 °C

Humidity 0 to 95% RH (non-condensing)

## Municipal Cororation Jodhpur South

### Bill of Quantities

Name of Work:- **Supply, installation, testing & commissioning of Online Continuous Effluent Monitoring System (OCEMS) at outlet with data transfer to CPCB, RSPCB & MCJS server for 50 MLD Sewage Treatment Plant phase1 at Salawas Jodhpur including three year operation and maintenance with Defect Liability Period of 3 years.**

#### Estimate

#### Non BSR Items

S.No.	Particulars	Qty	Unit	Rate Rs	Amount Rs
1.	Supply, installation, testing & commissioning of Online Continuous Effluent Monitoring System (OCEMS) with complete accessories required to complete the work at outlet of STP with data transfer to CPCB, RSPCB and MCJS server for 50 MLD STP phase1 at Salawas Jodhpur including three year O&M and three year DLP period . For following parameters BOD, COD, TSS, pH, Temperature, T-N, T-P, Flow Technical specifications as mentioned in this tender document. (Rate including all taxes)	1 Set	Job	-	-
Total Amount in Rs.					

