BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

CENTRAL ZONE BENCH AT BHOPAL

ORIGINAL APPLICATION NO. 72 OF 2021(CZ)

RAMESH AGRAWAL **...APPLICANT**

VERSUS

UNION OF INDIA AND ORS. **...RESPONDENTS**

ACTION TAKEN REPORT ON BEHALF OF RESPONDNET NO. 8 CHHATTISGARH ENVIRONMENT CONSERVATION BOARD (CECB)

It is submitted most respectfully that:

1. It is stated that presently there are a total of 167 (one hundred and sixty-seven) seventeen (17) types of polluting industries. The online data of emissions from these industries is displayed on the CECB website. That, as of 09.09.2022, out of the aforementioned 167, emissions data is regularly received from 125 (one hundred and twenty-five) industries, 27 (twenty seven) industries are temporarily closed thus no data is received, and the data from 15 (fifteen) industries is not received due to technical/network issues and directions have been issued to the aforementioned 15 industries to rectify the defect so as to ensure that regular data of emissions be sent to CECB.
2. That, to make this system more user friendly, CECB had instructed the work of supply, commission and maintenance of real time data acquisition and handling of CAAQMS/ CEMS / EQMS data through client-server system for industries to Chhattisgarh Infotech Promotion Society (CHIPS) Raipur. CHIPS Raipur has entered into master service

agreement with M/s WEBEL, Kolkata. It is also pertinent to note that M/s WEBEL as part of Phase – I, has connected 468 analysers to Internet of Things (IoT) devices for a total of 31 industries and have successfully completed Phase-I work. Certificate of successful completion of User Acceptance Test has been issued by CECB to M/s WEBEL on 26/08/2022.

3. That, Chhattisgarh Environment Conservation Board has asked I.I.I.T. Raipur to evaluate the proposal submitted by M/s WEBEL, Kolkata for 1500 nos of analysers in Phase – II. The proposal submitted by M/s WEBEL, Kolkata was considered justifiable as per the report presented by I.I.I.T. Raipur and CECB has requested CHIPS to consider above proposal vide letter dated 20/09/2022 and again requested to expedite the same vide letter dated 11/11/2022.
4. It is also pertinent to note that after the completion of Phase – II works, real time emission data of all the industries will be displayed on the CECB website in more user friendly manner.
5. That CECB have taken the required steps to comply with the directions passed by this Hon'ble Tribunal and are further taking efforts to make the system more user friendly and up to date with real time emission reports.

Date: 20.11.2022

Place: Bhopal

CECB
SUPERINTENDING ENGINEER
C.G. Environment Conservation
Raipur

Through Counsel

Adv. Parul Bhadoria

छत्तीसगढ़ पर्यावरण संरक्षण मंडल

पर्यावास भवन, नार्थ ब्लॉक, सेक्टर – 19,
नवा रायपुर अटल नगर, रायपुर (छ.ग.) 492002
email:- hocecb@gmail.com

क्रमांक 4476 /मु./तक./छ.ग.प.सं.मं./2022 नवा रायपुर, अटल नगर, दिनांक 28/9/2022

प्रति,

सुश्री पारूल भदोरिया
अधिवक्ता,
चेम्बर नं. 609, यू.सी.आई. लॉयर चेम्बर,
जिला न्यायालय के पास, भोपाल, (मध्यप्रदेश)

विषय :– माननीय एन.जी.टी. सेंट्रल जोनल बेंच, भोपाल के समक्ष विचाराधीन प्रकरण ओ.ए. क्रमांक 72/2021 के संबंध में।

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उपरोक्त विषयांतर्गत लेख है कि माननीय एन.जी.टी. सेंट्रल जोनल बेंच, भोपाल के समक्ष विचाराधीन प्रकरण ओ.ए. क्रमांक 72/2021 के संबंध में अद्यतन स्टेटस रिपोर्ट पत्र के साथ संलग्न कर आवश्यक कार्यवाही हेतु प्रेषित है।

संलग्न – उपरोक्तानुसार।

सदस्य सचिव
छत्तीसगढ़ पर्यावरण संरक्षण मंडल
नवा रायपुर, अटल नगर (छ.ग)

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Status Report for supply, commission & maintenance of real time data acquisition and handling of CAAQMS / CEMS / EQMS data through client-server system for industries

- Presently data of 167 industrial units of 17 categories of highly polluting industries being displayed on CECB website.
- Chhattisgarh Environment Conservation Board had entrusted the work for "supply, commission & maintenance of real time data acquisition and handling of CAAQMS / CEMS / EQMS data through client-server system for industries" located across Chhattisgarh State to Chhattisgarh Infotech Promotion Society, Raipur (CHIPS) to make it more user friendly.
- CHIPS, Raipur has entered into master service agreement with M/s West Bengal Electronics Industry Development Corporation Limited (WEBEL), Kolkata.
- M/s WEBEL has successfully completed the first phase of work covering 468 numbers of analysers across 31 industries across the state. Certificate of successful completion of user acceptance test has been issued by CECB to M/s WEBEL on 26/08/2022.
- Chhattisgarh Environment Conservation Board has been received proposal from M/s WEBEL for 1500 numbers of analysers in remaining 17 types of highly polluting industries across the state in second phase. The total estimated cost of second phase is approx. 10.16 crores.
- Chhattisgarh Environment Conservation Board has availed the expert service of IIIT, Nava Raipur for evaluation of M/s WEBEL's proposal the IIIT, Nava Raipur has submitted its evaluation report vide letter dated 22/07/2022. The work has been delayed due to Covid-19 pandemic and imposition of restrictions and lockdown in the state from time to time.
- Chhattisgarh Environment Conservation Board vide its letter dated 20/09/2022 has requested Chief Executive Officer, CHIPS to consider the proposal submitted by M/s WEBEL for second phase. Copy of letter is enclosed.

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Paryavas Bhawan, North Block, Sector - 19,
Nava Raipur Atal Nagar, District - Raipur (C.G.)
e-mail - hocecb@gmail.com

No 4298 /H.O./CECB/2022 Nava Raipur Atal Nagar, Dated: 20/9 / 2022

To,

The Chief Executive Officer,
Office of CHiPS,
State Data Centre Building,
Civil Lines, Raipur (C.G.)

Sub. : - Regarding supply, commissioning and maintenance of Real Time Data Acquisition and Handling of CAAQMS/CEMS/EQMS data through Client Server System from industries located across Chhattisgarh State for 2nd phase by M/s West Bengal Electronics Industry Development Corporation Limited (WEBEL), Kolkata (West Bengal).

Ref. :-

1. RFP for selection of vender for supply commission and maintenance of real time data acquisition and handling of CAAQMS/CEMS/EQMS data through Client-Server System from industries located across Chhattisgarh State.
2. Master Service Agreement between CHiPS on behalf of Chhattisgarh Environment Conservation Board and M/s WEBEL.
3. Letter of Webel no. 3A/EC/BD/CECB 2nd Phase/01/05/20-21 dated 11/05/2020.
4. This office letter no. 7829, dated 03/12/2020.
5. CHiPs Raipur letter no. 1535, dated 04/09/2021.

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Please refer to above mentioned letters. Chhattisgarh Environment Conservation Board (CECB) had entrusted the work for supply commission and maintenance of real time data acquisition and handling of CAAQMS/CEMS/EQMS data through Client-Server System for 17 types of industries located across Chhattisgarh State. Accordingly, CHiPs Raipur has entered into Master Service Agreement with M/s West Bengal Electronics Industry Development Corporation Limited (WEBEL), Kolkata. It is submitted that M/s WEBEL has successfully completed the 1st phase of the work covering 468 nos. of analyzers across 31 industries of 17 types of highly polluting industries across the State. Certificate of successful completion of User Acceptance Test has been issued by CECB to M/s WEBEL on 26/08/2022.

Chhattisgarh Environment Conservation Board has received proposal from M/s WEBEL for 2nd phase for 1500 nos. of analyzers for the remaining 17 types of highly polluting industries across the State vide reference mentioned at s.no. 3. The total estimated project cost of 2nd phase is 10,16,59,950.00 (Rs. Ten Crore Sixteen Lacs Fifty Nine Thousand Nine Hundred Fifly Only). A copy of the proposal is enclosed herewith for your ready reference. **(Annexure-I)**

Chhattisgarh Environment Conservation Board has availed the expert services of IIIT, Nava Raipur Atal Nagar for evaluation of above proposal. The IIIT, Nava Raipur has recommended the proposal for consideration. A copy of the evaluation report is enclosed herewith for your ready reference. **(Annexure-II)**

In light of the above, you are requested to consider the above proposal for 2nd phase, so that supply, commissioning and maintenance of Real Time Data Acquisition and Handling of CAAQMS/CEMS/EQMS data through Client Server System from all 17 type industries located across Chhattisgarh State may be developed.

An early reply is awaited from your end.

Encl.:- **As above.**

Member Secretary
Chhattisgarh Environment Conservation Board
Nava Raipur Atal Nagar, District-Raipur (C.G.)

Annexure-I

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opportunities infinITe

West Bengal Electronics Industry Development Corporation Limited

Webel Bhavan, Block : EP & GP, Sector V, Bidhannagar, Salt Lake, Kolkata - 700 091
Phone 91 33 2339 2234/228/327/316 • Fax : 91 33 2357 1739/1708 e-mail : contact@webel-india.com
[CIN : U52209WB1974SGC029237]

Ref: 3A/EC/BD/CECB 2nd Phase/01/05/20-21

Date: 11.05.20

The Member Secretary,
Chhattisgarh Environment Conservation Board
Paryavas Bhawan,
North Block, Sector – 19,
Atal Nagar, Raipur (C.G.) 492002.

Ref : 1. Service Agreement signed between CHIPS on behalf of CECB, Raipur and M/s. WBEIDC Ltd., Kolkata regarding Supply, Commission and Maintenance of Real Time Data Acquisition and Handling of CAAQMS/ CEMS/EQMS data through Client-Server System from Industries located across Chhattisgarh State vide dated 23.02.2018
2. CECB Letter no. 6349 dtd. 28.11.2018
3. CECB Letter no. 6733 dtd. 21.12.2018
4. Our email dated 11.09.2019
5. CECB Letter no. 12/CECB/Sci./2020 dtd. 13.04.2020

Sub : Submission of proposal for inventorization of number of analyzers for future integration.

Sir,

This is in reference to your above mentioned letters.

We are glad to start the 2nd Phase of " Supply, Commission and Maintenance of Real Time Data Acquisition and Handling of CAAQMS/CEMS/EQMS data through Client-Server System from Industries located across Chhattisgarh State ".

Please find below our proposal for your consideration.

Objective of the Project:

1. To establish an integrated real time online monitoring system for monitoring the stack emission, ambient air and effluent parameters from 163 industries located across the state of Chhattisgarh.

2. To acquire accurate and high integrity real time measurements of the emission and ambient air parameters directly from the analyzers installed at the industry site without any intermediate conversions, logics or changes except for standardization some unit conversion may be applied.

3. To detect exceedance of monitored parameters for the prescribed standards and provide real time alerts on the same.

West Bengal Electronics Industry Development Corporation Ltd. Webel Salt Lake Kolkata

4. To provide a multi-client open architecture platform that supports any analyzer (make and model) and on a single integrated Central database system which supports all type of communication between the Industry and the regulator.

5. To provide a unified web based access controlled platform accessible from CECB Headquarters, Regional Offices and all Industry sites in the state based on the provided authorization level.

6. To ensure that the SOP (Standard Operating Procedure) of CECB highlighting course of action to be taken in the event of industry emission default are integrated in the software.

Scope of Work:

1. To establish continuous online monitoring system and to have a universal format of connectivity that can accept real time data from any installed analyzers (make or model) which may be customized in accordance with analyzers already installed in the industry. Industry will be able to choose any analyzer make and model that is approved by the Central Pollution Control Board or by the CECB for monitoring the ambient, emission and effluent parameters.

2. The system will be a highly scalable client server application where the client software resides in the industry site and the central server software resides at the central location hosted on premise at CECB and/or cloud.

3. Provide a highly scalable system that will be able to connect the available installed analyzers at the Industry site simultaneously in real time with a non-proprietary backend database suitable for storing Time-Series Data. In addition to the analyzers, the system will be capable of live streaming of feeds from all IP-PTZ cameras installed in the industry for the purpose of pollution control. Users will have the option of viewing analyzer data from a particular environmental monitoring system (e.g. AAQMS/CEMS/EQMS) along with the live footage from such cameras, if installed.

4. The system will support multiple client software that are found suitable to the requirement and approved by CECB, which can send data to the central server.

5. The central server software will expose authenticated Representational State Transfer (REST) based Application Programming Interface (API) for client software to transmit the data.

6. The client software will be able to connect to the server based on the exposed API and not be restricted to the requirement of static IP.

7. During collection and transmission, the platform will utilize highly encrypted digital communication to ensure authentic data is received and data origination location (GPS

coordinates) and source signature are also verified by the software.

8. The client software will be able to transmit the data to server using minimal bandwidth using existing site Broadband LAN/GPRS/GSM connectivity or by using an external dongle as an alternative for establishing online connectivity.

9. The software will provide reporting capabilities to display trend graphs, configurable alerts in accordance with CECB SOP and otherwise, tabular data, charts and data validation interface.

10. The software will provide the ability to annotate the validated data with the industry comments (Industry would have to comment on the data if clarifications are raised by CECB) and data quality codes. Software will have the ability to make the annotations visible while viewing the data in the charts, if chosen by the User.

11. The software also will provide ability to develop custom made on-demand reports with capabilities to export the data into PDF, CSV and Excel formats. The reports developed will be printable on any of the standard printers.

12. Entire Source code of the software will be handed over to CECB and the board will have the authority to review any specific module to validate the business logic and the data handling process.

13. The ability to generate the encryption keys for the Client side software will be provided to CECB, so that the board can provide authorized keys to the individual sites for secured data transmission. There will not be any financial implication to CECB for generation of such keys and it will be a software feature.

14. Publishing of data shall be at the end of the regulator and will have necessary components in-built in the system to publish valid data only.

15. Will have provision to share the validated data with the CECB server database as and when required.

Software Requirements - Data Collection and Transmission Module

1. The data collection and transmission module will directly connect to the installed analyzer and fetch the data directly from the analyzer without any intermediary software or conversions. The software will have no editing provision for altering/correcting the data at the industry side.

2. No data shall be accepted as an output from OPC of Server or DCS or any other intermediate software at Industry side.

3. The data collection and transmission module will convert the collected data from the analyzer into JSON format.

4. The data collection and transmission module will encrypt the data with unique client specific encryption key to ensure authentic data transfer from the industry to the central server. Only encrypted and authenticated data shall be received by the Central Server Module.

5. During internet connectivity failure or a communication issue with the central server, the data collection and transmission module will store the encrypted data locally and retransmit when the connectivity restored and data transmission is possible. Any such delayed transmission will be identifiable at the regulator side using data quality codes.

6. The data collection and transmission module will wait for acknowledgement from the server and will re-transmit the data if no acknowledgement is received within the timeout period. Systems will at a minimum be equipped with QoS-2 transfer protocol.

7. Software will support reading analyzer configuration and report the configuration changes to the central server. Any configuration changes done at the site will have audit trail and reported to the regulator for approval in the form of workflow.

8. The data collection and transmission module will support remote analyzer configuration. The data collection and transmission module will accept remote analyzer configuration commands and update the analyzer configurations with the set value.

9. Each measurement will be associated with the data quality code inferred while data collection and the data quality code will be transmitted along with the data. The data quality code will indicate analyzer failures, analyzer communication failures, data delays, data calibration issues, etc. (These codes will be parameterized)

10. The data collection and transmission module will accept commands for calibration (auto and manual) and able to perform calibration of the analyzer locally.

11. The data collection and transmission module will be able to collect the data directly from the analyzer with a minimum scan interval of 10 seconds (subject to Industry analyzer specification).

12. Data collection and transmission shall be at a minimum 1 min or other mean average period selectable by user.

13. The data collection and acquisition software will be able to collect and encrypt the data locally on the industry site. The data will be archived locally on the client machine for a period of 1 year.

14. The data collection and transmission module will communicate the status periodically to the central server even when no analyzer is connected or when analyzer is faulty with appropriate data quality code.

15. The data collection and transmission module will auto-restart on failure or machine reboots.

16. The data collection and transmission module will be able to transmit the data over Broadband/LAN/Wi-Fi/GPRS/GSM etc.

17. The Central Server will publish an open Application Programming Interface (API) to support different client side software. We will be supplying the data collection and transmission module will comply with the API. The client side software requirement shall be demonstrated at CECB. Data transmitted only from such demonstrated and proven client software will be accepted by the Central Server Module.

Central Server Software Requirements – Regulator Side

1. The Central Server Module will provide a backend processing services for transmitted data and a highly scalable backend database capable of storing time-series data acquired from the industry site.

2. The database will be able to support data storage and query for 10 years of data collected from all the industry sites with minimum of 1 minute interval.

3. The database will be scalable to support about 2000 concurrent Analyzers and will be able to store and process more than 100 Terabyte of data.

4. The Central Server Module will have pre-configured editable (to comply with change in laws) threshold limits for the various monitored parameters based on the industry type as per the Central Pollution Control Board directives for each of the industry types.

5. The Central Server Module will support remote configuration of the industry site parameters from the CECB.

6. The Central Server Module will generate automated alarms and alerts based on parameter exceedance, calibration failure, data connectivity failure, analyzer failures or any such as alerts as required by the regulator.

7. The Central Server Module will be able to identify delayed data published from the industry site due to network connectivity failures and mark those data separately from the live connected data.

8. The Central Server Module will be able to send pre-configured template based SMS and Emails for alerts and alarms generated based on the configured rules. This feature will be a built in capability of the Central Server Module and not external application software.

9. The Central Server Module will have facility to transfer data to other server at

regulator side at a weekly interval for data backup and recovery requirements.

10. The Central Server Module to be able to generate report on alarms/events and exceedance with industry wise consolidation and period wise say weekly, monthly, annually etc.

11. The Central Server Module will provide automatic notification to the industry site and regulator inbox for all new notifications and action items like fixing communication issues, analyzer problems etc.

12. The Central Server Module will be able to support data encryption and security at the server side. The data received from the site will be decrypted and data authenticity ensured.

13. The Central Server Module will be able to collect data from the industry sites even when one of the central server is down and thus provide adequate redundancy.

14. The Central Server Module will be able to identify which client software and version send for specific data and capture the IP address from which the data was sent for audit purposes.

15. The central server will be available 24/7 for 365 days for data collection. The system will provide automated redundancy (at least n+1) so that industry site will be able to continuously send the data.

16. The Central Server Module will support data export in RS232/RS 486/xml/text format. The communication protocol for this system will be as per ISO - 7168.

17. We will provide the central server software and workstation software. The central server software will do all the data processing and storage management. The workstation software installed will provide the regulator with functionality (Web Interface Module) without the need to directly login to the central server. Minimum of two Workstation software licenses will be provided by us.

18. The Web Interface Module will provide reporting capabilities to display trend graphs, configurable alerts, tabular data, charts, wind-rose chart, pollution rose chart and data validation interface.

Database Specification for Software – Regulatory Side

S.No.	Particulars	Specifications
1	Software	Highly scalable Big Data database capable of storing time-series data Like Cassandra, MongoDB, Hbase, or similar.
2	Storage	Minimum 100 TB or 1 year's analyzer data and video footage from IP-PTZ cameras, whichever is more.
3	Concurrent	Support minimum of about 2000 concurrent connections
4	Availability	High availability with 99.95% availability
5	Latency	< 5 seconds for standard site specific query

Web-Server Interface Requirement

A. To view, generate default report, analyze the collected data and corroborate with industry for various exceedance and failures.

B. The Web Server Interface Module will provide a User Interface presented in the browser will be very user friendly and intuitive following the best practices in web based user interface design.

C. The User Interface will be supported on major browsers like IE, Firefox, Chrome, Safari etc. The user interface will be responsive i.e. supports rendering on a Tablet, smart phones which supports these browsers.

1. Users with different authorizations – Super User/ Administrator, User, Guest, etc.

2. Intranet/Internet – View Only Access to Common Public

3. The Web Server Interface module will provide the 'Authorized User interface to configure measured parameters. The detail screens for site configuration, monitoring station configuration, analyzer configuration and parameter configuration will be available.

4. The Web Server Interface module will support grouping of industry sites, industries across geographic dimensions like District, and City, Industry Type, etc. and other custom attributes (like industry type, time period, pollutant type, etc.) selected by the User.

Alerts and Alarms

1. The Web Server Interface module will provide an interface to view and list all alarms and alerts. There will be a filter to view only new alerts and alarms.

2. Customisable report generation, grouping

3. The Web Server Interface module will provide an interface to acknowledge and respond to the alarms and alerts by both the industry and regulator. Regional offices will have access to interact with Industries under their jurisdiction.

Remote Calibration

1. The Web Sever Interface module will support configuration of remote calibration of the analyzer by the 'Authorized User'

West Bengal Electronics Industry Development Webel Salt Lake Kolkata

2. The Web Sever Interface module will have the ability to provide the various manual/online calibration sequences, schedules for remote calibration and reports.

3. The Web Server Interface module will support calendar view of all the automated calibration schedule and sequence.

Security

1. The Web Server Interface module will have facility for data viewable in non-editable format for Regional offices of the CECB for only Industries under the control of respective regional offices.
2. Each industry will be able to view and generate default reports for the data generated for their industries based on the access provided.
3. The Web Server Interface module will support configurable user authentication levels to support different roles for Head office, Region offices and industry site access
4. The Web Server Interface module will support creating and managing new users and their access levels.

Data Validation

1. The Web Server Interface module will provide user interface for data validation and approval. The regulator will be able to select a particular time range and approve/reject the data with proper comments.
2. The Web Server Interface module will support manual and automated data validation and approval workflow to review the various industry site data and approve by providing appropriate comments based on the data quality.
3. The Web Server Interface module will provide ability to annotate the data with the specific events/comments provided by the industry such as maintenance schedules, breakdown, analyzer fault etc.
4. The software will have the capability to monitor the maintenance schedules, Breakdown.
5. Calibration data will be appropriately tagged and, differentiated from the normal monitoring data.

Corroboration and Workflow

1. The software will support corroboration between the industry site and regulator by providing a built in workflow feature and an inbox feature. This feature will be a built-in functionality of the central server module and the

web interface module and not additional software running separately, to ensure that there is integration with the reporting module.

2. Whenever there is any exceedance or analyzer failure or analyzer connectivity failure, an action item will be generated in the industry site inbox. On opening the alert by industry user, system will capture the date and time. The industry site personnel will be able to update with the corrective actions and comments. These comments/reasons will show upon the graphs when the data for that particular period is viewed. Regulator will have option to respond to these comments from Industry in the workflow.
3. Industry site will be able to inform the regulator of different maintenance events (site maintenance, site breakdown, analyzer breakdown etc.) using workflow feature of the Web Interface Module.
4. The system will automatically generate events and inbox messages based on the exceedance thresholds and alerts configured.
5. The system will provide the history of communication between the industry site personnel and the regulator for specific events/workflows.
6. The various events like communication failures, analyzer failures, exceedance etc. and corresponding reasons will be available for reporting. There will be standard reports for viewing industry level statistics for communication failures, analyzer failures, power failure, exceedance, etc.

Reports

1. The Web Server Interface module will support standard reports for each industry site based on the type of monitoring i.e. ambient, emission and effluent. For each of these types of monitoring exceedance threshold reports with different averaging periods during user selected time period will be created.
2. The Web Server Interface module will have both default reports and also custom made reports as per requirements by the end user.
3. The Web Server Interface module will be able to support different data quality code and report data based on representativeness and data quality. Statistical significance of data will be reportable in respect to data density.
4. The Web Server Interface module will generate report on approved and validated data for public view. However, there will also be a capability to see the raw data collected from industry site by CECB.
5. The Web Server Interface module will be able to generate wind rose and pollution rose based on the wind data collected from the various ambient air quality stations.
6. The Web Server Interface module will have capability to compare, group sector wise industries, analyzers and generate report (text, numeric and graphical).

7. The Web Server Interface module will support ability to export the reports data to csv, pdf, xls/xlsx and text file as and when required.
8. The Web Server Interface module will have provisions to accommodate printers of different model and make.
9. The Web Server Interface module will support ability to develop custom reports by the regulator based on the data analysis requirements. The report generated will be both graphical and tabular form.
10. The software will be able to select the data quality code, the data representativeness, the time window and the site specific parameters for generating reports.
11. The Web Server Interface module will provide daily status of each industry site and provide metrics on data quality and representativeness.
12. Report will be able to calculate differential data from two parameter reading and show the trend of differential data. This feature is required for temperature difference measurements and alerting.
13. Will have feature to make calculations on raw data obtained from analyzer and generate alerts and reports.
14. The web Server Interface module will provide custom reporting capabilities to support regulator's present and for future requirements.
15. There will be a provision to create custom charts from the Web Interface Module. There will be a support to add new charts and dashboards as per the requirements.
16. Will provide optional features such as to connect the data to display boards for public display.

Live Status

1. The Web Server Interface module will support real time view of the data from all the industry sites for all the parameters configured for monitoring.
2. The Web Server Interface module will support geo-location of the Industry using specific Latitude -Longitude or as per cartographic coordinates overlay on a map and present information of industry (Name, Address, Type of Industry, Brief Processes, Operating Status, etc.), parameters connected and present value either graphically or numerically display.
3. The software will be able to show the status of each of the sites in a geographic map and will show alerts and alarms based on system failures and parameter exceedance.
4. For ambient air quality, the software will be able to graphically present Air Quality Index (AQI) of the Cities/Districts over the map of the State of Chhattisgarh.

List of Deliverables

The Indicative list of deliverables shall include (but not limited to):

1. Development and complete Integration of the Software Application and Database with the existing system of CECB developed in the first phase along with all software and hardware devices including the analyzers and multi-channel cloud connectors related to this project will be our responsibility.
2. Site survey of each and every site for technical analysis and status of site readiness for installation & integration. A report of every analyzer and connectivity status will be generated.
3. Supply, Deployment and Maintenance of Hardware Equipment:
   - Integrating Servers and other hardware with the existing system.
   - Supply and integration of Multi-Channel Cloud Connectors.
4. Process Flow, Work Flow in line with the approved design of the first phase.
5. Software Design, Development and Documentation including Software Architecture Design, Logical and Physical Database Design subsequently integrated with the first phase.
6. Development of Software Application and Database integrated with the first phase.
7. Complete Source Code with documentation and integration with the first phase.
8. Test Plans and Test cases (including Unit Test Plan, System/Integration Test Plan, User Acceptance Test Plan, Security Test Plan, and Load Test Plan).
9. Software Testing Documentation (including details of defects/bugs/errors and their resolution).
10. Tools to monitor the SLA will be supplied by us for the complete project including integration with the first phase.
11. Trial Run & Test Run to be done by us in consolidated manner along with the first phase.
12. Consolidated Handover will be given to the customer.
13. Periodic Status and Review Reports in consolidated manner including the first phase.
14. Consolidated Remote Support will be provided by us.
15. The second phase project will be completely integrated along with the first phase.
16. Operation and Maintenance of the project along with the Software Application, Database, Hardware device supplied by us for 3 years after Go Live of the project.

West Bengal Electronics Industry Development Corp. Ltd. Webel Salt Lake Kolkata

Estimated Budgetary Commercials :

Sl. No.	Description	Qty	Rate	Amount
1	Integration of existing Software application and database with new Industries and central server (per Analyzer)	1500	10,075.00	1,51,12,500.00
2	Site survey for site technical analysis and confirmation of site readiness (per Analyzer)	1500	2,200.00	33,00,000.00
3	Supply and Installation of necessary equipment (including multi -channel cloud connector) & Software for analyzers server (per Analyzer)	1500	12,300.00	1,84,50,000.00
4	Operation and Maintenance of the Project along with Software application, database, Hardware devices supplied by us for 3 years after Go Live of the project (per Analyzer)	1500	32,860.00	4,92,90,000.00
				8,61,52,500.00
			GST @ 18%	1,55,07,450.00
(Rupees Ten Crores Sixteen Lakhs Fifty Nine Thousand Nine Hundred Fifty only			TOTAL	**10,16,59,950.00**

Terms & Conditions :-

1. Considering our past experience of this project we estimate 1500 Analyzers across 163 Industries. However, during Installation if the actual Analyzer count is found to be more than 1500 then a supplementary work order is required for connecting the additional analyzers on pro-rata basis.

2. **Payment terms:** WBEIDC Ltd. will invoice for a batch of 10 Industries after completion of Installation and commissioning. Next Installation (for bath of another 10 Industries) will commence after release of payment of the submitted Invoice.

3. Timeline for 2nd phase: 12 months from the date of receipt of confirmed work order for completion of new Industry sites. The timeline will be strictly followed, provided the sites are ready for installation, timely receipt of payment and availability of all resources and approvals from all stakeholders of this project.

4. Maintenance of Industry analyzer is not covered under our scope.

We hope you will find our offer in line and place your valued order on us. For any clarification, please feel free to contact us.

Thanking you,
Yours faithfully,

For West Bengal Electronics Industry Development Corporation Ltd.

Suman Moitra
General Manager - BD

West Bengal Electronics Industry Development Corporation Ltd. Webel Salt Lake Kolkata

Annexure-II

Cover Letter

Ref. IIITNR/R&D/Consultancy/2021/July-22/01

Dt. 22/July/2022

HO C.G. Environment Conservation Board 5296 22/7/2022 Atal Nagar, Dist. Raipur (C.G.)

To,

Member Secretary

Chhattisgarh Environment Conservation Board (CECB),

Paryavas Bhavan, Naya Raipur

Chhattisgarh, India

Ref. 2752/HO/SCI/CECB/2021, regarding the evaluation of work done/to be done (CAAQMS/CEMS/EQMS Project)

Subject: Evaluation report for work to be done (Phase-2)

Undersigned has gone through the Request For Proposal (RFP)/Scope of the work defined by CECB, letter selection of vender by CHiPS (2325/CEO/CHiPS/CECB/2017, dt. 21/Dec/2017), Webel 2nd Phase Proposal for inventorization, ref 3A/EC/BD/CECB 2nd PHASE/01/05/20-21, Dt. 11/05/2020.

The detailed evaluation report is attached as Annexure-I

Dr. Vivek Tiwari (Assistant Professor (CSE), IIIT Naya Raipur, CG) 22/7/22

Dr. Debanjan Das (Assistant Professor (ECE), IIIT Naya Raipur, CG) 22/7/22

Encl: Annexure-1

Annexure-I

Evaluation Report: Work to be done (Phase-2)

- **Definitions:**
  - **Webel Proposal:** Webel 2nd Phase Proposal for inventorization, ref 3A/EC/BD/CECB 2nd PHASE/01/05/20-21, Dt. 11/05/2020.
  - **RFP:** Request For Proposal for Implement the work in 1st phase by CHiPS.

- **Observations:**
  - **Functional**
    - The "objective" of the Webel proposal is aligned with RFP.
    - The "scope of the work" in Webel proposal is aligned with RFP, except minor deviation for point number 15. It should be CPCB at the place of CECB
    - The "client-side software requirement" in Webel proposal is aligned with RFP. However, the software has already been developed in Phase-1. Additional clarification is given in Webel proposal at point number -3 about the format of data being converted into JASON.
    - The "Central server software requirement" in Webel proposal is aligned with RFP.
    - Web-Server interface, alerts, alarms, remote calibration, security, data validation, corroboration, workflow, reports, live status description present in Webel proposal are aligned with RFP.
    - The list of deliverables in Webel proposal is clear and straightforward. However, a couple of deliverables need to be added as mentioned in below suggestion section.
    - Refer SN -3 (Table-1), a small hike (0.034%/unit) from 12,075 to 12,300 is observed.
    - Refer SN -4 (Table-1), a small hike (1.86%/unit) from 32,258 to 32,860 is observed.

  - **Commercials**

    Total Budget/Cost of Phase 1: INR 6,26,22,600 (as per the order received by WEBEL from CHiPS, ref 2325/CEO/CHiPS/CECB/2017, dt. 21/Dec/2017). The major tasks were:

    To Develop Scalable Software Application to support connectivity of 2000 Analyzers from Different Industries.

    1. Connect and Integrate 465 Analyzers to the Software Application from the Industries
    2. Operation and Maintenance of the developed system for 3 years.

The major tasks in Webel Proposal for phase-2 are:

1. Analyzers from the list of 163 Industries (assumed 1500 Analyzers) that need to be Integrated to the Developed Software Application
2. Integration of Software Application and Database with the New Industries and central server
3. Supply and Installation of necessary equipment & Software for 1500 Analyzers
4. Operation and Maintenance cost for 3 year
5. Site Survey for site technical analysis and confirmation of site readiness

Based on the details in the RFP (page 35) and the agreement between WEBEL and CHiPS *"The Integration of Additional Analyser Units"* will be based on *"100% of integration Cost quoted per Unit", the following commercial/cost has been analysed and presented in Table-1.*

SN	Description	Rate of Phase 1 (in Rs. Per Analyser)	Phase 1 No. of Analyzer	Cost of Phase 1 (In Rs. For 465 Analysers)	Rate of Phase 2 (in Rs. Per Analyser)	Phase 2 No. of Analyzer (Assumed 1500 analysers)	Cost of Phase 2 (in Rs. for assumed 1500 analysers)
		ref. ChiPS oreder, ref 2325/CEO/CHiPS/CECB/2017, dt. 21/Dec/2017			Ref. Webel Proposal 2nd phase		
1	Design and Development of Software Application as per approved SRS (Scalable upto 2000 Analyzers)	Scalable upto 2000 Analyzers	Scalable upto 2000 Analyzers	2,77,70,125*	Nil	Nil	Nil (Within 2000 Analyzer Scalability)
2	Integration of Software Application and Database with the New Industries and central server	10,075	465	46,84,875 #	10,075	1,500	1,51,12,500
3	Supply and Installation of necessary equipment & Software for Analyzers	12,075	465	56,15,000	12,300	1,500	1,84,50,000
4	Operation and Maintenance cost for 3 year	32,258	465	1,50,00,000	32,860	1,500	4,92,90,000
5	Site Survey for site technical analysis and confirmation of site readiness##	Nil	Nil	Nil	2,200##	1,500	33,00,000 ##
6	Tax @ 18%			95,52,600			1,55,07,450
7	Total			Rs. 6,26,22,600			Rs. 10,16,59,950

* + # = 2,77,70,125 + 46,84,875 = 32455000 (ref. ChiPS oreder, ref 2325/CEO/CHiPS/CECB/2017, dt. 21/Dec/2017)

Table-1: ***Commercial/cost Analysis for Phase-2***

##There is additional (compare to phase-1) budgets/cost provision is given for site survey. The cost seems justifiable (INR 2200/analyser). It can be considered based on the experience for industry readiness and discussion with CECB in meeting to make the process fast and smooth.

- **Suggestions:**

  I. The scope of the work in Webel proposal is aligned with RFP, except minor deviation for point number 15. It should be CPCB at the place of CECB

  II. The list of deliverables should also include as:
  - User Acceptance test also suggested along with Trail and Test Run.
  - Deliver training manuals and literature: may include/revise with more content based on the training experience under phase-1.
  - Provide updated/revised manuals etc as mentioned in 5.3 (xiii) in RFP.
  - Provide documents as mentioned in 5.3 (xviii and xx) in RFP

  III. CECB may decide the penalty as per rules/need if seems.

- **Recommendations**

  - The Webel proposal for phase 2 covers all the functional requirements as described in RFP, hence it can be accepted from a functional point of view.
  - Based on the budget/cost analysis as given in "commercial section" in this report, the budget/cost rendered in Webel proposal phase-2 seems justifiable.
  - There is additional (compare to phase-1) budgets/cost provision given for the site survey. The cost seems justifiable (INR 2200/analyzer). It can be considered based on the experience of industry readiness and discussion with CECB in the earlier meeting to make the process fast and smooth.
  - Refer SN -3 and 4 (Table-1), a small hike (0.034%/unit and 1.86%/unit) has been observed which seems justifiable. However, CECB may discuss/bargain this with Webel on this price.
  - CECB may look at suggestions made in the report and may incorporate if seems fit.
  - Recommend conducting "Acceptance Testing" as like UAT at the time of the project delivery.
  - The Webel proposal may be considered with respect to the above points as it is justifiable and further process may be initiated.