GOVERNMENT OF INDIA
BHABHA ATOMIC RESEARCH CENTRE
WASTE MANAGEMENT DIVISION
WASTE MANAGEMENT FACILITY, TROMBAY

Ref: WMD/ETP/EEI/CRPC/73066
Date: 13.08.2020

NOTICE INVITING TENDER

Sealed quotations are invited on behalf of President of India by ‘Chief Plant Superintendent, WMD, Trombay’ for the following work from contractors having adequate experience and capabilities to execute such magnitude of similar works and who have similar experience with different units of Department of Atomic Energy (DAE), Nuclear Power Corporation of India Ltd., Public sector undertakings etc.

Name of work:
Minor works w.r.t. Design, Supply, Installation, Testing and Commissioning of Centralized Radiation Protection Consoles (CRPCs) at ETP & DC, BARC Trombay as per details given in Annexure No. ‘WMD/ETP/EEI/CRPC//Work-details’.

Terms & Conditions -

a. The tenderer may contact telephonically on ‘022-25594127’ for clarifications, if any w.r.t. scope and details of the works. Last date for entertaining such queries shall be 26.08.2020 up to 16:00 hrs, only on working days.

b. Tenderer shall send the quotation in attached proforma and printed on letter-head with GST, etc. and break-up of Taxes, duties, levies, other charges, if any.

c. Sealed quotation should clearly indicate Name of Work, Reference No. & Due date of submission of quotation. Address on the envelop should read:

Kind attention: Guruprasad R., SO/E,
Room No - 122, Effluent Treatment Plant (ETP),
Bhabha Atomic Research Centre, Trombay, Mumbai-400085

Such sealed quotation should reach above address through ‘registered post/speed post’ only through Indian Postal Service. Last date for receipt of sealed quotation is 03.09.2020 up to 14:00 hrs.

d. The Sealed Quotations will be opened on 03.09.2020 at 14:30 hrs in Divisional office, NRG, BARC, Trombay.

e. Associate Director, Nuclear Recycle Group, Trombay, reserves the right to accept / reject any or all the quotations, without assigning any reason thereof.

f. Quoted offer by the tenderer shall be valid for minimum 60 days from the date of opening and also the quoted price shall remain firm during the period of execution of the order.

: Format proforma for quotation

Guruprasad R.,
SO/E.
## Format proforma for quotation

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Item Description</th>
<th>Qty</th>
<th>Rate</th>
<th>Basic Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(Nos.)</td>
<td>(Rs) / %</td>
<td>(Rs)</td>
</tr>
<tr>
<td>1</td>
<td>Design, Supply, Installation, Testing and commissioning of Centralized Radiation Protection Consoles (CRPCs)</td>
<td>01 Job</td>
<td></td>
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<tr>
<td>2</td>
<td>GST</td>
<td>---</td>
<td>%</td>
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<tr>
<td>3</td>
<td>P&amp;F</td>
<td>---</td>
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<tr>
<td>4</td>
<td>Freight</td>
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<td></td>
<td><strong>Grand Total</strong></td>
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1. **Introduction:**

2 nos. of PC based consoles are available at our site for monitoring and generation of alarms of 13 nos. of instruments (installed in various locations of the plant) used for measurement of radiation exposure rate and airborne activity. All these field instruments communicate with these 02 consoles via RS 485. These field instruments & consoles, combination, form to make the **Centralized Radiation Protection Console (CRPC)** of our plant.

Presently the installed instruments, the consoles and the communication (through hard wiring) between them are functional at site. However due to the aging of the PC based console, the CRPC system experiences frequent downtime. Hence it is planned to replace these PC based consoles by means of Panel PCs- **human machine interface (HMI)**.

2. **Brief Scope of work:**

The architecture of the existing system is shown in Figure -1.

**Main criteria – needed to be considered while designing are as follows:**

1. The HMIs (to be supplied) shall be of minimum 15” size (Industrial Panel PC having Colour Display & touch screen for human interfacing).
2. Both the HMIs shall be considered to be operating 24x7.
3. Though the rooms are air-conditioned but the HMIs shall be suited for continuous operation at ambient temperature of 40°C.
4. Failure of one HMI shall not hamper the functionality of the entire CRPC system. Continuous monitoring / interface of all the instruments shall be possible on the other HMI.

It may be clearly noted that - **NO specific architecture / methodology / scheme has been devised / designed – which needs to be implemented / followed by the contractor. Hence the contractor can formulate their own design, devise a suitable architecture & use appropriate software for their interface / operation.**

**However it shall be sole responsibility of the contractor to design the system appropriately and demonstrate for its completeness with regards to its functioning & operability.**

A suitable expected modification is briefly indicated in Figure-2.

3. **General Features of the CRPC system (Hardware + Software)**

Supply of necessary hardware, development of software, testing of interfacing between the field instruments & HMI and commissioning of the communication network is in the scope of the supplier.

1. The HMI main screen shall display 16 nos. (4 x 4 grid pattern) of instrument details. 13

Contd......
nos. (wired instruments) shall be interfaced as part of commissioning activity and remaining 03 nos. shall be kept as spare for future requirements.

2. In case of any alarm getting generated from the instrument, the same shall be displayed on this main screen (with flashing LED) with an audio output (beeper).

3. Each instrument shall have a separate individual screen – for acknowledging / resetting the alarm, trending (1 min. Interval) and for display of 4-5 vital parameters originating from the instrument.

4. Operator should be in a position to distinguish / diagnosis between network failure / instrument failure from the main screen display.

5. The details to be displayed for monitoring shall be provided by the department. For further assistance, if any, the original equipment manufacturer (OEM) of the instrument shall also be contacted. Co-ordination for the same shall be pursued by the department.

6. Each HMI shall be interfaced to an existing 32” monitor at site. These monitors have VGA port (presently our PCs are interfaced using this port).

7. Departmental intranet facility is available at site. The same can be used for communication between both the HMI stations, if found necessary.

8. Ethernet switches are required for the communication, the same shall be in the supplier’s scope (02 nos.)

9. Complete testing & commissioning of the installed system is in the scope of the supplier. Necessary co-ordination & co-operation, at site (field end), shall be provided by the department.

10. The Licensed copy of the software used for development (interface / operation) of the CRPC system shall be loaded on to a Laptop (scope of supply) for any further modifications, if required, at our end

4. **SUPPLY**

   1. **HMI based Touch screen display system** (Minimum specs is mentioned below)

   **Quantity – 2 nos.**

   **A. Design**
   1. Size : 15”TFT LCD having resistive touchscreen.
   2. Resolution : 1024 x 768
   3. Panel type : Flat front panel with IP 65 ingress protection
   5. Power supply : 230 V AC ± 10%, 50 HZ(with AC-DC adapter)
   6. Mounting to be done on : Wall / on CRCA sheet

   **B. System requirement** (Minimum specs is mentioned below)
   1. CPU : Min. 1.0 GHz Dual Core processor
   2. Memory : Min. 2 GB DDR3.
   4. HDD : 8 GB SSD

   Contd......
5. **USB**
   : USB 2.0 type A - Mouse, Keyboard and for USB pen drive (for transferring of data).

6. **HDMI**
   : For signal to be outputted to the 32” monitor available at site.

7. **Back light life**
   : 50000 hrs or better

8. **Ethernet**
   : Coming from RS 485 to Ethernet converter (RJ45)

9. **Audio (for beeper)**
   : Line out phone jack – for sounding alarm

10. **Others**
    : Which may be required for the completeness of the system.

**C. Ambient Condition:**

1. **Temperature**
   : (15 – 50)$^\circ$C

2. **Humidity**
   : 90% RH, non-condensing

5. **Other Items:**

   1. **USB Mouse and Keyboard**
      : 2 nos. Each. – **Logitech** make or equivalent.
      (Though they shall not be continuously connected but shall be used for any modifications, if required, in the HMI or downloading / uploading data)

   2. **RS485 to Ethernet converter**
      : 02 nos. (01 no. install + 01 no. spare) – **TP-Link** make or equivalent.
      (At site, presently the RS 485 signal gets converted to RS 232 (through a converter) before getting fed to the PC. This converter needs to be replaced).

   3. **Ethernet switch**
      : 02 nos. (01 no. install + 01 no. spare)
      **D-Link** make or equivalent, **8-port switch**
      (As the signal from building 2 shall be Ethernet, this switch shall be required at Building 1)

   4. **VGA to HDMI cable adaptor**
      : 02 nos.
      (As the 32” monitors are old and do not have HDMI ports, these adaptors shall be required for interfacing the HMIs to these monitors).

   5. **USB pen drive (8 GB)**
      : 02 nos. **Transcend** make or equivalent.
      (for transfer of data for print outs)

6. **Software:**

   Licenced software/s used for programming shall be supplied in a programming tool (laptop). Necessary hardware required for interfacing the programming tool to the desired...
device shall also be supplied. The contractor shall, at site, demonstrate all the features of the software and its functioning for satisfactory interface with the supplied hardware.

7. **Site Work:**

Preparation of the screens (on the HMI) – for monitoring and interface can be designed & prepared at supplier’s / contractor’s end – almost duplication work of the present screens. Testing of these screens for its performance, using a sample instrument from site, can also be initiated at contractor’s works.

Installation of HMI, other associated gadgets, Ethernet cabling etc need to be carried out site along with final communication checking with all the installed instruments. It is **estimated that 10 working days at site** shall be required for final completion of the work. Estimated man days may suitably be **included** in the offer.

8. **Programming tool (Laptop) – (Minimum specification):**

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<tbody>
<tr>
<td>1. Make</td>
<td>HP - Model VOS 3590 or Equ. / DELL</td>
</tr>
<tr>
<td>2. Processor</td>
<td>Intel i3 – 10th Gen, 64 bit (2.0 GHz speed), 4 MB cache memory</td>
</tr>
<tr>
<td>3. HDD</td>
<td>1 TB</td>
</tr>
<tr>
<td>4. Display</td>
<td>15.6” (LED), Full HD</td>
</tr>
<tr>
<td>5. Operating system</td>
<td>Windows 10</td>
</tr>
<tr>
<td>6. RAM</td>
<td>4 GB RAM (DDR4)</td>
</tr>
<tr>
<td>7. Drive (DVD)</td>
<td>Read / Write</td>
</tr>
<tr>
<td>8. Battery operating time</td>
<td>3 Hours</td>
</tr>
<tr>
<td>9. Weight</td>
<td>Not more than 2.5 Kg</td>
</tr>
<tr>
<td>10. Quantity</td>
<td>01 no</td>
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**Note:**

1. It is sole responsibility of the contractor to establish the communication between the HMIs and demonstrate the completeness of the system’s operation by means of Data fetching & display, Alarm generation – its acknowledging & resetting, trending and data logging.

2. Preparation of the software and its simulated testing can be carried out by the contractor at his works. Upon successful testing and initial inspection by departmental representative, Installation & commissioning activities can be initiated at site.

3. For initial testing at contractor’s site, a sample field installed instrument shall be provided for checking the functioning of software & complete interface.

Contd......
List of Items to be supplied

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<tr>
<td>1.</td>
<td>15” HMI TFT touch screen</td>
<td>02 nos.</td>
</tr>
<tr>
<td>2.</td>
<td>Programming tool (laptop)</td>
<td>01 no.</td>
</tr>
<tr>
<td>3.</td>
<td>USB – Keyboard</td>
<td>02 nos.</td>
</tr>
<tr>
<td>4.</td>
<td>USB – Mouse</td>
<td>02 nos.</td>
</tr>
<tr>
<td>5.</td>
<td>RS485 to Ethernet converter</td>
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GENERAL NOTES:

Quotation:

1. Factory evaluation: Purchaser reserves the right to evaluate the manufacturer’s work himself or by his authorized representative. The bidder shall co-ordinate & arrange a visit for the evaluation. During the visit the bidder shall produce documentary evidence of similar work carried in the recent past by the firm.

2. Inspection: Bidder will have to demonstrate full functionality of the system being supplied – (on the sample instrument provided by the department at the time of inspection). Upon successful inspection the material can be shipped to site for final installation & commissioning.

3. Guarantee: All the offered items shall be guaranteed against faulty material, Defective Design and poor workmanship for a period of One Year (12 months) from the date of commissioning of system.

4. Important Notes:

   In future course, if desired, the bidder may have to:

   4.1 Provide name & contact details of the concerned officers (previous clients) who can be contacted for obtaining feedback regarding work carried out.
   4.2 Submit a feedback certificate from their previous clients for their satisfactory work completion and tubing performance over a period of at least 1 year.
   4.3 Arrange a site visit for the department representative at the previous client’s works / factory.

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5. Notes (Commercial):

5.1 Offer shall be valid for minimum 60 days from the date of opening and quoted price shall remain firm during the period of execution of the order.

5.2 Any deviation from the specification shall be clearly mentioned in your offer.

5.3 Payment will be made within 30 days of completion of the work.

5.4 Work shall be completed within 90 days of release of work order.

5.5 Quoted price shall be exclusive of all taxes & taxes – rate and amount shall be columned separately.

6. Other General Notes:

6.1 Contractor personnel shall have police verification clearance and adhere to all Security norms of the department.

6.2 All the health & safety norms as stipulated by the department shall be followed by the contractor personnel. All the safety wears required for the job and tools, tackles shall be arranged by the contractor.

6.3 Injury, if any to the contractor’s personnel shall be the responsibility of the contractor and not of the department. Contractor will bear all the medical expenses however First -aid help will be given by the department as far as possible.