भाकृअनुप-केन् बारानीकृषि अनुसन्धानसंस्थान
ICAR – Central Research Institute for Dryland Agriculture
संतोषनगर, सैदाबाद पोस्ट हैदराबाद ५०० ०५९ Santoshnagar, Saidabad P.O. Hyderabad 500 059
040-24530161, 24530224 Fax: 040-24531802 http://www.icar-crida.res.in/ Email : store.crida@icar.gov.in

F. No: 2-1/(31)/2018-19/NICRA-SFC/SP Date:18-01-2019

Tender Enquiry for "Pre AMC Repair/ Replacement of Components of FATE Facility and Undertaking of Annual maintenance Contract".

On behalf of the Director, ICAR-CRIDA invites **Online** Tenders under Two Bid System (Technical and Financial separately) for **Pre AMC Repair/ Replacement of Components of FATE Facility and Undertaking of Annual maintenance Contract.**

The Tender Document with full details can be downloaded from CRIDA Website (http://www.icar-crida.res.in/) or the Government of India, Central Public Procurement Portal (http://www.eprocure.gov.in) as per the schedule as given in CRITICAL DATE SHEET as under. The participation in the tender will be subject to remittance of the prescribed Bid Security along with the Technical and financial Bids.

(Saurabh Meena)
Stores and Purchase Officer

INSTRUCTIONS AND TERMS & CONDITIONS FOR ONLINE BID SUBMISSION

1. **Submission:** Only bids received on e-procurement portal will be considered for opening. Bids in any physical form sent through fax/email/courier/post/delivered personally will not be considered.
2. The Tenderers /bidders are requested to visit the website (http://www.icar-crida.res.in/) or the Government of India, Central Public Procurement Portal (http://www.eprocure.gov.in) regularly. Any changes/modifications in tender enquiry will be intimated by corrigendum through this website only.
3. In case, any holiday is declared by the government on the day of opening, the tenders will be opened on the next working day at the same time. The Director CRIDA, HYDERABAD reserves the right to accept reject any or all the tenders.
4. **Tender ID:** Shall be notified on the website (http://www.icar-crida.res.in/) along with document.
5. The firms who desire to participate in such tenders in future may bring it to the notice of Procuring Entity and may register in CPPP through DSC.
6. The bidders should have a valid registration of the firm with GOI/any state govt.
7. This institute will not be responsible for any delay in enrollment or submission of the offer/uploading the offer on above mentioned e-procurement portal for any reason whatsoever. Hence vendors are advised to register in the e-procurement website https://eprocure.gov.in & enroll their Digital Signature Certificate (Class – II or above) and upload their quotations well in advance to avoid last minute problems.
8. **Bid Security:** Bid Security **(also known as Earnest Money)** is to be deposited by all the bidders except Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or registered with the Central Purchase Organization or the concerned Ministry or Department. The bidders should furnish bid security of **100,000/- (one lakh rupees only)** along with their bids. The bid security will be accepted in the form of Account Payee Demand Draft, Fixed Deposit Receipt, Banker's cheque or Bank Guarantee from any of the Commercial Banks or payment online in an acceptable form. The bid security is normally to remain valid for a period of forty-five days beyond the final bid validity period. Bid securities of the unsuccessful bidders shall be returned. EMD should reach this office on or before Tender closing date and time.
9. **Performance Security:** The successful bidder is required to pay an amount equal to 10% of successful bid amount of **AMC CHARGES** towards performance security deposit and the same will be released within one month from the date of expiry all contractual Obligations. No interest shall be paid on such Performance security deposit. Performance Security should remain valid for a period of sixty days beyond the date of completion of all contractual obligations. The Performance Security Deposit should be in the form of Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks or payment online in an acceptable form and on which no interest will be paid.
10. The firm should be in existence for over at least 03 years in the trade with the business turnover of not less than Rs. **2 crore** per annum during the last three years. Documents to this effect may be enclosed.
11. Modification in the tender documents after the closing date is not permissible.
12. The make of the components like sensors and computability should clearly be quoted
13. The successful firm shall have to complete the pre AMC repair/replacement of component within **30** days from the date of confirmed order and the rates quoted shall valid for a period of 120 days from the date of opening of tender.
14. AMC contract will start only after successful satisfactory completion of repair work and acceptance of the same by the technical committee.
15. Further although the post repairs AMC is sought for 3 years, the contract will be initially awarded for a period of one year only and further year wise extension will be given only after satisfactory performance by the contractor and acceptance of the same by the technical committee
16. Rates once finalized will not be enhanced/reduced during the currency of the contract.
17. In case, the successful bidder shows inability at any stage, after the contract is finalized and awarded, for whatsoever reason(s), to honour the contract, the EMD/Performance security deposited would be forfeited.
18. The Director, CRIDA reserves the right to cancel the contract at any time during the currency period of the contract without giving any Reason.
19. Any dispute relating to the enquiry shall be subject to the jurisdiction of the court at Hyderabad only.
20. The lowest Tender may be considered for acceptance keeping in view the overall reasonability of quoted rates
21. The tender document should invariably be filled in and duly signed by the authorized signatory by affixing the company/firm seal on every page of tender and the terms and conditions should strictly be followed before submitting the tender.
22. All repairs/supplies are subject to inspection and approval before acceptance.
23. This Institute is exempted from payment of Customs charges Vide Govt.of India, Ministry of Science and Technology, Deptt.of Scientific and Industrial Research, vide Letter No. **TU/V/RG-CDE (372)/2016, dated 18-10-2016 (Valid upto 31-08-2021).**
24. In absence of all or any copies of documentary proof as required in tender documents shall be rejected.

CHECK LIST

PLEASE NOTE THAT ALL RELATED SCANNED COPIES REQUIRED TO BE ENCLOSED WITH THE TENDER DOCUMENT AS A PROOF

S.No.	List of the Documents to be enclosed with the Tender	Page No.	Enclosed
1	Technical compliance		
2	Bid Security soft copy		
3	The firm registration certificate issued by the appropriate government to be enclosed.		
4	Tender Acceptance Letter		
5	Document showing the firm/company's turnover per annum for the last two financial years certified by the Chartered Accountant		
6	Attested copies of past three years experience OEM for authorized sales /service of the FATE facility or similar advanced research facilities		
7	Certificates of registration for GST issued by appropriate Government		
8	The firm should submit Income Tax returns of latest 3 financial years		
9	NSIC/SSI certificates registered with NSIC (if applicable) to be enclosed		
10	Orders/Satisfactory completion certificate for undertaking of work in Govt. Office /Govt. Undertaking Office /Private Office etc.		
11	Total pages of your entire Tender Document including Enclosures	Total pages _____	

Certified that the above information is correct and the firm is willing to accept all the terms and conditions of the tender document.

Signature and Seal of the Bidder: _____

Business Address: _____

Tender Acceptance Letter
(To be filled by bidder on firm/Company Letter Head)

To
The Director
Central Research Institute for Dry Land Agriculture

Sub: Acceptance of Terms & Conditions of Tender.
Tender Reference No: _____
Name of Tender/Work:

Dear Sir,

1. I/ We have downloaded / obtained the tender document(s) for the above mentioned 'Tender/Work' from the web site(s) namely:_____ as per your advertisement, given in the above mentioned website(s).

2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from Page No. _____ to _____ (including all documents like annexure(s),schedule(s), etc.,), which will form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.

3. The corrigendum(s) issued from time to time by your department/ organizations related to this tender too have also been taken into consideration, while submitting this acceptance letter.

4. I / We hereby unconditionally accept the tender conditions of above mentioned tender document(s) / corrigendum(s) in its totality / entirety.

5. I / We do hereby declare that our firm/company has not been blacklisted /debarred by any Govt. Department/Public Sector undertaking.

6. I / We certify that all information furnished by the our firm/company is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/organization shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Yours Faithfully,
(Signature of the Bidder, with Official Seal)

ADDITIONAL TERMS AND CONDITIONS:

1. Bidders should quote their rates of individual items and for rebate offered in figures as well as in words. If the rates are not quoted in words in addition to figures, such tenders will be rejected. Incomplete quotation in any form shall be rejected.
2. Intending bidders can inspect and examine the Site during office hours and its surrounding and shall satisfy himself before submitting his tender as to the nature of the Site, the quantities and nature of works and material necessary for the completion of the Works and the means of access to the Site, the accommodation he may require and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect this tender.
3. The office functions from 9.30 am to 4.30pm except second Saturday and public holidays.
4. The workers carrying out the work shall be provided with proper safety gear as per the requirements. The tools/ equipment for use shall be of standard quality.
5. Tenderers are advised to submit the tender strictly based on the terms and conditions and specification contained in the Tender Documents and not to stipulate any deviations. Conditional tenders are liable to be rejected.
6. In case any incident occurs with the deployed labour of the contractor/agency while working, it will the responsibility of the contractor/agency. This office shall not liable for any claim
7. In case of breach of any of terms and conditions mentioned above, the Competent Authority will have the right to cancel the work order or contract as a whole without assigning any reason thereof , and nothing will be payable by the Patent Office in that event and the security deposit will be forfeited.
8. The contract will be non transferable and hence the firm shall not be entitled to assign or sublet the work or any part of it to any other person or party failing which the contract will be cancelled immediately
9. Participating Firms are requested to clearly understand the scope of work, location and details of manpower to be positioned and nature of duty etc., before participating in the tender. The services are to be provided at CRIDA-HAYATH NAGAR RESEARCH FARM
10. All revisions, clarification, corrigenda, addenda, etc. to the tenders (if required) shall also be hosted on the CPP Portal and hence contractors are advised to regularly visit the said site and keep themselves updated. The tenderers are again advised to get themselves registered on CPP Portal, also ensure that, login ID details of the bidders shall be communicated to tender inviting officer.
11. The earnest money deposit submitted by all the tenderers except the lower tenderer will be refunded upon finalizing the bid. Earnest money deposit submitted by the lowest tenderer will be returned after acceptance of the tender and submission of the security deposit.
12. If the tenderer withdraws his tender before expiry of the validity period, or before the issue of letter of acceptance, whichever is earlier, or makes any modification in the terms and condition of the tender which are not acceptable to the department, then the Department shall, without prejudice to any other right or remedy, be at liberty to forfeit the earnest money absolutely.
13. The L-1 tenderer is bound to accept the tender and execute/ perform the work as envisaged in the tender documents. In case of unwilling to perform/ execute the work or withdraw his L-1 offer due to any reason including incorrect/ wrong quoting, the firm will be debarred to participate in any future tender for a minimum duration of one year or period as decided by accepting authority.
14. To cancel the advt./enlistment of the agency pertaining to the above Tender, anytime without assigning any reason whatsoever for which no claim on any ground shall be entertained
15. The participating firms can visit the facility site on pre bid meeting date provided in the CPPP web. The transportation from CRIDA to HAYATH NAGAR RESEARCH FARM can be arranged by this institute on the day of pre bid meeting.

Scope of the work

"FATE" - SCADA based Free Air Temperature Elevation Facility Annual Maintenance Contract

TABLE OF CONTENTS

1 **Project Background**

1.1 Introduction

Central Research Institute for Dryland Agriculture (CRIDA) is a is a premier institute of Indian Council of Agricultural Research engaged in research, training and extension activities in basic and applied research in rainfed farming. Indian Council of Agricultural Research (ICAR) is an autonomous organisation under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture, Government of India.

This Institute also undertakes National/ International Collaborations and Consultancy Projects. All India Coordinated Research Programmes (AICRPs) of ICAR on Dryland Agriculture and Agrometeorology with 25 partners each are in CRIDA. This is the lead Institute and the National Nodal point for the National Innovations in Climate Resilient Agriculture (NICRA) which is being implemented at large number of Research Institutes of ICAR, State Agricultural Universities and KVKs.

ICAR-CRIDA requires its FATE Facility including all sub systems like (cryogenic liquid) LCO2, SCADA, electrical systems to be maintained on annual maintenance contract subject to regular condition assessment and maintenance in accordance with the systems manufacturing manuals and recommendations as well as industry best practice.

1.2 SCADA based FATE System Description

The Free Air Temperature Enrichment (FATE) system is a research facility with elevated temperature conditions over ambient and intended to conduct controlled experiments with other manipulative parameters such as CO2 enrichment and moisture deficit stress on intact eco-systems under natural environmental conditions.

The increasing CO2 concentration of Earth's atmosphere and associated predictions of global warming are likely to affect the agricultural productivity and functioning of natural ecosystems. In order to conduct realistic experiments to understand how plants and ecosystems will respond to these changes this facility has been developed at CRIDA Hyderabad.

Functionality of FATE

The facility creates an artificially induced enriched temperature through arrays of infrared heaters in open field conditions with uniformity of the thermal radiation and canopy temperature across the plot. This facility has three major components viz., infrared heating system, SCADA based control system and (cryogenic liquid) LCO2 storage and CO2 supply system.

The impact of enrichment of temperature on vegetation in the presence of elevated CO2 is made possible with SCADA controlled elevated IR temperature and release of CO2 fumigation linked with wind speed and wind direction.

1.2.1 Infrastructure

Major components of FATE

i. The Nine FATE Rings

Fabrication of nine FATE rings of eight meter diameter with detachable arrangement along with height adjustment with respect to crop height. Three rings are for maintaining ambient crop canopy temperature + 3°C ±0.5°C. Another three rings are for maintaining ambient crop canopy temperature + 3°C ±0.5°C and CO_2 550ppm ± 50ppm. Remaining three rings are for ambient temperature with all identical structural fittings.

All Rings are so located that no hindrance in any set conditions with each other's. Ambient crop canopy temperature +3°C maintain with adjustable IR Heater of suitable capacity in each plots. Each ring consists of poles of 80x50, 50x50, 80x80mm hot dip Galvanized sections.

The CO_2 Elevation Rings has a PU tube in circular for release of CO_2 which are directly connected with dedicated 20 KL main Tank through Solenoid valves, pressure regulators etc.

ii. Heating system

The heating system in each of eight rings consisting of 24 infrared heaters 220 v, 2000w each with total 48 KW capacity with weather proof arrangements to maintain the set elevated temperature. The supportive structures have high quality material to with stand rugged open field weather conditions.

The gradient of +3.0 ± 0.5°C above ambient temperature is maintained with proper control and regulation through SCADA set points. The infrared heaters are enclosed in weather proof sheet steel enclosures. Each ring fitted with nine such heaters by steel wire hangers and rest fixed on the pilers thus maintaining the uniform desired temperature range over and above the ambient temperature. The temperature settings have a cut off for above 50 ± 0.5°C under any circumstances.

iii. CO_2 supply system
CO2 supply system is consisting of CO_2 tank of 20 Kilo litres Liquid CO_2 capacity with all necessary accessories to maintain the liquid, gas pressure and with relevant safety, licencing norms. Gas is supplied from the CO_2 tank site to the FATE rings site through SS 304 grade seamless Tubing. The elevated CO_2 concentration in the open field is provided with proper wind speed and direction monitoring system and CO_2 fumigation linked with the wind speed and wind direction to maintain controlled CO_2 concentration in open field with gradient temperature condition.

iv. Control panel
Control panel consisting of sensing ambient temperature, Canopy temperature, soil temperature, soil moisture and CO_2 analyser with Supervisory Control and Data Acquisition (SCADA) interface system Xarrow SCADA control software, PC linked Program Logic Control (PLC)-Mitsubishi FX3u-32 M PLC, Digital Expansion Block-Mitsubishi FX2n-16EYT, RS-485 Interface Module Mitsubishi FX3u-485ADP etc.

v. Temperature sensors and control
The Temperature transmitter installed is a micro-controller based Redix make model number SC807. This is, high performance 2-wire RH+T transmitter. It has 2 x 4-20 mA outputs with True 2-wire operation for accuracy of ± 2% RH, ± 0.5°C, it's a PC programmable using PC configurator PCC82. The ambient temperature is sensed with weather station made by Virtual Electronics for temperature range -40 to 123.8°C with accuracy ± 0.5°C. Analog Input Module employed is made by Radix Electro Systems Pvt Ltd with 8 channels, each with universal analog inputs capable of connecting 8 thermocouples, Linear input - 0~50 mV, 0/4~20 mA, communication ports isolated RS485/ MODBUS RTU, up to 19200 Baud with user programmable. Its scalable with 3 key tactile keypad, non-volatile, indefinite duration 3 key programming.

vii. CO_2 analyser and sensors
CO_2 monitoring is done by microprocessor based CO_2 analyser with non-dispersive infrared absorption (NDIR) measuring method. The provision for measuring CO_2 concentration is made through 6 sampling points in each chamber and is interfaced with SCADA.

viii. SCADA (Supervisory Control and Data Acquisition):
A supervisory computer is the core of the SCADA system which is gathering data of all eight chambers on the process/status and sending control commands to the field connected process/status devices. A high performance Graphical HMI is the front end of operator with Xarrow trade name. Data acquisition begins at the PLC level and includes instrumentation readings and equipment status reports that are communicated to SCADA as required.

Data is then compiled and formatted in such a way that a control room operator using the HMI (Human Machine Interface) can make supervisory decisions to adjust or override normal PLC controls. Data is also fed to a historian, built on a database management system, to allow trending and other analytical auditing. The present supervisory computer is connected via a USB to serial link to the PLC.

ix. Data management system
The SCADA program has a user configured database which provides the software about the connected instrumentation and parameters which are to be accessed. The database also have information on how often the parameters of the instruments are accessed and if a parameter is a read only value (e.g. a measured value) or read / write, allowing the operator to change a value (set point). The SCADA software continuously updates its own database with the latest analogue while functioning. The data on various parameters viz., ambient temperature, IR temperature, wind speed, wind direction, CO_2 concentration recorded at each ring of the facility is recorded at a pre-set interval.

x. Standard signal cables
Standard signal cable is provided for connecting sensors to the PLC/SCADA system in control room. Cables are of standard make and ISI certified and enough caution was taken to avoid any signal loss in the wires while connecting from source to the SCADA. Cables system has ferrules and identifiers for easy identification in the field to facilitate easy maintenance.

2. Particular Specification
Tender for Comprehensive AMC for servicing and maintenance of "FATE" SCADA based Free Air Temperature Elevation Facility including UPS System and 20KL (cryogenic liquid) LCO2 source and CO_2 distribution system at NICRA Complex at HRF CRIDA Hyderabad

Component Specification quantity and Details Enclosed

2.1 Introduction

This section sets out the **scope of maintenance work and additional support services** that ICAR-CRIDA is procuring.

This Specification is intended to define and outline the minimum standards, workmanship, safety and deliverables expected from the appointed Maintenance Contractor (the Contractor) for the FATE system installed at the ICAR-CRIDA HRF Hayatnagar Hyderabad Location.

2.2 FATE System Maintenance Contract - Scope of Work

ICAR-CRIDA requires all its FATE Facilitate including all sub systems like SCADA, UPS, electrical, Liquid/gas CO2 source, supply and distribution system to be maintained and subject to regular condition assessment and maintenance in accordance with the systems manufacturing manuals and recommendations as well as industry best practice. If the contractor finds or knows of discrepancies between the systems operational and maintenance manual and new Industry standards or requirements it is expected that the contractor will notify the client for implementing them with in this contract scope.

The operational requirement of "FATE", SCADA based Free Air Temperature Elevation Facility is also to be executed by the experienced and qualified personnel at any time of the research project requirement**.**

The maintenance work to be undertaken as part of this Contract is as follows:

2.2.1 Annual Maintenance

- The Contractor shall visit the ICAR-CRIDA HRF Location Site on the basis of his quote throughout the annual period, to undertake the following as a minimum:
- Carry out an initial system health check and metering COMMs integrity check in order to gather an overview of the status of the FATE Facility.
- Investigate any system defects, deficiencies, deviations, alarms raised since previous visit and advice of strategies on reducing or eliminating these alarms either during the visit or within a post visit report.
- Perform a full database backup, to help to prevent potential catastrophic system failure from losing essential data, potentially being used for reporting or Research purposes.
- Liquid/Gas based CO_2 storage tank, supply, distribution and handling of such facility with authorised/trained technicians as per the PESO safety standards is also desired.
- In addition to the above and time permitting, the Contractor will provide the following services:
- Undertake any changes/enhancements to system set-ups. To be advised by the Client prior to the maintenance visit.
- Undertake Client and client's agent refresher training. Requirements to be advised prior to the maintenance visit.
- Any materials required for breakdown or for such other required work is to be executed on cost of material, which should be approved by the The Director CRIDA Hyderabad.
- The required log books, maintenance schedule charts are to be maintained and be made available for inspection by the concerned authority CRIDA.
- Periodic CO_2 gas leak testing and other safety regulations are to be monitored and records to be maintained properly.
- All spares parts and materials shall be genuine and of same make and type as installed wherever applicable and a minimum quantity of spares and materials for routine maintenance may be kept at site to minimize time of maintenance.
- The firm / agency / contractor has to keep SCADA based "FATE" Free Air Temperature Elevation Facility's well maintained for the required research work at all times.
- Proper care shall be taken to avoid major/minor breakdown at the SCADA based "FATE" Free Air Temperature Elevation Facility.
- In the event of any breakdown, the same will be rectified immediately within 4 hours from the time of reporting of the fault.
- Similarly, if any breakdown takes place due to negligence of firm/ agency/ contractor, the whole component has to replaced/ rectified to bring it to the original condition immediately.
- The maintenance periods for the system shall not be exceeded. However, within the duration of the Contract it may be found necessary to shorten these periods after experience to cater for operation under adverse conditions etc.

- The Contractor shall therefore provide within the Tender Return a Schedule of Rates for each item of equipment detailing the cost associated with each maintenance item associated with the item of equipment.
- Similarly prior to take over of facility under AMC any deviations, defective or out of service parts like sensors, motors, components etc., are needed to be replaced or repaired on chargeable basis as denoted by "**one time repair charges**"

All works to the equipment shall be undertaken to the Manufacturer's requirements as detailed within the relevant Operation and Maintenance Manual.
If the contractor finds or knows of discrepancies between the system/facility operational and maintenance manual and new Industry standards or requirements it is expected that the contractor will notify the client to Replace/upgrade/repair the components.
The Contractor shall prepare a maintenance programme for the equipment detailed within this Specification based upon the maintenance periods indicated. A copy of this programme shall be included within the Tender Return.
Within the Tender Price the Contractor shall allow a visit to the site within fourteen days of being awarded the Contract to familiarise themselves with the system and to undertake an inspection of the system and to provide a report to the Concerned In charge of any additional defects noted during the inspection.

2.2.2 Monthly Support

The Contractor is to provide a monthly maintenance check via Physical visits and remote desktop connection, reporting any defects or issues with the system to CRIDA. The Contractor shall submit a monthly service report with all system parameters functional status.

2.2.3 Offsite Support.

The Contractor shall provide general telephone, support via the Designated Site Engineer during "normal" working hours, 09:30 to 16:30 for the duration of the contract.

2.2.4 Remote Call Out.

The Contractor shall have the facility to provide a 24hr 365 day / year emergency cover to FATE facility installed at the ICAR-CRIDA HRF Location on a call out basis.
The Contractor shall indicate within the Tender Return how their call out system shall operate, i.e. point of contact, telephone support, time to attend site etc.
In the event of a call out, engineer call back to confirm receipt of the call out, advice primary action, take the agreed technical response and or dial up response shall be undertaken within 1 hour of the call out. The Contractor shall indicate within the Tender Return the costs associated with the provision of the call out service.

2.2.5 Software Updates.

The FATE facility's SCADA software installed is version 5.0 and the Contractor shall allow within the Tender to upgrade and install the latest version of the software, or its version.
The Contractor shall provide and install all updates to the FATE SCADA software as released by the system manufacturer. It is envisaged that this will be undertaken, as Installation of software upgrades must not interrupt the operation of the system.

2.3 Additional FATE Facility System Support Duties

2.3.1 Operational Support

ICAR-CRIDA shall require, from time to time, assistance with the operation of the SCADA System. This is generally envisaged to be, but not limited to, during the deployment of a ICAR-CRIDA and could involve testing of systems and equipment.
The routine operation of SCADA based "FATE" Free Air Temperature Elevation Facility is also to be executed by the experienced and qualified personnel at any time of the research project requirement**.**
Unlike a call out this work will be planned in advance and be carried out to a programme. The Contractor shall indicate within the Tender Return the costs associated with the provision of the Operational Support Service on this basis.

2.4 Personnel

The following personnel shall be provided by the Contractor for the implementation of this contract:

2.4.1 Contract Manager

The duties of the Contract Manager are described below:

- Shall be in a senior position within the Contractor's Company, and shall be the first point of contact between ICAR-CRIDA and the Contractor.
- Shall be in such a position to be able to make all commercial decisions on behalf of the Contractor in relation to the Contract.
- Shall be responsible for the overall implementation and administration of the Contract.

- Should have experience of the Modern Agricultural Research Facilities, Equipment's and process plants.

Details of the proposed Contract Manager, including a CV and details of relevant experience, shall be provided with the Contactor's Tender Return.

2.4.2 Designated Site Engineer

The duties of the Designated Site Engineer are described below:

- Shall be a senior engineer within the Contractor's Company, and shall be responsible for the site operations required for the Maintenance Contract.
- Shall be responsible for all works undertaken as part of this Contract.
- Shall have sufficient qualifications and experience to undertake the role in respect of the type of installation installed at ICAR-CRIDA.
- Should have experience of the Modern Agricultural Research Facilities, Equipment's and process plants.

Details of the proposed Designated Site Engineer, including a CV and details of relevant experience, shall be provided with the Contactor's Tender Return.

2.4.3 Installation Technicians

The Contractor shall provide sufficient Installation Technicians to undertake the works described within this Specification.

The Installation Technicians shall:

- Be under the control of the Designated Site Engineer.
- Be sufficiently skilled and experienced to undertake the tasks required.
- Have sufficient qualifications and experience in respect of the type of installation installed at ICAR-CRIDA.

Details of the Engineering Technicians required for the Contract shall be provided with the Tender Return.

2.5 Contract Schedule

Within the Tender Proposal the Contractor shall indicate the period of time required for maintenance of the system. These time periods will be used by ICAR-CRIDA to advise the Researchers for the shutdowns of the system that will be required for maintenance of the system.

3. Service Level Agreement

The Contractor shall be aware that the following items may result in termination of the Contract:

- Non-compliance with the ICAR-CRIDA Operational Management System.
- Failure to attend a call out within specified time.
- Failure to comply with the requirements of this Specification.

In the event of the occurrence of any of the above, ICAR-CRIDA shall immediately advise the Contractor's Contract Manager, in writing, who shall arrange for the necessary remedial actions to take place without delay.

Any costs associated with these remedial actions shall be borne by the Contractor.

4. **Instructions to Tenderers**

4.1 Introduction

- Failure to comply with any of these instructions may lead to tenders being rejected.

4.2 Clarifications

If there is any query regarding the Tender Document the Tenderer shall set out such queries in writing, by e-mail, for clarification and address them to The Director quoting the Tender Reference Number.

Requests for clarification shall be submitted in writing, by e-mail, in sufficient time to allow a response and at least seven working days before the final date for submission of Tenders.

4.2.1 Tender Amendment

During the tender period ICAR-CRIDA may issue Tender Amendments to clarify, modify or add to the Tender Document.

4.2.2 Conditions for Tendering

ICAR-CRIDA does not bind itself to accept the lowest or any Tender nor shall ICAR-CRIDA be liable for any expenses incurred by the Tenderer in preparation of the Tender.

4.2.3 Information to be returned with Tender

The following information is to be returned in the order specified in a single folder containing the relevant files in pdf format.

- Experience of the company in maintenance of SCADA based systems with a particular emphasis on Modern Agricultural Research Facilities; Equipment's and process plant systems only.
- List of key personnel that you are proposing to deliver the maintenance along with experience of key staff. The records should show how the proposed individuals have the necessary skills and expertise to meet the requirements of this specification.
- A detailed method statement setting out as a minimum your approach to managing this FATE facility Maintenance Contract.
- A maintenance programme for the equipment detailed within this Specification based upon the maintenance periods indicated.
- Details of the operation of the FATE facility as proposed by the Contractor.
- A schedule of staff resources (with hours/days by activity) required to complete the work described to tally with the Final amount submitted as part of the tender.
- The Contractor's Risk Assessments and Method Statements for undertaking work on a Client's SCADA system based FATE Facility.

F A T E

SCADA based Free Air Temperature Elevation Facility

Functional Status of components of Facility before award of A M C

FATE – Functional Status of Facility's Components

1 Ambient ring-1

SNo	Components	Numbers	Specifications	Manufacture details	Present Status of System		
					Working	Not-Working	Need Repairs
1	Air temperature sensor	1	Pt100	Radix	Yes		
2	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-0II	Ray teck FLUKE	Yes		functional check needed
	Ambient ring-2						
3	Air temperature sensor	1	Pt100	radix	Yes		
4	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-II	Ray teck FLUKE COMPANY	Yes		functional check needed
5	Analog Input Module - 8I/P channels, 2x16 backlit LCD, 3 key, 3 level prog, 4-20 mA output, RS485 /MODBUS RTU Code 2310	1	radix SCM 201	Radix electro systems		Yes	
6	Soil Moisture sensor	1	radix SCC401	Microcomm-SOM1310		Yes	
7	Soil Temperature sensor	1		Microcomm-ME1310		Yes	
	Ambient ring-3						
8	Air temperature sensor	1	Pt100	Radix	Yes		
9	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-II	Ray teck FLUKE COMPANY		Yes	
10	Control Wiring Cables-Set Ambient Control Rings- to- Control Panel	1	ISI, 1100V Grade			Need Repla-cement	
	Temperature Control ring-1						
11	Air temperature sensor	4	Pt100	Radix	2	2	
12	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-II	Ray teck FLUKE COMPANY		Yes	functional check needed
13	IR Heaters	24	FSR1000, 230 V,1000Wat	ELSTEIN	12	12	
14	Analog Input Module - 8I/P channels, 2x16 backlit LCD, 3 key, 3 level prog, 4-20 mA output, RS485 /MODBUS RTU Code 2310	1	radix SCM 201	radix electro systems		1	
15	Soil Moisture sensor	1	radix SCC401	Microcomm-SOM1310		1	
16	Soil Temperature sensor	1		Microcomm-ME1310		1	
	Temperature Control ring-2						
17	Air temperature sensor	1	Pt100	Radix	Yes		
18	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-II	Ray teck FLUKE COMPANY		Yes	functional check needed
19	IR Heaters	24	FSR1000, 230 V1000Watt	ELSTEIN	12	12	
20	Analog Input Module - 8I/P channels, 2x16 backlit LCD, 3 key, 3 level prog, 4-20 mA output, RS485/MODBUS RTU Ord. Code 2310.	1	radix SCM 201	radix electro systems Pvt		1	
	Temperature Control ring-3						
21	Air temperature sensor	1	Pt100	Radix	Yes		
22	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-II	Ray teck FLUKE COMPANY	Yes		functional check needed
23	IR Heaters	24	FSR1000, 230 V,1000Watt	ELSTEIN	12	12	

24	Analog Input Module - 8I/P channels, 2x16 backlit LCD, 3 key, 3 level prog, 4-20 mA output, RS485/MODBUS RTU Ord. Code 2310.	1	radix SCM 201	radix electro systems Pvt		1	
	CO2 X Temperature Control ring-1						
25	Air temperature sensor	4	Pt100	Radix	Yes		
26	IR Sensor	1	RAYCMLTJ3M, 24V20mA CAT-II	Ray teck FLUKE COMPANY		Yes	function al check needed
27	Ceramic IR Heaters in SS Enclosure	24	ELSTEIN FSR 1000, 230 V1000Watt	ELSTEIN	12	12	
28	CO2 Analyser & Monitor	1	PRIVA Guardian NG	EDINBURGH SENSOs		yes	Not function al
29	Solenoid Valves	9	FLUID CONTROL SYSTEM	ROTEX AUTOMATION		9	
30	CO2 Tubing PU TUBING Size-A*8X12 Size-B*4x6	set	PU CALIBRATED 98 SHORE A*U27 *574112	LEGRIS		Size-A*=25 Mts, Size-B*=20Mts	
31	legris on/off valves	6	legris on/off valves	legris on/off valves		6	
32	Soil Moisture sensor	1	radix SCC401	Microcomm-SOM1310		1	
33	Soil Temperature sensor	1		Microcomm-ME1310		1	
34	Analog Input Module - 8I/P channels, 2x16 backlit LCD, 3 key, 3 level prog, 4-20 mA output, RS485/MODBUS RTU Ord. Code 2310.	2	radix SCM 201	radix electro systems	1	1	
	CO2 X Temperature Control ring-2						
35	Air temperature sensor	4	Pt100	Radix	Yes		
36	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-II	Ray teck FLUKE COMPANY U.S.A		1	
37	Ceramic IR Heaters in SS Enclosure	24	ELSTEIN FSR 230V,1000Watt	ELSTEIN	12	12	
38	CO2 Analyser & Monitor	1	PRIVA Guardian NG	EDINBURGH SENSORS UK		1	
39	Solenoid Valves	9	FLUID CONTROL SYSTEM	ROTEX AUTOMATION		9	
40	CO2 Tubing PU TUBING Size-A*8X12 Size-B*4x6		PU CALIBRATED 98 SHORE A*U27 *574112	LEGRIS		Size-A*=25 Mts, Size-B*=20Mts	
41	legris on/off valves	6	legris on/off valves	legris on/off valves		6	
42	Soil Moisture sensor	1	radix SCC401	Microcomm-SOM1310		1	
43	Soil Temperature sensor	1		Microcomm-ME1310		1	
44	Analog Input Module - 8I/P channels, 2x16 backlit LCD, 3 key, 3 level prog, 4-20 mA output, RS485/MODBUS RTU Ord. Code 2310.	1	radix SCM 201	radix electro systems		1	
	CO2 X Temperature Control ring-3						
45	Air temperature sensor	4	Pt100	Radix	Yes		
46	IR Sensor	1	RAYCMLTJ3M, 24V 20mA CAT-II	Ray teck FLUKE COMPANY U.S.A		1	
47	Ceramic IR Heaters in SS Enclosure	24	ELSTEIN FSR-230 V, 1000Watt	ELSTEIN	12	12	
48	CO2 Analyser & Monitor	1	PRIVA Guardian NG	EDINBURGH SENSORS UK		1	
49	Solenoid Valves	9	FLUID CONTROL SYSTEM	ROTEX AUTOMATION		9	
50	CO2 Tubing PU TUBING Size-A*8X12 Size-B*4x6		PU CALIBRATED 98 SHORE, A*U27 *574112	LEGRIS		Size-A*=25 Mts, Size-B*=20Mts	

51	legris on/off valves	6	legris on/off valves	legris on/off valves		6	
52	Soil Moisture sensor	1	radix SCC401	Microcomm-SOM1310		1	
53	Soil Temperature sensor	1		Microcomm-ME1310		1	
54	Analog Input Module - 8I/P channels, 2x16 backlit LCD, 3 key, 3 level prog, 4-20 mA output, RS485/MODBUS RTU Code 2310	1	radix SCM 201	radix electro systems Pvt		1	
	Weather Station						
55	Weather station with ambient temperature, RH, Wiind speed, wind direction, Rain fall, solar Radiation sensors	1	Microcomm		Yes	Wind Speed Rain Gauge	Yes
56	PLC INRERFACE	1	ME-1310-PLC	Microcomm	Yes		
57	Powersuply & Battery charger	1	Automatic sealed lead-Acid Model HPX-30	Xenotronix	Yes		
58	**Fate Control Pannel**						
59	Fate Control Pannel housing all PLC, control, electrical, signalling, relay modules and power supplies.	1	Climate C	Saveer Biotech	Yes		
60	PLC	1	MELSEC FX3U-32M	MITSUBISHIPLC	Yes		
61	SCADA	1	Xarrow 5.0	Xarrow	Yes		
62	PLC communicators	2	FX2N-16EYT	MITSUBISHI	Yes		Some control Cables need replacement
63	PLC INPUT&OUPUT	1	FX2N-8AD	MITSUBISHI	Yes		
64	Relay module	5	Relay module	Saveer biotech ltd	Yes		
65	UPS-5KV	2	SRC-6KUXI	APC	Yes		
66	UPS-Supported batteries	32	APC	APC	Yes		Replacement as per time schedules needed
67	Control box comprising of all electrical protection, mcb contactors etc.				Yes		Need some repairs Replacement
	CO2 Source & Supply						
68	20K CO2 Tank with SS308 pipe network, Rinac chiller, safety releases, all other associated devices.	1	20 KL with PESO licence	Bharath Tank RINAC Chiller	Yes		Need some Tunings
69	Computer with OEM licence software Windows, Office pack, Antivirus, SCADA software etc.	1	i7	DELL		Yes	Need some repair & Re-installation
70	HP PRINTER-16MB mem(264MHZ) SPEED	1	CNFGNO6102	HP LASER JET PRO	Yes		
71	FATE structure including G.I Pillar 3m height from G.level with Manual Height adjustment accessories	108		Saveer	Yes		Need some Tunings

I) Evaluation Criteria for technical bids:

Bidders must submit documentary proof as mentioned in the checklist which will be need for evaluating the technical bids. The following are the criteria with the scorecards:

i. Experience in the relevant field (satisfactory certificates obtained from the earlier executed orders issued by different organizations/institutes needs to be enclosed)

Year	Score
More than 5 years	10
3 to 5 years	5
1 to 3 years	3
Less than 1 years	0

ii. No. of AMC for similar equipments in other institutions in India (work orders obtained from the earlier organizations/institutes needs to be enclosed):

No.	Score
More than 3	50
Between 2 & 3	30
Between 1 & 2	10
Less than 1	0

iii. Required expert manpower based on their qualifications/expertise (needs to be enclosed company certificates):

No. of engineers	Score
More than 15 specialized certified Engineers	35
More than 5 and less than 15	20
Less than 5	5

iv. Average Turnover of last 3 years:

Amount	Score
>5 crores	5
2 and 5 crores	3
Between 50 lakhs & 2 crores	1
Less than 50 lakhs	0

The bids top 5 technically qualified firms will be considered for financial evaluation rest will be eliminated.

II) Evaluating criteria for financial bids:

The facility needs repairing and replacement of some components and then AMC is required for the same for 3 years.

1. Pre AMC Repairs and Replacement (one time charges) - A
2. AMC (Charges for Spares parts cost) - B(i)
3. AMC (Labour charges for AMC) - B(ii)

The bidders need to provide total along with the cost of each (**A, B(i), B(ii) and total**). The total cost will be used for calculating L1, L2 and L3 etc. from the bidders.