

Tender Notification for Procurement

Society for Innovation and Development

Indian Institute of Science

Bangalore 560012

Quotations are invited for the procurement of Plasma Emission Detector based bio-Hydrogen Gas Analyzer System on CIP Bengaluru Basis to measure a certain set of contaminants in bio-Hydrogen as per ISO 14687 specifications for PEM fuel cell applications. The quotation should clearly indicate the terms and conditions of delivery, delivery schedule, entry tax, payment terms, warranty coverage etc.

The quotation should be submitted in two parts:

Part I (Technical bid) and

Part II (Commercial bid).

Important dates

Sl.No	Item	Date
1	<p>Two bid tenders last date</p> <p>The tenderer should submit Technical and Financial Bid separately in sealed envelope super scribing the envelope as 'Technical Bid' and 'Financial Bid'.</p> <p>Both these envelopes should again be put in a single envelope supscribed 'TENDER FOR HYDROGEN GAS ANALYZER SYSTEM' should reach;</p> <p>The Chief Executive, Society for Innovation and Development (SID) Indian Institute of Science Bangalore-560012</p> <p>Kind Attention : Prof Dasappa</p>	31 st March 2021
2	<p>Technical Bid opening date</p> <p>The Financial bids of the short listed agencies, qualifying in the technical scrutiny of the Committee set up by the Institute, will be opened at a later date.</p>	02 nd April 2021

Requirement

Hydrogen economy in general and bio-hydrogen in particular are gaining significant traction in light of the environmental challenges. Standards have been established for contaminant limits in conventional Hydrogen generated from either SMR or Electrolysis route (ISO 14687). Towards qualifying bio-syngas generated from oxy-steam gasification for fuel cell applications, the generated gas is required to be analyzed for as per the ISO specification. In light of the same, a Plasma Emission Detector based H₂ gas analysis system for quantifying the following designated contaminants is sought to be procured. The details of the contaminants the detector should handle, the measurement range and the lowest detection limit are as indicated in the following table.

Sr.No	Impurity	Measurement Range	Lowest Detection Limit
01	Ammonia – NH ₃	0 – 500 ppb	0.5 ppb
02	Moisture – H ₂ O	0 – 1000 ppb	10 ppb
03	Sulfur compounds		
03-a	H ₂ S	0 – 500 ppb	0.5 ppb
03-b	COS	0 – 500 ppb	0.5 ppb
03-c	CS ₂	0 – 500 ppb	0.5 ppb
03-d	CH ₄ S	0 – 500 ppb	0.5 ppb
03-e	DMS	0 – 500 ppb	0.5 ppb
03-f	DMDS	0 – 500 ppb	0.5 ppb

Specific features required

1. System must have provisions for auto calibration
2. Material should be able to handle corrosive gases (containing sulfur) and the gas stream components should preferably be made of high purity quartz
3. Control interface with HMI (Human Machine Interface) and minimum 8 inch display for displaying the chromatograms
4. Windows 10 & RS232/RS 485 interface with Ethernet connectivity
5. All detectors used for measurement shall be housed in a single Chassis (moisture and other gases)
6. Gas purifier shall be supplied from the same OEM to ensure integrity of the Zero Gas
7. Gas Dilution system shall be supplied from the same OEM for ease of calibration and to ensure integrity of readings.
8. Minimum 6 isothermal ovens to cover a range of applications for the same instrument and for upgradation with additional GC.
9. Analyzer should have open architecture philosophy for on site upgrade
10. Easy maintenance and detector service life should be more than 15 years

Important guideline for bidders

It is mandatory for bidders to quote items having Local Content more than 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017 P- 45021/2/2017 – B. E. –II dated 04.06.20 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (Submit duly filled Annexure III for the same.

Other generic terms of reference are as identified below;

1. Multi-Level Safety Monitoring

A tool for multi-level safety monitoring is required to ensure the optimal safety of operator, unit under test and test bed in all operating states.

2. Services to be supplied on various aspects related to the installation:

i. Electrical Engineering:

- Electrical integration of all test system components at IISc test cell environment.
- The electrical engineering has to be carried out according to EN-60204-1 - Safety of machinery.

ii. Mechanical Engineering:

Mechanical / physical integration of the analyzer at IISc including:

- Creation of a 3D layout of the test cell, the operator area and –if applicable – the technical area. Note: Drawings of the concerned part of the building will be provided in a suitable digital format by IISc.
- Detailed Engineering and specification of specific components and subsystems as specified in the technical specifications.
- Arrangement of the equipment / components / devices to be supplied and incorporation of them into the 2D-layout.
- Design drawings are to be delivered.
- Gas storage guidelines must be clearly specified for a variety of carrier and calibration gases along with safety aspects.

iii. Mechanical Installation and Commissioning:

Ensuring correct erection of the mechanical parts of the system (according to the scope of supply) and to guarantee compliance to installation specifications prior to test system commissioning and productive operation.

- Positioning and mounting of all equipment in cooperation (if necessary with local subcontractor)
- Removal of protection coatings and transport locking device(s)
- Alignment of equipment at designated location
- Commissioning of mechanical system elements

iv. Commissioning:

Well trained, qualified and certified engineers shall perform all required steps to get the single equipment and complete test system ready for the acceptance test as defined in the particular agreement. Following activities are to be included:

- Check of power & media supply, data, measurement and sampling connections.
- Installation, configuration and parameterization of all software.
- Allocation and verification of used I/O and measurement channels according to engineering.
- Interfacing of peripheral equipment based on scope of supply.
- Controller set-up and basic tuning for the given UUT/Load System combination as a preparation for the Final Acceptance Test.

3. Documentation:

Includes a compilation of following documents **in English language** (digital format); user manuals included typically:

- Operating manual.
- Maintenance instructions and schedules.
- Spare and wear parts lists as well as a list of consumables, safety instructions and a troubleshooting guide.
- Emergency measures according to the safety matrix.
- Documentation of third party products if any (language as available).
- System engineering drawings.
- Trouble shooting and emergency measures.

4. Other Items

- The cost of Analyzer Upgradation and each equipment/accessory to be quoted separately.
- The vendor must submit a signed compliance document mentioning whether their equipment meets each and every specification detailed above.
- The award of the tender will be decided by the institute as per price of the complete system. All insurance charges shall be borne by the vendor.
- Technical and financial bids should be submitted separately.
- All prices of the Analyzer Upgradation and accessories should be quoted in currency of respective country of origin of the equipment.
- The specifications mentioned shall be understood to be the minimum required. Additional technical and research features suitable to our requirements shall be given due reference.
- Vendors that submit qualifying technical and financial bids are required to send competent representatives from the sales and technical divisions for further negotiations.

Specific Terms And Conditions

The following requirements should be specifically adhered to by the vendor, and express indication should be given regarding adherence.

1. Guarantee Period

- The equipment should be guaranteed for a period of 12 months from the date of handing over the fully functional unit to the Institute, against manufacturing defects of material and workmanship.
- Separate list of spares desirable for an R and D lab along with costs to be provided separately with individual costs.

2. Post Guarantee Annual Maintenance Contract(Amc)

Annual maintenance contract (AMC) for the complete system will be start after expiry of the warranty period as per agreed terms and conditions. The contract will also include the recommissioning of the system for what so ever reasons.

- Costs for the post-guarantee 3 years of annual maintenance contract for the complete system which includes all the accessories supplied during the installation. One annual visit by relevant subject expert(s) must be scheduled during the period of AMC.
- The amount due every year on account of the AMC will be paid at the beginning of the year to the vendor.

3. Warranty

- The complete system is to be under warranty period of 36 months including free supply of spare parts, and labour from the date of functional installation, commissioning and acceptance.

- During the period of warranty the supplier is required to take full responsibility to recommission the system in the event of failure whatsoever reasons.

4. Replacement Of Defectives

Items found not acceptable or missing by the committee should be replaced by the supplier free of cost including the forwarding and Insurance expenses. Replacement of parts that become defective during installation and warranty should be arranged free of cost through the Indian associate of the supplier including all incidental charges.

5. Documentation

- Two sets of operational/service/application manuals are to be provided along with the Equipment in English.
- Detailed documentation on various sequences, application software and evaluation software etc. are to be provided and the same must be updated regularly for next 10 years as and when these are released.
- Supplier is required to ensure mailing of product/research newsletters released from their R&D sites to the our site on a regular basis. This is to keep this centre abreast of the latest developments taking place in system technology and research techniques.
- The vendor is to provide a tender compliance sheet by giving all the necessary specifications, which should be supported by printed documentation sheets and certification of each item. In the absence of such documentation, a letter from the principals of the company should be provided.

6. Software Upgradation

Software upgrades for the core system and all related applications for next 10 years to be provided free by the firm as a matter of routine as and when these are released, inclusive of minor hardware changes.

7. Research Cooperation (Optional)

- The vendor is required to provide work in progress packages to us for research trial as for their other research sites.
- The firm should provide an exhaustive list of performance of various engines which will help the research and cooperation.
- The vendor should extend demonstrated cooperation regarding design and implementation of novel hardware and software inputs as required by the user, such as newer analysis techniques, emissions standards, post-processing, synthesis of data.
- Specific proposal regarding research collaboration will be submitted subsequently for consent and counter signatures of the principals on the research proposal.

8. Delivery, Installation & Commissioning Of The System

The facility should be delivered, installed and functionally commissioned within 3 months from the date of receipt of confirmed supply order. The supply of the items will be considered as effected only on satisfactory commissioning and inspection of the system by the institute. After successful installation and inspection, the date of taking over of the entire complete running of the system by the institute shall be taken as the start of the warranty period.

9. Custom Clearance

The Institute will furnish the necessary papers for the import of items into India, necessary custom duty exemption certificate and other supporting documents to facilitate the import of the items.

10. Training

The supplier, at their expense, will arrange for an application specialist, immediately after the installation and commissioning of the Analyzer System, to demonstrate the capabilities/features of

the system and also to impart training to staff members . The supplier, at their expense, shall provide initial specialized training at our site by a research scientist and a research engineer from the supplier's international R&D Centre or from an internationally renowned centre; the training shall cover the state of art research application, together with system operation and first line maintenance of the system, system and application software, along with developmental aspects for modifications and development of user defined sequences, for various application purposes, etc. The travel, boarding and lodging expenses of the above personnel, scientist and engineer shall be borne by the vendor and this training should be completed before handing over the Gas Analyzer System to us.

11. Mode Of Shipment

The consignment must be air-lifted, insured and transported to the installation site by the supplier.

12. Payment Terms

A confirmed irrevocable and divisible letter of credit will be opened with the bank designated by the vendor with 80% of the total cost payable against confirmed proof of dispatch and the remaining 20% balance on successful installation against a bank guarantee of 10% of the total cost for the 3 years warranty period.

TERMS AND CONDITIONS FOR SUBMISSION OF BIDS

Both the Technical and Commercial bid should be put in separate sealed envelopes and both the envelopes should be put in another cover subscribing “**Hydrogen Gas Analysis System**” and should reach “*The Chief Executive Society for Innovation and Development (SID) Indian Institute of Science; Bangalore-560012 (Kind Attention : Prof Dasappa)*” on or before **Wednesday, 31st March 2021**.

The Technical bid must include all the details of technical specifications of the equipment, compliance certificate along with commercial terms and conditions, **however, without the price component**. The bill of materials printed technical brochure and any other documents to help the technical evaluation of the bid may be enclosed.

1. The commercial bid must include the price of the item(s) in Indian/Foreign currency indicating the breakup of

a) For Goods manufactured within India

- (i) The price of the goods quoted Ex-works including taxes already paid.
- (ii) GST and other taxes like excise duty, entry tax and other applicable taxes which will be payable on the goods if the contract is awarded.
- (iii) The charges for inland transportation, insurance and other local services required for delivering the goods to IISc, Bangalore.
- (iv) The installation, commissioning and training charges including any incidental services, if any with applicable service taxes.

(b) For Goods manufactured abroad

- (i) The price of the goods should be quoted on CIF/DAP Bangalore, India basis.
- (ii) The charges for insurance and transportation of the goods by Air/Sea up to Bangalore India.
- (iii) The agency commission charges, if any.
- (iv) The installation, commissioning and training charges including any incidental services, if any.

It is mandatory for bidders to quote items having LOCAL CONTENT more than 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017 P-45021/2/2017 – B. E. – II dates 04.06.20 issued by the DPIIT, Ministry of Commerce and Industry, Government of India. DULY SIGNED ANNEXURE III TOWARDS THIS END MUST BE SUBMITTED.

2. The invoice to be billed at 5% GST for which concessional GST certificate will be provided to the vendor.
3. Please indicate the import code of the items.
4. If the goods are found to be defective, they have to be replaced / rectified at the cost of the supplier within 15 days from the date of receipt of written communication from us. If there is any delay in replacement / rectification, the warranty period should be correspondingly extended.
5. The terms FOB, FCA, CIF, CIP, etc., shall be governed by the rules prescribed in the current edition of the Incoterms published by the International Chambers of Commerce, Paris.
6. The purchases made by the purchaser for scientific purpose are exempt from excise duty and Custom Duty at a concessional rate is leviable.
7. Conditional tenders shall not be accepted.
8. Bids shall remain valid for minimum of 90 days after the date of bid opening prescribed by the Purchaser.
9. The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders.
10. The bidder should have established track record of Design, Manufacturing and Supply of Gas Analysis Systems.
11. Technical support for 3 year must be provided.
12. Onsite inspection of the machine will be done by IISc before the dispatch.
13. All the annexures should be filled and submitted by the bidders.

Annexure-I

Technical Compliance Sheet

(Note: Compliance Certificate to be enclosed with the technical bid)

Description	Comply	Non-comply	Deviation from specifications	Remarks
Impurities Range				
Ammonia – NH ₃ 0 – 500 ppb Range 0.5 ppb LDL				
Moisture – H ₂ O 0 – 1000 ppb 10 ppb				
H ₂ S 0 – 500 ppb Range 0.5 ppb LDL				
COS 0 – 500 ppb Range 0.5 ppb LDL				
CS ₂ 0 – 500 ppb Range 0.5 ppb LDL				
CH ₄ S 0 – 500 ppb Range 0.5 ppb LDL				
DMS 0 – 500 ppb Range 0.5 ppb LDL				
DMDS 0 – 500 ppb Range 0.5 ppb LDL				
General Features				
Auto calibration				
Ability to handle corrosive gases				
Control interface with HMI				
Minimum 8” display				
Windows 10 & RS232/RS 485 interface with Ethernet connectivity				
Single chassi mounting				
Gas purified and dilution system to be supplied by same OEM				
6X isothermal ovens				

Annexure-II

MANUFACTURERS' AUTHORIZATION FORM

[The bidder shall require the manufacturer to fill in this form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by the person with the proper authority to sign documents that are binding on the Manufacturer.]

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

To:

The Chief Executive Society for Innovation and Development (SID) Indian Institute of Science; Bangalore-560012

WHEREAS

We [insert complete name of Manufacturer], who are official manufacturers of [insert full address of Manufacture's factories], do hereby authorize [insert complete name of Bidder] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

Duly authorized to sign this authorization on behalf of: [insert complete name of Bidder]

Annexure-III

ANNEXURE III – DECLARATION OF LOCAL CONTENT

(To be given on company letter head - For tender value below Rs.10 crores)

(To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for tender value above Rs.10 crores)

To;
The Chief Executive;
Society for Innovation and Development (SID);
Indian Institute of Science;
Bangalore-560012

Date :

Sub: Declaration of Local content

Tender Reference No: _____

Name of Tender : - _____

1. Country of Origin of Goods being offered: _____
2. We hereby declare that items offered has _____ % local content.

“Local Content” means the amount of value added in India which shall, be the total value of the item being offered minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

“*False declaration will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.”

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