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भारत सरकार
GOVERNMENT OF INDIA

भाभा परमाणु अनुसन्धान केंद्र
BHABHA ATOMIC RESEARCH CENTRE
खाद्य प्रौद्योगिकी प्रभाग
FOOD TECHNOLOGY DIVISION

Dr. Suchandra Chatterjee

Scientific Officer (G)



टॉम्बे
TROMBAY
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400085

Tender enquiry No.: FTD/ I/30169/2022

Date: 24/08/2022

Invitation for tender notice

Dear Sir,

Sub: Inviting quotations for installation, commissioning, software installation and user training of Konik LC-GC-MS system (HPLC 600-HRGC5000B FID Konik) at FTD, BARC, Trombay, Mumbai (as per attached specifications in annexure).

Tender applications are invited for and on behalf of President of India by Head, FTD, BARC Trombay from eligible service providers/firms to carry out the installation and commissioning work as described below:

S. No.	Description of the work	Completion period
1	Installation, commissioning, software installation and user training of Konik LC-GC-MS system (HPLC 600-HRGC5000B FID Konik)- as per attached specifications in annexure	Within 6 weeks after receiving the work order

The bidder should qualify the criteria and mandatory requirements (mentioned in terms and conditions) before submitting the quotations.

Last date of submission of sealed quotation along with all required documents & certificates (through Speed Post/Registered letter of India Post) is 08/09/2022 upto 1800 hrs. The sealed quotations will be opened on the next day at 1130 hrs. in the office of Head, FTD, BARC, Trombay, Mumbai.

All offers should be addressed to: Head, FTD, BARC, Trombay, Mumbai – 400 085

Attention to: Dr. Suchandra Chatterjee, SO/G, FTD, BARC.

Reference No.: Tender enquiry no. with date

Super-scribed with: Installation, commissioning, software installation and user training of Konik LC-GC-MS system (HPLC 600-HRGC5000B FID Konik)

Terms and Conditions

1. The bidder should be a manufacturer/service provider registered in India or their authorized dealer or should be 100% subsidiary in India of parent company, if any
2. Joint ventures are not accepted.
3. **Should have satisfactorily completed installation, commissioning of Konik LC-GC-MS system (HPLC 600-HRGC5000B FID Konik).**

Required: Documentary Evidence.

4. **Company/firm must have at least 10-year experience in handling high end analytical instruments like GCMS.**
5. **Company/firm must have Engineer/s officially trained by Konik-Spain.**
6. Engineer/Technician should have precleared security vetting of his company/firm as per BARC security rules.
7. Engineer/Technician of the company/firm should have valid PVC not expiring during the tender period (i.e. from the date of this enquiry till completion of job after getting work order).
8. Engineer/Technician coming inside for any technical discussion about the installation or survey of the site should have a valid pass of BARC. TEP will not be made by BARC.
9. All Engineer/Technician of the company/firm for the execution of job in this tender should have proper PPE and arrangement for all above shall be made by company/firm.
10. Engineer/Technician should have prior experience of working in BARC premises or other reputed organizations related to above mentioned jobs.
11. At least 2 customer feedback forms stating the quality of work and overall feedback to be submitted in support of claim.

Required: Documentary Evidence.

12. Company/firm must have average turnover of not less than 15 crores in last 3 years.
13. **Membership Certificate:** The bidder/parent company should possess the key professional staff in his organization with good knowledge of codes and standards like ISO 9001-2015, ISO 14001-2015, Greenguard (For design, development, manufacturing, supply and servicing).
14. The supplier shall arrange all materials & components required to execute the work.
15. The party must offer **full guarantee** on the service provided for satisfactory performance for a period of **12 months**, and a **warranty certificate** should be provided after completion of the work.
16. **No Payment in advance** will be admissible and payments will be made against successful completion of installation, commissioning of the said instrument on production of the bill and advanced stamped receipt.
17. Income Tax @ 2%, will be deducted from bill.
18. Delivery schedule of within **6 WEEKS** should be strictly adhered as mentioned in the quotation after receiving the work order.

19. Any delay which is attributable to the service provider/firm is liable for penalty @ ½ % per week (max 5%) to be imposed on them. In case of any extension, suitable & valid reason should be given by the party.
20. Since the service rendered against this work order are meant for the research purposes of a research institution under the Department of Atomic Energy, **Excise duty/GST as payable for professional services will be applicable to service provider.** The indenter shall make available the excise duty exemption certificate (if any) to avail of the excise duty exemption well before the delivery date stipulated in the work order. It shall however, be the responsibility of the service providing company/firm also to ensure that they **execute the work order only after getting the excise duty exemption certificate from the indenter (if required).**

I. Confidentiality: -

No party shall disclose any information to any third concerning the matters under this contract generally. Any information identified as “**proprietary**” in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party. This clause shall apply to the sub-contractors, advisers or the employees engaged by the party with equal force.

II. “Restricted information” categories under section 18 of the Atomic Energy Act, 1962 and “Official Secrets “ under Section 5 of the Official Secrets Act, 1923: -

Any contravention of the above - mentioned provisions by any contractor, Sub-contractor, consultant, Adviser or the employees of the contractor will invite penal consequences under aforesaid legislation

III. Prohibition against use of BARC’s name without permission for publicity purposes.

The contractor or sub-contractor, consultant, adviser or the employees of the contractor shall not use BARC’s name for any publicity purpose through any public media like press, Radio, T.V. or Internet without prior written approval of BARC.

General Notes:

1. The bidder shall take all the necessary safety precautions during work and they shall be responsible for any damage or accidents. No compensation in any case will be paid by the Department to the bidder.
2. The work shall be subject to inspection by the purchaser or his authorized representative. Work shall be conducted under their supervision and to the full extent of satisfaction.
3. The work shall be completed within four calendar months from the receipt of work order.
4. Payment will be made as per rules, after the completion of the work to purchaser’s satisfaction against submission of original bill in triplicate and advance stamp receipt.
5. All taxes applicable will be deducted from the bill.
6. Any delay which is attributable to the contractor is liable for penalty @ ½ % per week (Max 5%).
7. Bidder shall mention their PAN & GST no. in the quotation.
8. The offer shall be kept open for acceptance for a minimum period of 45 days from the date of opening of the quotation.
9. Head, FTD reserves the right to accept/reject any or all the quotations without assigning any reason whatsoever.

10. The bidder shall furnish the detailed information regarding whether an ex-employee of BARC is working in their organization or whether any of their relative is working in DAE/BARC or whether he/she is an ex-employee of DAE/BARC. In case of such information, or wrong information the quotation or contract is likely to be rejected or cancelled.
11. Guarantee period of at least one year must be provided for material quality and workmanship.

Confidentiality clauses:

- I. **Confidentiality:** No party shall disclose any information to any third party concerning the matters under this contract generally. Any information identified as "Proprietary" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any party without the prior written consent of the original disclosing party. This clause shall apply to the sub-bidders, consultants, advisers, or the employees engaged by the party.
- II. **"Restricted information" categories under Section 18 of the Atomic Energy Act, 1962 and "Official Secrets" under Section 5 of the Official Secrets Act, 1923:**
Any contravention of the above-mentioned provisions by any bidder, sub-bidder, consultants, adviser or the employees of a bidder will invite penal consequences under the aforesaid legislation.
- III. Prohibition against use of BARC's name without permission for publicity purposes:
The bidder or sub-bidder, consultant, adviser or the employees engaged by the bidder shall not use BARC's name for any publicity purpose through any public media like Press, radio, T.V. or Internet without the prior written approval of BARC.

Kindly confirm your acceptance of the work order.

Thanking you,

Suchandra Chatterjee 24.08.2022

(Dr. Suchandra Chatterjee)

Scientific Officer/G

FTD, BARC, Trombay,

For and on behalf of the President of India

(The Purchaser)

Through

S. Gautam 24.8.22
(Dr. S. Gautam)

डॉ. एस. गौतम / Dr. S. Gautam

अध्यक्ष, खाद्य प्रौद्योगिकी प्रभाग / Head, Food Technology Division

जैव-विज्ञान वर्ग / Bio-Science Group

भाभा परमाणु अनुसंधान केंद्र / Bhabha Atomic Research Centre

भारत सरकार / Government of India

ट्रॉम्बे, मुंबई - 400 085 / Trombay, Mumbai - 400 085

ANNEXURE I

The fully computer controlled LCMS system to use as LSMS and LCGCMS. The system should have following configuration.

General specifications.

- Mass range: 4 – 1,500 amu for GCMS-LCMS combination. The system should be able to upgrade the MASS up to 2400amu in future in the field.
- Mass resolution: fully adjustable over the mass range to 2.5M at m/z 1,000 and to 1.5M between m/z 1,000 and 1,500 or 2,500
- Scan speed: scan rate programmable up to 33,000 amu/sec with 0.1 amu scan step for LCMS operation and 100,000 amu for GCMS or LC-GC-MS operation.
- Dynamic range: Total ADC (analog/digital converter) dynamic range is 10^6
- Mass axis stability: 10.1 amu over 8 hours

Ionization sources:

Fast exchange three different ionization sources for positive and negative ions: combines 12 different ionization modes in a compact benchtop instrument:

LC-MS SOURCE: ESI/APCI

API Source

- Single source for both API modes of operation: switching from ESI to APCI mode is performed in a simple and fast operation (probe exchange).
- Adjustable geometry spray orientation (0° , 30° , 60° and 90° between probe and cone positions) offers many possibilities to adapt the sensitivity to the analyst needs. Orthogonal position is preferred in those situations of high total dissolved solids in the analyzed samples or high content of chromatographic non-volatile buffers (phosphates or ion pairing reagents), thus minimizing the cone surface contamination and blockage and extending the robustness and stability of analysis.
- Drying gas flow focusing has been designed to improve the extraction of solvent-free ions into the mass analyser. Variable drying gas flow rates (from 0 to 500 l/h) and temperature (up to 350°C) allow the optimisation of the desolvation and declustering of analytical ions prior their introduction into the vacuum region.
- Two closely coupled on-axis stages of pumping join the API region with the vacuum region via sample cone and skimmer. While analyte ions are efficiently transmitted on-axis (because of their momentum), the drying gas (low molecular weight) diverges from the ion expansion and is pumped away from the skimmer orifice, thus improving the overall sensitivity.
- The variation of sample cone voltage (from 0 to $\pm 150\text{V}$) allows ions fragmentation via Collision Induced Dissociation (CID), which expands the abilities of the technique by offering valuable structural information.

- After the skimmer, ions are directed to the Quadrupole through an hexapole based ion guide that ensures efficient ion transference to the high vacuum region of the mass spectrometer.

ESI Mode

- Simple ESI probe design for easy adjustment of HPLC eluent.
- Handles HPLC flow rates from capillary LC up to conventional analytical LC (flow rate range from 2 μ l/min to 2 ml/min)
- Variable capillary voltage (from 0 to \pm 5kV) and Nebulizing gas flow rate (from 0 to 50 l/h) to optimise the Electrospray formation.

APCI Mode

- Simple APCI probe design for easy adjustment of HPLC eluent.
- Handles HPLC flow rates from conventional analytical LC (flow rate range from 0.2 ml/min to 2 ml/min)
- Variable sheath gas (from 0 to 250 l/h) and probe temperature (up to 600°C) to optimise the analyte and solvent vaporization before ionization
- Variable corona voltage (from 0 to \pm 4kV) to optimise ionization efficiency

Analyzer and mass filter

- 220 mm Quadrupole. Research degree SS rods.
- Plugged-in Pre-filters prevents contamination and enhance High Mass transmission.
- Maintenance free quadrupole.

Vacuum system

- Standard Differential pumping by two air-cooled Turbomolecular drag pumps 200 l/s throughput for N_2 backed by a 5 and 21m³/m rotary vane pump (LC-MS version).
- Pump-down from atmosphere to operating pressures requires approximately 5 min.
- Recommended time to reach a stable operation temperature is 30 min.
- System venting to atmospheric pressure requires approximately 20 min
- Built-in Active Pirani gauge for low vacuum and Cold Cathode Inverted Magnetron gauge for high vacuum (optional, not included. Included in the LC-MS version). Vacuum controlled up to 10⁻⁷ Torr (N_2 equivalent). Computer controlled electrovalves provide automated sequences for instrument operation, start-up and shut down.
- Optional dry-vacuum pumps totally oil-free for utmost baseline stability and no oil contamination, back streaming or back migration.

Detector

- Gas-sealed photon-multiplier for positive and negative ions and dynode conversion (7kV). PM Voltage is programmable from 0 to 2,000V .
- The Photomultiplier is enclosed in its own vacuum envelope for eliminating chemical contamination.

Sensitivity

LC-MS SOURCE:

ESI Specification: Positive Ions: The signal-to-noise ratio of at least 10 (based on RMS noise) when 5 μ l injections of a 2 ppb solution of Reserpine are performed in SIM conditions (m/z 609.3; dwell time 100 ms).

APCI Specification: Positive Ions: The signal-to-noise ratio of at least 10 (based on RMS noise) when 5 μ l injections of a 2 ppb solution of Reserpine are performed in SIM conditions (m/z 609.3; dwell time 100 ms).

HPLC module

The quoted system should be with Low Pressure mixing Quarternary gradient pump (which can be upgrade to semi prep to get flow of 40ml/min), column oven, Rheodyne injector, UV detector. The autosampler should quot as optional item.

Pump Specification:

Quarternary gradient system with double piston pump with 10ml/min stainless steel pump heads.

Maximum delivery pressure: 400 bar

Flow range: 0.001 to 9.999ml/min

Flow Rate accuracy: Deviation \leq 0.5% measured at 1 ml/min

Flow rate precision: RSD \leq 0.1%, measured at 1 ml/min

Programming: Maximum 20programs + 10 links (to programs) and 1 wakeup program

LPG module with up to 4 eluents with in built degassing

Rheodyne injector with 20 microlitre loop

Detector Specification:

UV detector with 190 – 700 nm Wavelength range

Sensitivity: 2×10^{-5} AU at 240nm, 1.0 s

Wavelength verification: holmium oxide filter cell

Column oven Specification:

The column oven should be able to accommodate up to 4 analytical or preparative columns of 350mm length.

Temperature range: 5 – 85°C

Autosampler Specification:

The autosampler should be able to handle atleast 50 samples

The system should able to upgrade in future to use with GC which then can be used for Autosampler, Headspace sampler, Purge and Trap, Sample preparation unit (to mix internal standards, etc.)

The system should be able to mount with any other GC and HPLC system

All the system should be able to control through software or through key pad.

The ELSD Should quot in option.

GC Module

The GC should be able to couple with LCMS system to use as LC-GC or LCGCMS mode. The complete system should be able to use as a single module or individual module. During the operation of individual module, all the threee – HPLC, GC and MS should be able to use simultaneously.

The GC should be with two split/splitless injector, one TCD, and MS interface to couple with the MS of LCMS.

The system should have atleast 12 positive and negative oven temperature ramping with minimum 90°C/min ramp.

The system should be able to accommodate FID and ECD detector mounting in future if required.

The system should have the maximum oven temperature limit of 480°C or better.

Future Upgrade option:

The system should be able to upgrade in future to use as GCMS.

The system should be able to upgrade in future to use as HPLC-GC-MS.

The system should be able to use with DIP/DEP in future after upgrading the system for GCMS-LCMS combination.

The system should be able to upgrade to use with autosampler which can be used for GCMS or LCMS with different modules like Liquid autosampler, Headspace, purge and Trap, SPME, Thermal Desorption, etc.

Sachin Chatterjee
24.08.2022