



Indian Institute of Technology Kanpur, Kanpur
Department of Mechanical Engineering

Inquiry no: ME/SDE/2017/DFBG/4

Date of Opening: September 21, 2017

Date and time of Closing: 5 pm, October 6, 2017

Sealed bids are invited for the procurement of **Gas chromatograph system** with suitable columns and detectors optimized to analyse the composition of product gas from coal/biomass gasification and pyrolysis process. The approximate range of product gas composition is as follows: H₂ (40%), CO (20%), CO₂ (20%), CH₄ (10%), other C2-C3 hydrocarbon species (1-2%), O₂ (2-4%) and N₂ (2-6%)

The desirable hardware and software capabilities and specifications are given below:

Parts	Desirable specifications and capabilities
Oven	<ol style="list-style-type: none"> 1. Provision to accommodate two or more packed or capillary columns and injectors. 2. Programmable oven temperature from ambient to 450°C with temperature hold and ramp facility. 3. The maximum ramp rate should be 80°C/min or better. 4. Support, minimum 4 ramps (5 plateaus) or more. 5. The cooling time to ambient should be 6 min or better. 6. Provision to ensure total inert path from injector to detector.
Injectors	<ol style="list-style-type: none"> 1. Glass insert or any other technology for making the injector as a total inert system. 2. Programmable temperature from ambient to 400°C. 3. Provision to protect the columns from any impurities in sample. 4. Electronic pressure control system: range 0.00 to 100 psig 5. Gas sampling valves for online sample injection.
Detectors	<ol style="list-style-type: none"> 1. Both TCD and FID. The detector configuration and inclusion of any other type of detector should be explored to optimize the performance of the application mentioned at the beginning of this document. 2. TCD: <ul style="list-style-type: none"> • Current : 0 – 300 mA • Temperature 0 – 400°C • Linear dynamic range >10⁵ • Polarity: Both +/- • Provision for rapid stabilization from turn-on and low-drift performance • Over current protection 3. FID: <ul style="list-style-type: none"> • Maximum operating temperature 450°C • Linear dynamic range >10⁷ • Flame out detection and automatic re-ignition • Grounded jet • Optimized for the column used
Columns	Either packed or capillary column or both. The type and configuration should be based on the optimized performance of



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	the application mentioned at the beginning of this document.
Carrier gas pressure and flow controls	Provide electronic pressure and flow controls
Computer interfacing and software	1. Adequate data acquisition system and user friendly software for data collection, method generation and data analysis. 2. A PC with required configuration may be included in the quotation
Uninterrupted power supply systems	1. UPS with required specification may be included in the quotation

You are encouraged to add any other technical features that will enhance the accuracy and user friendly operation of the system, at competitive rates, over and above the ones mentioned in this document. The bids will be evaluated for its technical and commercial competitiveness.

Kindly note the following **terms and conditions**:

1. All quotations must reach the undersigned on or before the closing date.
2. The firm should supply authorization certificate by the original equipment Manufacturer, for dealership/distributorship along with the quotation, if applicable. Parent company should be an established company with good number of installations and after sales support in India
3. The firm should submit complete technical brochure with all technical details of the GC model.
4. Firm may quote for consumables like silicon rubber septum, gas tight syringe for a reasonable time of operation.
5. The firm should give a declaration that they have not been blacklisted/debarred for dealing by Government of India in the past.
6. Please do mention tender number clearly on envelope.
7. The supplier/manufacturer must have supplied systems to institutions of national and/or international repute.
8. Please send complete contact details of the person/ organization to whom your company had supplied similar systems.
9. Normal payment terms for the institute will be applicable (90% on delivery of the items and remaining 10% after satisfactory installation/inspection).
10. You must provide the warranty for a period of minimum one year and after that there should be provision for purchase of AMC at competitive market rates.
11. Validity of quotation should be at least 60 days.
12. The price of the item should be after applying Maximum educational discount.
13. Delivery period should not be more than 6 weeks and delivery should be at IIT Kanpur.
14. The intender reserves the right to withhold placement of final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason is reserved.
15. The price should be for IIT Kanpur and it should also be inclusive of packing and forwarding charges, commissioning and installation charges at IIT Kanpur.

Training and technical support:



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The training for operation and routine maintenance should be provided along with technical support to handle different gas analysis requirements that may arise in future.

In case of any queries, you may please write to **sminub@iitk.ac.in**.

Kindly send the quotation in sealed envelope latest by 5 pm, 6th October, 2017 to the following address.

Dr. Santanu De
Assistant professor
Department of Mechanical Engineering
Indian Institute of Technology Kanpur
Kanpur-208016 (U.P.) India