

**TENDER NO: SDG3109P15/07**



**Oil India Limited**  
**(A Govt. of India Enterprise)**  
**P.O. Duliajan – 786602,**  
**Assam**

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Tender No. : SDG3109P15/07  
Tender Fee : INR 4,500.00 OR USD 100.00  
Bid Security : Applicable

Bidding Type : SINGLE STAGE TWO BID SYSTEM  
Bid Closing on : As mentioned in the Basic Data of the tender in OIL's e-portal.  
Bid Opening on : As mentioned in the Basic Data of the tender in OIL's e-portal.  
Performance Guarantee : Applicable

OIL INDIA LIMITED invites Global Tenders for items detailed below:

Item No. / Mat. Code	Material Description	QTY.	UOM
1	Supply of Gas Chromatograph as per the following a) Detailed specification – <b>Annexure - I</b> (Attached) b) Bid Rejection Criteria (BRC) and Bid Evaluation Criteria – <b>Annexure-II.</b> c) Commercial Check list - <b>Annexure - III</b>	2	No

**Special Notes:**

- 1.0 The tender will be governed by "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders) including Amendments & Addendum to "General Terms & Conditions" for e-Procurement.
- 2.0 Commercial Check list is furnished vide Annexure – III. Please ensure that the check list is properly filled up and uploaded along with Technical bid.
- 3.0 The item qualifies for Nil duty / Deemed Export benefits. For Deemed Export benefits please refer Addendum to the General terms and conditions for Global tender.

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- 4.0 Please note that all tender forms and supporting documents are to be submitted through OIL's e-Procurement site only except following documents which are to be submitted manually in sealed envelope super scribed with tender no. and due date to The Head Materials, Materials Department, Oil India Limited, Duliajan- 786602, Assam on or before the Bid Closing Date and Time mentioned in the Tender.
- a) Original Bid Security.
  - b) Details Catalogue and any other document which have been specified to be submitted in original.
- 5.0 The tender is invited under SINGLE STAGE-TWO BID SYSTEM. The bidder has to submit both the "TECHNO-COMMERCIAL UNPRICED BID" and "PRICED BID" through electronic form in the OIL's e-Tender portal within the Bid Closing Date and Time stipulated in the e-Tender. The "TECHNO-COMMERCIAL UNPRICED BID is to be submitted as per Scope of Work & Technical Specification of the tender and "PRICED BID" as per the **Online Priced Bid format.**
- 6.0 In Technical Bid opening, only Technical Rfx will be opened. Therefore, the bidder should ensure that "TECHNO-COMMERCIAL UNPRICED BID should contain details as mentioned in the technical specifications as well as BEC/ BRC and upload the same in the Technical RFX Response-> User - > Technical Bid. **No price should be given in above Technical Rfx otherwise the offer will be rejected.** Please go through the help document in details before uploading the document and ensure uploading of technical bid in the Technical RFX Response-> User - > Technical Bid only. The "PRICE BID" must contain the price schedule and the bidder's commercial terms and conditions. Details of prices as per Bid format / Commercial bid can be uploaded as Attachment under the attachment option under "Notes & Attachments"
- 7.0 PRICED BIDS OF ONLY THOSE BIDDERS WILL BE OPENED WHOSE OFFERS ARE FOUND TO BE TECHNO-COMMERCIALY ACCEPTABLE.
- 8.0 All the Bids must be Digitally Signed using "Class 3" digital certificate (*e-commerce application*) only as per Indian IT Act obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India. The bid signed using other than "Class 3" digital certificate, will be liable for rejection.
- 9.0 Bidders are requested to examine all instructions, forms, terms and specifications in the bid. Failure to furnish all information required as per the bid or submission of offers not substantially responsive to the bid in every respect will be at the bidders risk and may result in the rejection of its offer without seeking any clarifications.
- 10.0 **The Integrity Pact is applicable against this tender.** OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide Annexure XII of the tender document. This Integrity Pact proforma has been duly signed digitally by OIL's competent signatory. The proforma has to be returned by the bidder (along with the technical bid) duly signed (digitally) by the same signatory who signed the bid, i.e., who is duly authorized to sign the bid. Any bid not accompanied by Integrity Pact Proforma duly signed (digitally) by the bidder shall be rejected straightway. Uploading the Integrity Pact with digital signature will be construed that all pages of the Integrity Pact has been signed by the bidder's authorized signatory who sign the Bid.

OIL's Independent External Monitors at present are as under:

- (I) **SHRI N. GOPALASWAMI, I.A.S ( Retd ) ,**  
Former Chief Election Commissioner of India  
E-mail Id : gopaldaswamin@gmail.com
- (II) **SHRI RAMESH CHANDRA AGARWAL , IPS( Retd)**  
Former Director General of Police  
E-mail Id : rcagarwal@rediffmail.com

**General Notes for Bidders.**

(Bidders should confirm each & every point clearly. Deviations, if any, should be highlighted in the quotation.)

- 1.0 Bids are invited under Single Stage Two Bid System. Bidders shall quote accordingly under Single Stage Two Bid System. Any offer not complying with the above will be rejected straightway.
- 2.0 Bid Rejection Criteria (BRC) and Bid Evaluation Criteria (BEC) vide **Annexure - II** shall be applicable to this Tender.
- 3.0 Commercial Check-list vide **Annexure – III** should be filled-up and submitted along with the offer.
- 4.0 The quotation must be submitted online and accompany detailed specifications of the offered product, forwarding relevant catalogue with drawings & literature with their quotation.
- 5.0 The items shall be brand new, unused & of prime quality with serial number and date of manufacture. Bidder shall warrant (in the event of an order) that the product supplied will be free from all defects & fault in material, workmanship & manufacture and shall be in full conformity with ordered specifications. This clause shall be valid for 12 months from date of successful commissioning. In case of breakdown during the warranty period, a competent service engineer of the supplier should make as many visits as are necessary to rectify the instrument. The supplier should provide any spares required for making the instrument operational.
- 6.0 Bidder is to mention the name of manufacturer, country of origin and port of shipment.
- 7.0 Bidder, if not a manufacturer, must submit a letter of authorization along with the quotation to sell their products to OIL INDIA LIMITED from the original manufacturer with warranty back-up. The OEM should give a written undertaking that they will be responsible for providing the warranty and annual maintenance as per the clauses mentioned in the tender, even if there is a change in the authorized distributor of the manufacturer. The undertaking from OEM should also include that, if in future, OEM does not have any authorized distributor, the service will be provided directly by the service engineer of the OEM without any extra charge.
- 8.0 The original equipment manufacturer (OEM) should confirm in writing that the spares for the quoted model will be available for a period of ten years after installation of the instrument.
- 9.0 Consumables required for two years of operation should be included for gas chromatograph as well as hydrogen generator.
- 10.0 Printed documents in support of claimed specification should be provided.
- 11.0 System should be upgradeable at site for future applications.
- 12.0 One set of operating manual and service manual (in English) should be provided with the instrument
- 13.0 **Installation & Commissioning**
  - a) Installation, Commissioning of the complete equipment shall be carried out by the supplier at, Duliajan, Assam, India. The supplier shall depute their competent personnel to Duliajan for this purpose.

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- b) During installation and commissioning of the unit, the commissioning personnel shall have to provide complete demonstration of the instrument to OIL personnel on operation, general maintenance, troubleshooting of different components of the unit.
- c) Installation and Commissioning charges, if any, must be quoted separately on lump sum basis which shall be considered for evaluation of the offer. Offers without indicating the Installation/Commissioning shall be treated as incomplete and non-responsive. Bidders shall confirm about the installation, commissioning while quoting. Any, pre-installation requirements are to be clearly indicated in the offer
- d) While quoting installation and commissioning charges, bidder should take into account all charges including to and fro fares, boarding/lodging, and other daily expenses of the commissioning personnel. OIL may provide accommodation on chargeable basis subject to availability. Income, Service, Corporate Taxes etc., if any, towards Installation/Commissioning will be to supplier's account and will be deducted at source.
- e) Offers without indicating the Installation/Commissioning charges shall be loaded with the maximum installation/commissioning charges received against this tender for evaluation purpose.
- f) Moreover, if Income/Service taxes are not categorically mentioned in their offer, then such offers shall be loaded with the applicable rate of taxes for evaluation purpose.

**14.0 Training :**

2(Two) scientific staff of OIL should be trained in the operation of the software and the instrument and routine maintenance of the instruments at site for 3 working days after the installation is over.

**15.0 Annual Maintenance Contract**

Charges for the Annual Maintenance Contract (AMC) for 4(four) years, after the warranty period is over, should be quoted with year-wise break up. These charges will be used for evaluation purposes only. The entire system should be under Annual Maintenance Contract for a period of 4(four) years after the warranty period is over. During the maintenance contract period, the service engineer of the supplier should make two visits for preventive maintenance of the instrument and one visit, if necessary, for breakdown maintenance of the instrument. Spares required, if any, during the maintenance contract period will be provided by OIL.

**16.0 Performance Guarantee** FID Detection limit of 2pg C/Sec and FID data acquisition rate of 200 Hz for the gas chromatograph must be demonstrated at site without which installation will not be considered complete. Factory Test Certificates with respect to various parameters which cannot be demonstrated at site must be enclosed

**17.0 Payment:** Payment shall be released as follows

- i) 80% of the order value shall be paid against proof of dispatch/shipment of the goods.
- ii) Remaining 20% of the order value along with installation and commissioning charges (if any) shall be paid after successful installation and commissioning and acceptance of the unit by OIL.
- iii) OIL may also consider making 100 % payment towards supply of the units against proof of dispatch provided bidders agree to pay interest for 20% of the order value and also submit Bank Guarantee for the amount equivalent to 20% of the order value.
- iv) Payment towards Installation/Commissioning/Training (if any) shall be released on successful completion of the Installation/Commissioning/Training

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v) Payment against AMC charges shall be made on quarterly basis against the invoice(s) to be submitted by the bidder at the end of each quarter.

Any offer not complying with the above shall be loaded at one percent above the prevailing Bank Rate (CC rate) of State Bank of India for evaluation purpose.

18.0 The items covered by this enquiry shall be used by Oil India Limited in the PEL/ML areas which are issued/ renewed after 01/04/99 and hence Nil Customs Duty during import will be applicable. Indigenous bidder shall be eligible for Deemed Export Benefit against this purchase. Details of Deemed Export are furnished vide Addendum to MM/GLOBAL/E-01/2005 attached.

19.0 Other terms and conditions of the tender shall be as per "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders). However, if any of the Clauses of the Bid Rejection Criteria (BRC) / Bid Evaluation Criteria (BEC) mentioned here contradict the Clauses in the "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders) of the tender and/or elsewhere, those mentioned in this BEC / BRC shall prevail.

**BID REJECTION CRITERIA (BRC)/BID EVALUATION CRITERIA (BEC)**

(I) Bid Rejection Criteria:

(A) TECHNICAL

- 1.0 The bid must conform to the specifications, terms and conditions given in the tender. Bid shall be rejected in case the equipments/components thereof along with their peripherals, accessories and user interface software application offered do not conform to the required minimum/maximum parameters stipulated in the technical specifications and to the respective international/national standards where ever stipulated/applicable.

(B) COMMERCIAL:

Commercial Bid Rejection Criteria will be as per Section D of General Terms & Conditions of Global Tender (MM/GLOBAL/E-01/2005) with following Special Bid Rejection Criteria.

- 1) Bids are invited under **Single Stage Two Bid System**. Bidders shall quote accordingly under Single Stage Two Bid System. **Please note that no price details should be furnished in the Technical (i.e. Unpriced) bid.** The "Unpriced Bid" shall contain all techno-commercial details except the prices, which shall be kept blank. The "Price Bid" must contain the price schedule and the bidder's commercial terms and conditions. Bidder not complying with above submission procedure will be rejected.
- 2) **Bid security of US \$ 3,270.00 or Rs. 1, 47,150.00** shall be furnished as a part of the TECHNICAL BID (refer Clause Nos.9.0 & 12.0 (Section A) of "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders)). **Any bid not accompanied by a proper bid security in ORIGINAL will be rejected without any further consideration.** For exemption for submission of Bid Security, please refer Clause No. 9.8 (Section A) of "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders). Bank Guarantee towards Bid Security shall remain valid till **01.07.2015**
- 3) Validity of the bid shall be minimum 6 months (180 days) from the date of Bid Closing Date. Bids with lesser validity will be rejected.
- 4) Bidders must confirm that Goods, materials or plant(s) to be supplied shall be new of recent make and of the best quality and workmanship and shall be guaranteed for a period of twelve(12) months from the date of commissioning at site against any defects arising from faulty materials, workmanship or design. Defective goods/materials or parts rejected by OIL shall be replaced immediately by the supplier at the supplier's expenses at no extra cost to OIL.
- 5) Successful bidder will be required to furnish a Performance Bank Guarantee @10% of the order value. The Performance Bank Guarantee must be valid for one year from the date of successful commissioning of the items. Bidder must confirm the same in their Technical Bid. Offers not complying with this clause will be rejected
- 6) Bidders are required to submit the summary of the prices in their price bids as per bid format (Summary ), given below :

(i) **Price Bid Format (SUMMARY) for Foreign Bidders :**

- (A) Total Material Value :
- (B) Packing & FOB/FCA Charges :
- (C) Total FOB/FCA Port of Shipment value, ( A + B ) above :
- (D) Overseas Freight Charges upto Kolkata, India :
- (E) Insurance Charges :
- (F) Total CIF Kolkata value, ( C + D + E ) :
- (G) Installation/Commissioning Charges :
- (H) Training Charges :
- (I) Total Value, ( F + G + H ) :
- (J) AMC Charges for 04(four) years after warranty :
- (K) Grand Total Value including above ( I + J ) :
- (L) Grand Total Value in words :
- (M) Gross Weight :
- (N) Gross Volume :

(ii) **Price Bid Format (SUMMARY) for Indigenous Bidders:**

- (A) Total Material Value :
- (B) Packing and Forwarding Charges:
- (C) Total Ex-works value, ( A + B ) above :
- (D) Sales Tax, (Please indicate applicable rate of Tax)
- (E) Total FOR Despatching station price, ( C + D ) above
- (F) Road Transportation charges to Duliajan
- (G) Insurance Charges
- (H) Assam Entry Tax
- (I) Total FOR Duliajan value, ( E + F + G + H ) above
- (J) Installation/Commissioning Charges :
- (K) Training Charges :
- (L) Total value, (I+J+K) above :
- (M) AMC Charges for 04(four) years after warranty :
- (N) Grand Total Value including ( L+M)above :
- (O) Grand Total Value in words :
- (P) Gross Weight :
- (Q) Gross Volume :

**NOTE:**

1. The items covered under this enquiry shall be used by OIL in the PEL/ML areas issued/renewed after 01/04/99 and hence, applicable Customs Duty for import of goods shall be ZERO .Indigenous bidders must quote Deemed Export prices. Excise Duty under Deemed Export exempted.
2. Banking charges in the country of the foreign bidder shall be borne by the bidder

**7) Offers received without Integrity Pact duly signed by the authorized signatory of the bidder will be rejected.**

8) Installation/Commissioning/Training charges (if any) should be quoted separately on lumpsum basis which shall

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be considered for evaluation of the offers. These charges should include amongst others to and fro fares, boarding/lodging, local transport at Duliajan and other expenses of supplier's personnel during their stay at Duliajan, Assam (India).

Bidders must categorically indicate the above charges in their Price Bid and must confirm the same in their Technical Bids.

- 9) The prices offered will have to be firm through delivery and not subject to variation on any account. A bid submitted with an adjustable price will be treated as non-responsive and rejected.
- 10) Bids received after the bid closing date and time will be rejected. Similarly, modifications to bids received after the bid closing date & time will not be considered.
- 11) Bids containing incorrect statement will be rejected.

**(II) BID EVALUATION CRITERIA (BEC) :-**

Bids conforming to the specifications, terms and conditions stipulated in the tender and considered to be responsive after subjecting to the Bid Rejection Criteria will be considered for further evaluation as per the Bid Evaluation Criteria given below:

- 1) The evaluation of bids will be done as per the Priced Schedule (summary) detailed vide para (6) of BRC (Commercial).
- 2) If there is any discrepancy between the unit price and total price, the unit price will prevail and the total price shall be corrected. Similarly, if there is any discrepancy between words and figure, the amounts in words shall prevail and will be adopted for evaluation.
- 3) For conversion of foreign currency into Indian currency, B.C. selling (Market) rate declared by State Bank of India, one day prior to the date of price bid opening shall be considered. However, if the time lag between the opening of the bids and final decision exceed 3(three) months, then B.C. Selling(Market) rate of exchange declared by SBI on the date prior to the date of final decision shall be adopted for conversion and evaluation.
- 4) To ascertain the inter-se-ranking, the comparison of the responsive bids will be made as under, subject to corrections / adjustments given herein.

**4.1) When only foreign bidders are involved:**

**Comparison of bids will be done on the basis of "Grand Total Value" which is estimated as under:**

- (A) Total Material Value :
- (B) Packing & FOB/FCA Charges :
- (C) Total FOB/FCA Port of Shipment value, ( A + B ) above :
- (D) Overseas Freight Charges upto Kolkata, India :
- (E) Insurance Charges @1% of Total FOB/FCA Port of Shipment value vide (C) above
- (F) Banking Charges @ 0.5% of Total FOB/FCA Value ( C ) above in case of payment through Letter of Credit (If confirmed L/C at buyer's account is required, 1.5% of Total FOB/FCA Value will be loaded)
- (G) Total CIF Kolkata value, ( C + D + E + F ) :
- (H) Installation/Commissioning Charges, if any :
- (I) Training Charges, if any :
- (J) Total Value,( G + H + I ) :
- (K) AMC Charges for 04(four) years after warranty :
- (L) Grand Total Value including above ( J + K ) :

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- 4.2) When only domestic bidders are involved or when more than one domestic bidders are in contention in case of mixed response:

Comparison of bids will be done on the basis of "Grand Total Value" which is estimated as under:

- (A) Total Material Value :
- (B) Packing and Forwarding Charges:
- (C) Total Ex-works value, ( A + B ) above :
- (D) Sales Tax, (Please indicate applicable rate of Tax)
- (E) Total FOR Despatching station price, ( C + D ) above
- (F) Road Transportation charges to Duliajan
- (G) Insurance Charges
- (H) Assam Entry Tax
- (I) Total FOR Duliajan value, ( E + F + G + H ) above
- (J) Installation/Commissioning Charges, if any :
- (K) Training Charges, if any :
- (L) Total value, (I+J+K) above :
- (M) AMC Charges for 04(four) years after warranty :
- (N) Grand Total Value including ( L+M )above :

**NOTE: Excise Duty in case of the indigenous bidder is EXEMPTED**

- 4.3) When both foreign and domestic bidders are involved:

The Grand Total Value of domestic bidder (inclusive of customs duty on imported raw material and components etc, and applicable terminal excise duty on the finished products and Sales Tax) excluding inland transportation to destination and Insurance charges worked out as per Para 4.2 above and Grand Total Value of the foreign bidder worked out as per Para 4.1 above (with customs duty as applicable on the bid closing date) excluding inland transportation to destination will be compared. No price preference will be allowed to indigenous bidders except that for capital goods, the domestic manufacturers would be accorded a price preference to offset CST to the extent of 4 % or actuals, which ever is less subject to 30 % local content norms as stipulated for World Bank Funded project to the satisfaction of OIL. When more than one domestic bidders fall within price preference range, inter-se-ranking will be done on Grand Total Value basis.

Note: If the Government of India revises these evaluation criteria the same as applicable on the bid closing date will be adopted for evaluation of the offers.

- 5) Other terms and conditions of the enquiry shall be as per General Terms and Conditions for Global Tender. However, if any of the Clauses of the Bid Rejection Criteria/Bid Evaluation Criteria (BEC/BRC) mentioned here contradict the clauses in the General Terms & Conditions of Global Tender of the tender and/or elsewhere, those mentioned in this BEC/BRC shall prevail.

**CHECKLIST**

THE CHECK LIST MUST BE COMPLETED AND RETURNED WITH YOUR OFFER.PLEASE ENSURE THAT ALL THESE POINTS ARE COVERED IN YOUR OFFER.THESE WILL ENSURE THAT YOUR OFFER IS PROPERLY EVALUATED.PLEASE TICK "YES" OR "NO" TO THE FOLLOWING QUESTIONS IN THE RIGHT HAND COLUMN.

**(A) COMMERCIAL CHECKLIST**

<b>SI No.</b>	<b>REQUIREMENT</b>	<b>COMPLIANCE</b>	<b>REMARKS(IF ANY)</b>
1.0	Whether bid submitted under Single Stage Two Bid System?		
2.0	Whether quoted as manufacturer?		
2.1	Whether quoted as Supply House/Distributor. To Specify		
2.2	If quoted as Supply House/ Distributor.		
	(a) Whether submitted valid and proper authorization letter from manufacturer confirming that bidder is their authorized Supply House for the product offered?		
	(b) Whether manufacturer's back-up Warranty/Guarantee certificate submitted?		
3.0	Whether ORIGINAL Bid Bond (not copy of Bid Bond) sent separately? If YES, provide details.		
	(a) Amount :		
	(b) Name of Issuing Bank :		
	( c ) Validity of Bid Bond :		
	( d ) Whether Bid Bond submitted as per Revised Format		
3.1	Whether offered firm prices?		
3.2	Whether quoted offer validity of Six months from the date of closing of Tenders?		
3.3	Whether quoted a firm delivery period?		
3.4	Whether agreed to the NIT Warranty Clause?		
3.5	Whether confirmed to submit PBG as asked for in NIT?		
3.51	Whether agreed to submit PBG within 30 days of placement of order?		
3.6	Whether Price submitted as per Price Schedule (refer Para vi of BRC vide Annexure –II )		
3.7	Whether quoted as per NIT (without any deviations)?		
3.71	Whether quoted any deviation?		
3.72	Whether deviation separately highlighted?		
3.8	Whether indicated the country of origin for the items quoted?		
3.81	Whether technical literature/catalogue enclosed?		
3.82	Whether weight & volume of items offered indicated?		

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4.0	For Foreign Bidders – Whether offered FOB/FCA port of dispatch including sea / air worthy packing & forwarding?		
4.1	For Foreign Bidders – Whether port of Shipment indicated. To specify?		
4.2	Whether Indian Agent applicable?		
	If YES, whether following details of Indian Agent provided?		
	(a) Name & address of the agent in India – To indicate		
	(b) Amount of agency commission – To indicate		
	(c) Whether agency commission included in quoted material value ?		
5.0	For Indian bidders – Whether indicated the place from where the goods will be dispatched. To Specify :		
5.1	For Indian Bidders – Whether road transportation charges up to Duliajan quoted?		
5.2	For Indian Bidders Only – Whether offered Ex- Works price including packing/forwarding charges?		
5.3	For Indian Bidders only – Whether indicated import content in the offer ?		
5.4	For Indian Bidders Only – Whether offered Deemed Export prices ?		
5.5	For Indian Bidders only – Whether all applicable Taxes & Duties have been quoted ?		
6.0	Whether all BRC/BEC clauses accepted ?		

## TECHNICAL SPECIFICATION

Gas Chromatograph with following Specifications

Gas Chromatograph is required for analysis of sidewall core and drill cuttings extract and crude oil. The instrument should meet the following general specifications.

The gas chromatograph should be equipped to use hydrogen as carrier gas.

### Gas Chromatograph

The Gas Chromatograph should be a dual channel system with a provision to install two injectors and two detectors. It should be possible to control the system completely through a data station consisting of a computer and GC software.

The instrument should work under following ambient conditions

Operating temperature 15 to 40°C

Relative Humidity 50 - 95%

The instrument should operate on a power supply of 230V/50Hz

### Column Oven

Temperature range: Ambient + 5°C to 450°C with sub-ambient temperature down to -80°C using LN2

Ramp rate: 1 to 120°C/min in steps of 1°C/min with provision for at least 10 ramps and 11 plateaus.

Cool down time: 350°C to 50°C in less than 5 minutes

Column oven should be equipped to use hydrogen as carrier gas

Split/Splitless Injector 1 no

Temperature range: Up to 400°C in 1°C increments

The injector should ensure no discrimination between lighter and heavier components

The injector should be suitable for columns of 50 micron to 530 micron diameter

It should be possible to use Hydrogen, Helium or Nitrogen as carrier gas.

Electronic control of flow and pressure of carrier gas should be provided.

The electronic flow controller should be capable of handling pressure up to 1000 KPa (145 psi) and flow rates up to 500 ml/min.

It should be possible to operate the injector in constant flow, constant pressure, programmable flow and programmable pressure mode. In programmable flow mode, it should be possible to adjust pressure in steps of 1 KPa and in programmable flow mode. It should be possible to adjust the flow in steps of 0.1 ml/min.

It should be possible to adjust the split flow from 1:1 to 1:1000.

It should be possible to operate the injector in gas saver mode. Septum purge with flow rate up to 10 ml/min, should also be available.

Programmable Temperature Vapourizer 1 no

Temperature range: Up to 400°C in 1°C increments

It should be possible to program the injector in up to 3 ramps and 4 plateaus.

It should be possible to adjust heating rate upto 800 °C / min

It should be possible to attain sub ambient temperature down to -50 °C with liquid nitrogen cooling

The injector should ensure no discrimination between lighter and heavier components

The injector should be suitable for columns of 50 micron to 530 micron diameter

It should be possible to use Hydrogen, Helium or Nitrogen as carrier gas.

Electronic control of flow and pressure of carrier gas should be provided. The electronic flow controller should be capable of handling pressure up to 680 KPa (100 psi) and flow rates up to 500 ml/min. It should be possible to operate the injector in constant flow, constant pressure, programmable flow and programmable pressure mode. In programmable pressure mode, it should be possible to adjust pressure in steps of 1 KPa and in programmable flow mode it should be possible to adjust the flow in steps of 0.1 ml/min.

it should be possible to adjust the split flow from 1:1 to 1:1000.

It should be possible to operate the injector in gas saver mode. Septum purge with flow rate up to 10 ml/min, should also be available.

#### **Flame Ionization Detector 2 nos**

The detector should have a ceramic flame jet. The detector should be capillary column optimized. It should have flame out selection system. It should have a linear dynamic range of  $10^7$ . Electronic control of Hydrogen, Air and Makeup gas (Nitrogen or Helium) should be possible. It should be possible to adjust the flow rate of Hydrogen between 0-90ml/min, air between 0-600ml/min and make up gas between 0-90ml/min.

Temperature: Ambient to 450°C

Minimum detection range: (<) 2pg C/Sec

Data acquisition rate up to 200 (300) Hz should be possible

#### **Auto sampler**

It should work on split/splitless, PTV and On-column injector.

It should be able to house at least 100 sample vials of 1, 2 and 2.5 ml capacity. Four nos of wash bottles for syringe cleaning should be provided.

It should be possible to use syringes of size 5, 10 and 100 micro litre.

It should automatically recognize the syringe type.

Injection volume range from 0.1 to 100 microlitre should be possible.

Injection speed from 10 microlitre/sec to 100 microlitres/sec should be possible

The type and volume of the syringe must be automatically detected by the system.

The autosampler should be controllable by the GC software Data System

#### **Software**

GC software: It should be possible to build the methods to control all the functions of the gas chromatograph including autosampler through the computer.

#### **Installation Kit**

Consisting of at least the following

Ferrules (for 0.25 mm column) 10 nos

Ferrules (for 0.18 mm column), 10 nos

Column nuts 2 nos each for injector and detector,

Copper tubing, 1/8 diameter, 50 ft length

1/8 Tee Brass Joints 10 nos

1/8 inch Brass Unions 10 nos

Tool Set 1 no

#### **Column set**

The following columns should be included

Non-polar (DB-1HT) 30m X 0.25mm X 0.1 micron – 1 no  
(Ultra low bleed, Temperature range up to 400 Deg C)

Non-polar (DB-5HT) 30m X 0.25mm X 0.1 micron – 1 no  
(Ultra low bleed, Temperature range up to 400 Deg C)

Non-polar (BPX-5) 30m X 0.25mm X 0.25 micron – 1 no  
(Ultra low bleed, Temperature range up to 325 Deg C)

Non-Polar (BPX-5) 60m X 0.25mm X 0.25 micron – 1 no  
(Ultra low bleed, Temperature range up to 325 Deg C)

#### **Syringes**

Autosampler syringes

5 ul syringe for autosampler 10 nos

10 ul syringe for autosampler 10 nos

Manual Syringes

Syringe 5 ul with Conical Needle and Side port, 10nos  
Cemented Needle, Needle OD 0.47mm, ID 0.13mm,  
Needle length 51mm,Hamilton model 75, p/no. 87939  
Syringe 10 ul with Conical Needle and Side port, 10nos  
Cemented Needle, Needle OD 0.47mm, ID 0.13mm,  
Needle length 51mm,Hamilton model 701, p/no. 80339  
Syringe 2 ul Needle Point Style 2 10 nos  
Cemented Needle, Needle OD 0.51mm, ID 0.26mm,  
Needle length 70mm, Hamilton model 7002, p/no. 88411

### Generators

Hydrogen Generator with following specifications - 1 no.

Hydrogen Purity greater than or equal to 99.99999%  
Hydrogen flow rate greater than or equal to 300 ml/min  
Pressure - 0-6 bar (adjustable)  
Should work on a power supply of 230V/50Hz  
Should work under following ambient conditions  
Operating temperature 5 - 40°C  
Relative Humidity 50 - 95%

The principle of operation should be electrolysis of de-ionized water. No deionizer bags should be required.  
Capacity of water reservoir should be at least 5 liters. Generated hydrogen should be dried prior to supply.

### Safety features

Detection of internal and external leak and alarm in case of leak  
Hydrogen overpressure alarm  
Low water alarm  
Poor water quality alarm  
Flow rate of hydrogen should be displayed

Combined Air/ Nitrogen Generator with following specifications- 1 no.

Nitrogen purity greater than or equal to 99.9995%  
Nitrogen Flow rate greater than or equal to 600 cc/min  
Nitrogen pressure 0-5 bar

### Maximum limit of impurities

Oxygen in Nitrogen less than or equal to 10 ppm  
Hydrocarbons in air less than or equal to 0.1 ppm

The generator should work on pressure swing adsorption technology.

Air flow rate greater than or equal to 1500 mL / min  
Working pressure greater than or equal to 7 kg / cm<sup>2</sup>  
Should work on a power supply of 230V/50Hz  
Should work under following ambient conditions  
Operating temperature 5 to 40°C  
Relative Humidity 50 to 95%