

**CSIR - NATIONAL PHYSICAL LABORATORY**

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From: Director, CSIR-NPL

**Tender No. 14-VI/DS(1151)23PB/T-173**

**Dated: 09.01.2025**

**CORRIGENDUM**

With reference to NPL's Global Tender ID: **2024\_CSIR\_783184\_1** for "**Gas Chromatography with Helium Ionization Detector**". Some changes have been made in the technical specification of captioned tender. Revised specifications are as follows:

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| 5. Split/ Split less inlet/ injector (one no with FID or TCD)                                                                                                                                   |
| 5.3 Maximum operating temperature : 400 °C                                                                                                                                                      |
| 5.5 Flow setting range: <b>0 to 1250 mL/min for He</b> , 0 to 500 mL/min for H <sub>2</sub> and <b>0 to 500 mL/min for N<sub>2</sub></b> . The H <sub>2</sub> flow should be capped for safety. |

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| 14. Three days satisfactory comprehensive on-site training for the users after installation and commissioning. |
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Acceptability criteria

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| 1. The GC system should come along with the OEM test reports and should be validated at NPL site for the performance confirmation. |
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All other terms & conditions of said tender will remain the same.

  
Stores & Purchase Officer

**FORM TO BE FILLED BY IO WHILE CONVENING PRE-BID MEETING OF TSC****File No. 14-VI/DS(1151)23PB****Date: 17.11.2023****Pre-bid Meeting (To be typed clearly by the I/O)**Name of Indentor: **Dr DAYA SONI**Indent No.: **PR3026892023 dated 17.11.2023**Item Description: **Gas Chromatograph with Helium Ionization Detector (Pulse Discharge Ionization Detector)**Project No.: **OLP236232**Estimated Cost (in INR) : **50 Lakh**No. of Budgetary Quotes : **02 nos**(1) A pre-bid meeting of TSC was held on **07.01.2025**.

(2) Following queries were raised by participating Bidders:

<b>Name of the Firm</b>	<b>Queries Raised</b>	<b>Remarks, if any</b>
M/s Hydrocarbon Solutions (India) Pvt. Ltd.	Yes, Email attached	Email attached (Annexure II)
M/s Toshwin	Nil	Email attached

**Indenter's recommendation**

1. The comments, as received from bidders during PBC, and our response is as follows:

<b>Tender Specification and its number</b>	<b>Comment of bidder</b>	<b>Response of Indentor (Accepted/ Not accepted)</b>	<b>Revised specification (If any)</b>	<b>Justification for non-acceptance</b>
Format of the MAF Page 37: Annexure II	We have internal format for the MAF which is elaborate and includes all the points mentioned in NPL format. We and Agilent prefers to use the standard MAF template. Copy is attached. Please confirm whether that is acceptable?	Not accepted	NA	Its standard format prescribed by CSIR and No change is permissible.
PERFORMANCE STATEMENT CUM SERVICE SUPPORT FORM Page 39: Annexure IV	We have multiple orders completed in last 3 years, however, most of these are to government companies which prefers issuing the performance confirmations as response to requests by other government companies.  We shall share the list and contact details of orders in last 3 years as requested in these forms and request	PERFORMAN CE STATEMENT CUM SERVICE SUPPORT FORM is to be filled mandatorily by the bidder as given in Page 39:Annexure IV	NA	-

	CSIR NPL to ask for performance confirmations directly.			
5: Split/ Split less inlet/ injector : Maximum operating temperature : 450 °C Page 28, 29: CHAPTER – 4: SPECIFICATIONS AND ALLIED TECHNICAL DETAILS	We request amending the temperature to 400 deg C	Accepted	5.3 Maximum operating temperature:400 °C <b>Annexure 1A</b>	Nil
5: Split/ Split less inlet/ injector : Flow setting range: 0 to 1300 mL/min for He, 0 to 500 mL/min for H2 and 0 to 600 mL/min for N2. The H2flow should be capped for safety. Page 28, 29: CHAPTER – 4: SPECIFICATIONS AND ALLIED TECHNICAL DETAILS	We request amending the flow setting rates to:  Flow setting range: 0 to 1250 mL/min for He, 0 to 500 mL/min for H2 and 0 to 500 mL/min for N2. The H2 flow should be capped for safety.	Accepted	5.5 Flow setting range: <b>0 to 1250 mL/min for He</b> , 0 to 500 mL/min for H <sub>2</sub> and <b>0 to 500 mL/min for N<sub>2</sub></b> . The H <sub>2</sub> flow should be capped for safety. <b>Annexure 1A</b>	Nil
14: Training : Two weeks comprehensive on-site training for the users after installation and commissioning. Page 28, 29: CHAPTER – 4: SPECIFICATIONS AND ALLIED TECHNICAL DETAILS	2 weeks is long here so we suggest to change to:  Three days comprehensive on-site training for the users after installation and commissioning.	Accepted	14. Three days satisfactory comprehensive on-site training for the users after installation and commissioning. <b>Annexure 1A</b>	Nil

Final recommended specifications are as attached at **Annexure 1A** and signed by I/O:

Corrigendum to Tender may be issued/ may not be issued.

Recommended Revised Date of Tender submission (if any) is \_\_\_

The specifications are generic and broad based.

Submitted to TSC for necessary approvals.

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**FORM TO BE USED BY TSC FOR FINALISING PRE-BID MINUTES**

File No. 14-VI/DS(1151)23PB

Date: 17.11.2023

**TSC Minutes (To be typed clearly by the I/O)**

Based on the Pre-bid meeting and recommendation of I/O, following changes have been made in the specifications:

<b>Original Specifications</b>	<b>Final Specifications</b>
5. Split/ Split less inlet/ injector (one no with FID or TCD) <ul style="list-style-type: none"><li>• Maximum operating temperature : 450 °C</li><li>• Flow setting range: 0 to 1300 mL/min for He, 0 to 500 mL/min for H<sub>2</sub> and 0 to 600 mL/min for N<sub>2</sub>. The H<sub>2</sub> flow should be capped for safety.</li></ul>	5. Split/ Split less inlet/ injector (one no with FID or TCD) 5.3 Maximum operating temperature : 400 °C 5.5 Flow setting range: <b>0 to 1250 mL/min for He</b> , 0 to 500 mL/min for H <sub>2</sub> and <b>0 to 500 mL/min for N<sub>2</sub></b> . The H <sub>2</sub> flow should be capped for safety.
14. Two weeks comprehensive on-site training for the users after installation and commissioning.	14. Three days satisfactory comprehensive on-site training for the users after installation and commissioning.
Acceptability criteria 1. The GC system should come along with the test reports and application guarantee along with test and calibration reports at factory site.	Acceptability criteria 1. The GC system should come along with the OEM test reports and should be validated at NPL site for the performance confirmation.

The file is forwarded to Purchase Section for uploading the final specifications and TSC minutes on the website and CPPP Portal.

Declaration: We hereby declare that we have no conflict of interest with any of the bidder in this tender

## Annexure-IA

### Specifications for Gas Chromatograph with Helium Ionization Detector

1.	Gas Chromatograph Configuration	<p>Must support</p> <ul style="list-style-type: none"> <li>- Two inlets</li> <li>- Three detectors (Helium Ionization Detector, FID and TCD)</li> <li>- Three signal acquisition</li> </ul>
2.	Chromatographic & Sensor performance	<p>2.1 Peak area repeatability: <math>\leq 0.5\%</math> relative standard deviation (RSD)</p> <p>2.2 Retention time repeatability: <math>\leq 0.01\%</math> rel</p> <p><b>2.3 Inlet module Pressure sensor:</b>            Pressure control: 0.01 Psi or better            Accuracy: <math>\leq \pm 2\%</math> full scale or better            Repeatability: <math>\leq \pm 0.05</math> psi            Temperature coefficient: <math>\leq \pm 0.1</math> psi/<math>^{\circ}\text{C}</math></p> <p><b>2.4 Flow sensors:</b>            Accuracy: <math>\leq \pm 5\%</math> according to carrier gas            Repeatability: <math>\leq \pm 0.5\%</math> of set point            Temperature coefficient: <math>\leq \pm 0.2\%</math>/<math>^{\circ}\text{C}</math> for He and/or <math>\leq \pm 0.05\%</math>/<math>^{\circ}\text{C}</math> for <math>\text{N}_2</math> or Ar</p>
3.	Electronic Pneumatic Control (EPC) module:	Six EPC module providing control (of carrier, split and septum purge gas) upto 16-18 channels.
4.	Column Oven	<p>4.1 Sufficient in size for the required application area to accommodate at least up to two capillary columns (100 m length) or two glass packed columns or two SS packed columns (20 ft, 1/8" OD).</p> <p>4.2 Support <math>\geq 20</math> oven ramps with <math>\geq 21</math> plateaus and allow negative ramps also</p> <p>4.3 Oven temperature ambient to <math>450\text{ }^{\circ}\text{C}</math> with set point resolution of <math>0.1\text{ }^{\circ}\text{C}</math>.</p> <p>4.4 Maximum temperature ramp rate <math>120\text{ }^{\circ}\text{C}/\text{min}</math></p> <p>4.5 Oven cools down to ambient (<math>450\text{ }^{\circ}\text{C}</math> to <math>50\text{ }^{\circ}\text{C}</math> in 4 min) oven with fan for cooling.</p> <p>4.6 Ambient rejections: <math>&lt; 0.01\text{ }^{\circ}\text{C}</math> per <math>1\text{ }^{\circ}\text{C}</math></p> <p>4.7 Oven power must turn-off automatically when oven door/lid is opened.</p> <p>4.8 Maximum signal run time at least 999.99 min</p>
5.	Split/ Split less inlet/injector (one no with FID or TCD)	<p>5.1 Split ratio range 0 to 9999</p> <p>5.2 Carrier and makeup gas types: Helium, Hydrogen, Nitrogen or Argon</p> <p>5.3 Maximum operating temperature : <math>400\text{ }^{\circ}\text{C}</math></p> <p>5.4 Pressure setting range: 0 to 1035 kPa or more</p> <p>5.5 Flow setting range: 0 to 1250 mL/min for He, 0 to 500 mL/min for <math>\text{N}_2</math> and 0 to 500 mL/min for <math>\text{H}_2</math>. The <math>\text{H}_2</math> flow should be capped for safety.</p>

		5.6 Must have electronic septum purge flow control.
6.	Sample introduction system (GSV)	6.1 Three automatic gas sampling switching valve of 10 port or 6 port connected to each detector inlet. 6.2 Temperature controlled valve box. 6.3 Pressure balance or sample stop solenoid valve to ensure smooth and automated sampling of gas sample in loop.
7.	Detectors:	<p><b>7.1 Helium Ionization Detector</b></p> <ul style="list-style-type: none"> <li>a) Discharge gas: Helium</li> <li>b) Mode of Discharge: AC/ DC/ Barrier discharge</li> <li>c) Linearity/ Dynamic range: <math>\geq 10^5</math></li> <li>d) Minimum detectable range : 1 picogram/C</li> <li>e) Positive response to permanent gases</li> <li>f) Helium purifier for HID channel</li> <li>g) Hardware for backflushing the heavy portion and matrix cut provision.</li> </ul> <p><b>7.2 Flame Ionization (FID)</b></p> <ul style="list-style-type: none"> <li>a) Minimum detectable range: <math>&lt; 1.2</math> pg C/s</li> <li>b) Linearity/ Dynamic range: <math>\geq 10^7</math></li> <li>c) Maximum operating temperature: up to 450 °C</li> <li>d) Standard EPC for Air, H<sub>2</sub> and makeup gas (N<sub>2</sub> or He)</li> <li>e) Automatic flame ignition, flameout detection and efficient auto re-ignition.</li> <li>f) Data rate accommodates peak at least 5 msec or less at half height.</li> <li>g) Standard electronic pneumatic control for three gases: Air: 0-800 mL/min H<sub>2</sub>: 0-100 mL/min Makeup gas (N<sub>2</sub> or He): 0-100 mL/min</li> </ul> <p><b>7.3 Thermal Conductivity (TCD)</b></p> <ul style="list-style-type: none"> <li>a) Minimum detectable level: 400 pg/ mL tridecane with He carrier OR capable of detection of compounds with sensitivity better than 20000 mV.mL/mg (decane)</li> <li>b) Linear dynamic range: <math>\geq 10^5</math></li> <li>c) Maximum temperature up to 400 °C</li> <li>d) Programmable Signal polarity.</li> <li>e) Standard EPC for three gases (He, H<sub>2</sub> or N<sub>2</sub> matched to carrier gas type)</li> <li>f) Make-up gas: 0 to 20 mL/min or as per requirement Reference gas: 5 to 100 mL/min or as required for the analysis.</li> </ul>
8.	Software	8.1 Latest version of original licenced software package compatible with GC configuration. 8.2 Software must be compatible with latest Windows operation system with seamless integration and capable of complete control of all GC parameters. 8.3 Software must support independent temperature control for all heated zones, gas sampling valves.
9.	Data Acquisition system specification	9.1 The system should be provided with data acquisition system with standard i7 or better, 16 GB RAM, 1 TB SSD or better, latest operating system compatible with the GC

		software workstation with virus protection software, keyboard, mouse, USB port, 21” LED monitor and report printing system. 9.2 The original licenced operating system valid for minimum 5 years
10.	Installation	Installation of GC is to be done by supplier at CSIR-NPL site.
11.	GC Accessories	11.1 GC start-up/ installation kit consisting of plumbing items & gas filters 11.2 One unit of each moisture, hydrocarbon and oxygen trap/filters. 11.3 Columns: One DB-5MS Capillary column 0.32 id; One Porapak Q; One SS MS 13x; One SS MS 5A besides the fitted columns for the asked application. 11.4 Two Gas tight syringes for gas samples. 11.5 Gas sampling loops sizes from 0.1 mL, 0.25 mL, 0.5mL, 1 mL and 2 mL one each.
12.	Operation Manual	One hard copy along with soft copy of manual.
13.	Power supply	220-240 VAC; 50/60 Hz
14.	Training	3 Days satisfactory comprehensive on-site training for the users after installation and commissioning.
15.	Warranty	Two years.
16.	FOB	At CSIR-NPL, New Delhi

**Acceptability criteria:**

1. The GC system should come along with the OEM test reports and should be validated at NPL site for the performance confirmation.
2. Instrument should be capable of measurement of impurities of permanent gases (H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, CO<sub>2</sub>, CO, CH<sub>4</sub>, C<sub>3</sub>H<sub>8</sub>) in the matrix gases (CO, CO<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>, CH<sub>4</sub>, C<sub>3</sub>H<sub>8</sub>).
3. Measurement of sample gas mixture of CO, CO<sub>2</sub>, CH<sub>4</sub>, C<sub>3</sub>H<sub>8</sub> in nitrogen and air in ppm and % (less than flammability limit of the gas in case of hydrocarbon).