सी0एस0आइ0आर0-भारतीय पैट्रोलियम संस्थान
CSIR-Indian Institute of Petroleum
(वैज्ञानिक एवं औद्योगिक अनुसंधान परिशद)
(Council of Scientific & Industrial Research)
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Creating Future Fuels
ISO-9001-2015 Regd. Institute

Subject: Invitation of Expression of Interest for **"Gas Chromatography Transformer Oil Gas Analyser (GC-TOGA)"**

CSIR-Indian Institute of Petroleum (IIP), Dehradun, and ISO 9001-2015 Institute, is one of the leading constituent laboratories under Council of Scientific & Industrial Research (CSIR) engaged in R&D work in petroleum refining, natural gas and petro-chemicals and contributing towards creation of state of the art technology & products. CSIR-IIP has been working on several projects of National importance independently and also in collaboration with well-known Indian & foreign organizations.

This EOI is designed to explore the market and to finalize specifications based on technical discussions/presentations with the experienced Engineering/Fabricating companies/Firms in a transparent manner for **"Gas Chromatography Transformer Oil Gas Analyser (GC-TOGA)".**

E-BIDS for EOI are hereby invited through Central Public Procurement (CPP) Portal (https://www.etenders.gov.in) and only online offers will be entertained from the registered bidders of CPP Portal.

Reference No.: IIP/PUR/1/22-23/126/EOI/GC-TOGA/JK/ASD/PO:

Supply of "Gas Chromatography Transformer Oil Gas Analyser (GC-TOGA)"

Last date of submission : **12.07.2022 by 3:00 PM**

Date of opening : **13.07.2022 at 3:00 PM**

Interested bidders may download the details from our Website: www.iip.res.in **or on CPP Portal (https://www.etenders.gov.in**).

For and on behalf of CSIR

S/d
Controller, Stores & Purchase

Subject: Invitation for Expression of Interest (EOI) for Gas Chromatography Transformer Oil Gas Analyser (GC-TOGA)

CSIR-India Institute of petroleum (IIP), Dehradun an ISO 9001 Institute is one leading constituent under the council of scientific & Research (CSIR), engaged in R&D work in petroleum refining, natural gas and petrochemicals and contributing towards the creation of the state of the art technology & products. CSIR-IIP has been working on several projects of national importance independently and also in collaboration with well-known Indian organizations.

EOl are invited from reputed firms for supply of "**Gas Chromatography Transformer Oil Gas Analyser (GC-TOGA)"** for CSIR-IIP, Dehradun the required material properties for determination of dissolved gases (H_2, O_2, N_2, CO, CO_2, CH_4, $C2H_6$, $C2H_4$, C_2H_2, C_3H_6) in Electrical Insulating Oil/Transformer Oil in a single injection as per ASTM D3612-Method-C and for other application purpose as per Institute further requirement (PCBs in transformer oils etc.). The entire part of Gas Chromatograph Auto Headspace for gas extraction & Auto sampling must be of same original equipment manufacturer (OEM).

Firms that have carried out similar previously can apply along with documentary evidence for the work done in the past. The firms should also meet the other parameters as given below and required to submit the following information along with their applications:

a) Name of the firm with constitution /proprietorship detail, etc with the date of establishment/ registration

b) List of similar works completed in the last seven years as above with testimonials from the department concerned and the details of contact persons.

c) The firm should not have incurred any loss in more than 2 years during the last 5 years ending 31st March, 2022.

d) List of work in hand giving nature of work, department, and cost, date of start and completion with present progress, and the clients' contact details.

e) The certified Balanced Sheet and Profit & Loss account of the firm for the previous two years (2020-2021 and 2021-2022) must be enclosed with the offer.

f) Please submit articles of Association along with the offer to outline the scope of activities and standing of the firm.

Firms are requested to refer to the ***Order Nos. P-45021/2/2017-PP (BE-II) dt. 15.06.2017 as amended vide order of even number 28.05.2018, 29.05.2019, 04.06.2020, and 16.09.2020 and any subsequent amendments thereto*** issued by Public Procurement Section of DPIIT, Min. of Commerce & Industry, Government of India in their own interest to know about the provisions related to domestic suppliers for participation in open tenders. Firms may also refer to various other policies / programs of the Govt. related to promoting domestic manufacturing and/or supply

Offers against this EOI containing the technical aspects and contractual terms and conditions of the proposed procurement without a bid price should be submitted in form of E-BIDS through Central Public Procurement (CPP) Portal (https://www.etenders.gov.in) and only online offers will be entertained from the registered bidders of CPP Portal. Last date of submission of EOI is **12.07.2022 by 3.00 PM**. and shall be opened on the **13.07.2022 at 3:00 PM**. Shortlisted firms shall be called for making a presentation at a later date.

If the Procuring Entity is of the view that after EoI stage, there is likelihood of further participation by many more bidders and to avoid getting trapped into a legacy technology, the second stage bidding may not be restricted only to the shortlisted bidders of EoI stage. In the second stage, normal OTE/GTE bidding may be done.

If any information furnished by the applicant is found incorrect at a later stage, it shall be liable to be debarred from tendering/taking up of work in CSIR. CSIR-IIP reserves the right to verify the particulars furnished by the applicant; independently. CSIR-IIP reserves the right to reject any prospective application without assigning any reason.

Technical specifications for "Gas Chromatography Transformer Oil Gas Analyser (GC-TOGA)" for CSIR-IIP , Dehradun are as follows.

The material would include the following properties:

S.No		Specifications
1.	CHROMATOGRAPHIC PERFORMANCE	The system should be factory configured and comply with ASTM D3612 Method C, using fully automated headspace, dual detectors (TCD & FID), methanizer, dual six-port, or ten-port valves for column selection and backflush and determination of dissolved gases (H_2, O_2, N_2, CO, CO_2, CH_4, C_2H_6, C_2H_4, C_2H_2, C_3H_8, and C_3H_6) in Electrical Insulating Oil / Transformer Oil in a single injection as per ASTM D3612-Method-C with extensive self-diagnostic facility. The detection limit of dissolved gases should be as per the latest version of ASTM D3612-Method-C, Table 5.
		The entire part of Gas Chromatograph Auto Headspace for gas extraction & Auto sampling must be of same original equipment manufacturer (OEM).
		The Vendor has to submit the test report and chromatogram of actual transformer oil sample as per ASTM D3612-Method-C on the same instrument before shipment.
		It should have MS upgradeable from the same manufacturer in future for the analysis of PCBs in transformer oils.
		Runtime: 18 minutes or less
		Retention time repeatability < 0.008% or <0.0008 min or better
		Area repeatability <1% RSD.
		Automatic leak check and self-diagnostic in case of errors.
2.	OVEN	Ambient temp +4°C to 450°C.
		Maximum achievable temp rates: 120°C/min or better. Number of temperature-programmed ramps: 20 ramps with 21 isothermal hold or better.
		Oven cool down time from 400°C to 50°C in less than 4.5 min or better
		Temp stability should be within 0.1% of the actual temp.
3.	**INJECTOR**	Split/splitless Inlet system with pneumatics control, Maximum temp : 400°C, 0-100psi or better operation with 0.01psi increments, split ratio up to 7500:1 or better to avoid column overload and Gas saver mode to reduce gas consumption.
4.	HEAD SPACE AUTO SAMPLER	It should comply with ASTM D3612 Method C and Fully Automatic.
		The Automatic Head-Space Sampler should have a programmable oven with multiple temperature setting, mechanical shaking for vials, built in flow control, necessary interface connection with GC.

		A Head space vial(nominalcapacity-20ml) preparation setup comprising a high rotary vacuum pump, a digital Gauge, gas manifold, rotary high vacuum valves, SS hoses, nozzle, connectors, needles, syringes, septum should be supplied as'perASTM-D3612-Method-C.
		It should be capable of loading minimum 20 samples at a time.
		Sample heating to 200°C throughout pathway.
5.	**DETECTORS**	Up to 03 detectors. FID, TCD and MS Detector (**Upgradable in future for PCBs in transformer oils**).
6.	**FLAME IONIZATION DETECTOR (FID)-01 No.**	FID with pneumatic control
		Maximum temp: 450^{o}C
		Minimum Detectable level ≤ 1.4 pg C/s
		Linear dynamic range : > 10 to power 7
		Flame out detection & auto reignite
		Data rates 300Hz or better
		FID with pneumatic control.
		The detection limit of dissolved gases should be as per ASTM D3612-Method-C, Table 5 (CH_4-0.06 ppm, , C_2H_2-0.05 ppm, C_2H_4-0.04 ppm, C_2H_6-0.04 ppm,C_3H_8-0.2 ppm).
7.	**THERMAL CONDUCTIVITY DETECTOR (TCD) -01 No.**	Linear dynamic range: > 10^5 or better& with automatic bridge balancing.
		Maximum temperature: 400°C or better.
		Minimum detectable level: 400 pg tridecane or 300pg butane or better.
		The detection limit of dissolved gases should be as per ASTM D3612-Method-C, Table 5 (H_2-0.6 ppm, O_2-10 ppm, N_2-11.2 ppm, CO-0.09 ppm, CO_2-0.1 ppm).
8.	**FLOW CONTROL SYSTEM**	The Gas chromatograph should have EFC/EPC/PPC System such as constant pressure, pressure programmer, constant flow and flow programmer for carrier gases, Detectors and for auxiliary gases
		The EFC/EPC/PPC should be able to set the pressure to a minimum accuracy of 0.1 or better.
		EPC /EFC for Capillary Inlet
9.	**COLUMNS**	Two set of suitable columns as per ASTM-D3612-Method-C
11.	**CATALYTIC CONVERTER**	A suitable catalytic converter should be available for converting CO and CO_2 to CH_4.
12.	**CHROMATOGRAPHY MANAGEMENT SOFTWARE**	Original full version Latest licensed software should be supplied along with the system.
		The vendor should provide the original software license certificate from the original manufacture.
		The software should be Windows7 or higher OS operative.

		The report should have the chromatogram of the TCD and FID and the Concentration of the individual components.
		Integrated Chromatography software should have 21 CFR Part 11-compliance.
		Should have analytical system performance qualification with the IQ/OQ.
13.	**CALIBRATION BLEND**	Suitable calibration blends (H_2-5 ppm, O_2-10 ppm, N_2-15.0 ppm, CO-1 ppm, CO_2-1 ppm, CH_4-1 ppm, , C_2H_2-1 ppm, C_2H_4-1 ppm, C_2H_6-1 ppm,C_3H_8-1 ppm) for ASTM-D3612-Method-C.
14.	**PC AND PRINTER**	The system should be supplied with a **branded computer along with double sided printing printer** with latest and required configuration for running the system software for data acquisition, data processing and data storing and printing purpose.
15.	**INSTALLATION**	Supply complete installation with required accessories
16.	**WARRANTY**	12 months warranty from the date of commissioning.
		A certificate from the vendor is required stating that it will provide compulsory ten year service support with required spares after the supply of the instrument.
17.	**SERVICE SUPPORT**	Minimum 10 Years service support with required accessories.
18.	**OTHER ACCESSORIES**	All technical point should be mentioned in origin Lit or Brochure.
		On-site training: Installation, complete demonstration of the capabilities of the system with calibration standard and actual transformer oil sample for ASTM-D3612-Method-C.
		The equipment must be complete in all respect for determination of dissolved gases (H_2, O_2, N_2, CO, CO_2, CH_4, C_2H_6, C_2H_4, C_2H_2, C_3H_8, and C_3H_6) in Electrical Insulating Oil / Transformer Oil in a single injection.
		Vendor has to demonstrate for the repeatability of results of actual transformer oil samples.

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