

Notice Inviting Quotation (E-Procurement mode)
कोटेशन को आमंत्रित करने की सूचना (ई-प्रोक्योरमेंट मोड)

INDIAN INSTITUTE OF TECHNOLOGY DELHI
भारतीय प्रौद्योगिकी संस्थान दिल्ली
HAUZ KHAS, NEW DELHI-110016
हौज खास, नई दिल्ली -110016

Dated/ दिनांक: 02/09/2022

Open Tender Notice No. / खुला प्रस्ताव निविदा सूचना नंबर: IITD/BCHE(SP-3957)/2022

Indian Institute of Technology Delhi is in the process of purchasing following item(s) as per details as given as under.

इंडियन इंस्टीट्यूट ऑफ टेक्नोलॉजी दिल्ली निम्नलिखित मदों की खरीद की प्रक्रिया में है।

Details of the item आइटम का विवरण	High-Throughput Multiple Reactors System
Earnest Money Deposit to be submitted बयाना जमा करने के लिए जमा राशि	NIL. However, bidders are required to submit 'Bid Security Undertaking' in lieu of EMD (Annexure-IX)
Warranty वारंटी अवधि	3 Years/3 साल
Performance security निष्पादन सुरक्षा	3% of Contract value
Delivery Schedule	24 to 32 weeks <u>Pl.refer Terms & Conditions No.12</u>

Tender Documents may be downloaded from Central Public Procurement Portal <http://eprocure.gov.in/eprocure/app> . Aspiring Bidders who have not enrolled / registered in e-procurement should enroll / register before participating through the website <http://eprocure.gov.in/eprocure/app> . The portal enrolment is free of cost. Bidders are advised to go through instructions provided at 'Instructions for online Bid Submission'.

निविदा दस्तावेज केन्द्रीय सार्वजनिक खरीद पोर्टल <http://eprocure.gov.in/eprocure/app> से डाउनलोड हो सकते हैं ई-प्रोक्योरमेंट में पंजीकृत नहीं होने वाले इच्छुक बोलीदाताओं को वेबसाइट <http://eprocure.gov.in/eprocure/app> के माध्यम से भाग लेने से पहले पंजीकरण करना चाहिए। पोर्टल नामांकन मुफ्त है बोलीदाताओं को सलाह दी जाती है कि 'ऑनलाइन बोली के लिए निर्देश' पर दिए गए निर्देशों के माध्यम से जाने की सलाह दी जाए। Tenderers can access tender documents on the website (For searching in the NIC site, kindly go to Tender Search option and type 'IIT'. Thereafter, Click on "GO" button to view all IIT Delhi tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <http://eprocure.gov.in/eprocure/app> as per the schedule given in the next page. निविदाकर्ता वेबसाइट पर निविदा दस्तावेज का उपयोग कर सकते हैं (एनआईसी साइट में खोज के लिए, कृपया निविदा खोज विकल्प और 'आईआईटी' टाइप करें। उसके बाद, सभी आईआईटी दिल्ली निविदाओं को देखने के लिए "गो" बटन पर क्लिक करें) उपयुक्त निविदा का चयन करें और उन्हें सभी प्रासंगिक सूचनाओं से भरें और वेबसाइट पर <http://eprocure.gov.in/eprocure/app> पर पूरा निविदा दस्तावेज ऑनलाइन जमा करें। अगले पृष्ठ में दिए गए कार्यक्रम के अनुसार

No manual bids will be accepted. All quotation (both Technical and Financial should be submitted in the E-procurement portal).

कोई मैनुअल बोली स्वीकार नहीं की जाएगी। सभी कोटेशन (तकनीकी और वित्तीय दोनों को ई-प्रोक्योरमेंट पोर्टल में जमा करना चाहिए)

SCHEDULE

Name of Organization	Indian Institute of Technology Delhi
Tender Type (Open/Limited/EOI/Auction/Single/Global)	Global
Tender Category (Services/Goods/works)	Goods
Type/Form of Contract (Work/Supply/ Auction/ Service/ Buy/ Empanelment/ Sell)	Buy
Product Category (Civil Works/Electrical Works/Fleet Management/ Computer Systems)	Research Instrument
Source of Fund (Institute/Project)	Budget Code: Equipment (Newly created space)(35.02.01(IOE)) PLN12/02 / Project Code PLN12/02CH
Is Multi Currency Allowed	YES
Date of Issue/Publishing	02/09/2022 (17:00 Hrs)
Document Download/Sale Start Date	02/09/2022 (17:00 Hrs)
Document Download/Sale End Date	30/09/2022 (15:00 Hrs)
Date for Pre-Bid Conference	---
Venue of Pre-Bid Conference	---
Last Date and Time for Uploading of Bids	30/09/2022 (15:00 Hrs)
Date and Time of Opening of Technical Bids	03/10/2022_(15:00_Hrs)
Tender Fee	Rs. ___NIL___/- (For Tender Fee) (To be paid through RTGS/NEFT. IIT Delhi Bank details are as under: Name of the Bank A/C : IITD Revenue Account SBI A/C No. : 10773572622 Name of the Bank : State Bank of India, IIT Delhi, Hauz Khas, New Delhi-110016 IFSC Code : SBIN0001077 MICR Code : 110002156 Swift No. : SBININBB547 (This is mandatory that UTR Number is provided in the on-line quotation/bid. (Kindly refer to the UTR Column of the Declaration Sheet at Annexure-II)
No. of Covers (1/2/3/4)	02
Bid Validity days (180/120/90/60/30)	90 days (From last date of opening of tender)
Address for Communication	Prof. Manjesh Kumar , Chemical Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016
Contact No.	+91-11-26591117
Fax No.	Fax No. +91-11-2658 1120
Email Address	manjeshkumar@chemical.iitd.ac.in

**Chairman Purchase Committee: Prof. Naresh Bhatnagar
(Buyer Member)**

Instructions for Online Bid Submission/ ऑनलाइन बोली (बिड) के लिए निर्देश:

As per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal ([URL:http://eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app)). The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

व्यय विभाग के निर्देशों के अनुसार, यह निविदा दस्तावेज केंद्रीय सार्वजनिक प्रापण पोर्टल (यूआरएल: <http://eprocure.gov.in/eprocure/app>) पर प्रकाशित किया गया है। बोलीदाताओं को मान्य डिजिटल हस्ताक्षर प्रमाण पत्र का उपयोग करते हुए सीपीपी पोर्टल पर इलेक्ट्रॉनिक रूप से अपनी बोलियों की सॉफ्ट प्रतियां जमा करना आवश्यक है। सीपीपी पोर्टल पर पंजीकरण करने के लिए निविदाकर्ताओं की सहायता करने के लिए नीचे दिए गए निर्देशों का मतलब है, सीपीपी पोर्टल पर आवश्यकताओं के अनुसार अपनी बोलियां तैयार करें और अपनी बोलियां ऑनलाइन जमा करें।

More information useful for submitting online bids on the CPP Portal may be obtained at:

अधिक जानकारी सीपीपी पोर्टल पर ऑनलाइन बोलियां जमा करने के लिए उपयोगी हो सकती है:

<http://eprocure.gov.in/eprocure/app>

REGISTRATION

- 1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal ([URL:http://eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app)) by clicking on the link “**Error! Hyperlink reference not valid.**”. Enrolment on the CPP Portal is free of charge.

बोलीदाताओं को "नामांकन के लिए यहां क्लिक करें" लिंक पर क्लिक करके सेंट्रल पब्लिक प्रोक्योरमेंट पोर्टल (यूआरएल: <http://eprocure.gov.in/eprocure/app>) के ई-प्रोक्योरमेंट मॉड्यूल पर भर्ती करना आवश्यक है। सीपीपी पोर्टल पर नामांकन निःशुल्क है

- 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.

नामांकन प्रक्रिया के भाग के रूप में, बोलीदाताओं को अपने खाते के लिए एक अद्वितीय उपयोगकर्ता नाम चुनना होगा और एक पासवर्ड प्रदान करना होगा।

- 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

बोलीदाताओं को सलाह दी जाती है कि पंजीकरण प्रक्रिया के भाग के रूप में अपना वैध ईमेल पता और मोबाइल नंबर पंजीकृत करें। इन का उपयोग सीपीपी पोर्टल से किसी भी संचार के लिए किया जाएगा।

- 4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.), with their profile.

नामांकन पर, बोलीदाताओं को सीसीए इंडिया द्वारा मान्यता प्राप्त किसी प्रमाणन प्राधिकरण द्वारा जारी किए गए अपने मान्य डिजिटल हस्ताक्षर प्रमाण पत्र (कक्षा द्वितीय या कक्षा III प्रमाण पत्र के साथ महत्वपूर्ण उपयोग पर हस्ताक्षर करने) की आवश्यकता होगी (जैसे सिफ़ी / टीसीएस / एनकोड / ई-मुद्रा आदि) , उनके प्रोफाइल के साथ

- 5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.

केवल एक मान्य डीएससी एक बोलीदाता द्वारा पंजीकृत होना चाहिए। कृपया ध्यान दें कि निविदाकर्ता यह सुनिश्चित करने के लिए जिम्मेदार हैं कि वे अपने डीएससी को दूसरों को उधार नहीं देते हैं जिससे दुरुपयोग हो सकता है।

- 6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.

बोलीदाता फिर अपने यूजर आईडी / पासवर्ड और डीएससी / ईटीकेन के पासवर्ड को दर्ज करके सुरक्षित लॉग-इन के माध्यम से साइट पर लॉग ऑन करता है।

SEARCHING FOR TENDER DOCUMENTS/ निविदा दस्तावेजों के लिए खोजना

- 1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.

सीपीपी पोर्टल में निर्मित विभिन्न खोज विकल्प हैं, ताकि बोलीदाताओं को कई मापदंडों से सक्रिय निविदाएं खोज सकें। इन मापदंडों में निविदा आईडी, संगठन का नाम, स्थान, तिथि, मूल्य आदि शामिल हो सकते हैं। निविदाओं के लिए उन्नत खोज का एक विकल्प भी है, जिसमें बोलीदाता कई नामों को जोड़ सकते हैं जैसे संगठन का नाम, अनुबंध का स्थान, स्थान, सीपीपी पोर्टल पर प्रकाशित निविदा की खोज के लिए तारीख, अन्य कीवर्ड आदि।

- 2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

बोलीदाताओं ने एक बार निविदाएं चुनी हैं जिसमें वे रुचि रखते हैं, उसका वे आवश्यक दस्तावेज / निविदा कार्यक्रम डाउनलोड कर सकते हैं। ये निविदाएं 'मेरी निविदाओं' फ़ोल्डर में ले जाई जा सकती हैं। इससे सीपीपी पोर्टल को बोलीदाताओं को एसएमएस / ई-मेल के माध्यम से सूचित किया जा सकता है, यदि निविदा दस्तावेज में कोई शुद्धि जारी कि गई है।

- 3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

बोलीदाता को प्रत्येक निविदा को निर्दिष्ट अद्वितीय निविदा आईडी का नोट बनाना चाहिए, अगर वे हेल्पडेस्क से कोई स्पष्टीकरण / सहायता प्राप्त करना चाहते हैं।

PREPARATION OF BIDS / बोली (बिड) की तैयारी

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.

बोलीदाता को अपनी बोलियां जमा करने से पहले निविदा दस्तावेज पर प्रकाशित किसी भी शुद्धि को ध्यान में रखना चाहिए।

- 2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

कृपया बोली के भाग के रूप में जमा किए जाने वाले दस्तावेजों को समझने के लिए निविदा विज्ञापन और निविदा दस्तावेज ध्यान से देखें। कृपया उन अंकों की संख्या पर ध्यान दें जिन में बोली दस्तावेज जमा करना है, दस्तावेजों की संख्या - जिसमें प्रत्येक दस्तावेज के नाम और सामग्री शामिल हैं, जिन्हें प्रस्तुत करने की आवश्यकता है। इनमें से कोई भी विचलन बोली को अस्वीकार कर सकता है।

- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option.

बोलीदाता, अग्रिम में, निविदा दस्तावेज / अनुसूची में बताए अनुसार प्रस्तुत करने के लिए बोली दस्तावेज तैयार करना चाहिए और आम तौर पर, वे पीडीएफ / एक्सएलएस / आरएआर / डीडब्ल्यूएफ स्वरूपों में हो सकते हैं। बोली दस्तावेजों को 100 डीपीआई के साथ काले और सफेद विकल्प स्कैन किया जा सकता है।

- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can

use "My Space" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

मानक दस्तावेजों के एक ही सेट को अपलोड करने के लिए आवश्यक समय और प्रयास से बचने के लिए जो प्रत्येक बोली के भाग के रूप में जमा करने के लिए आवश्यक हैं, ऐसे मानक दस्तावेज अपलोड करने का प्रावधान (जैसे पैन कार्ड कॉपी, वार्षिक रिपोर्ट, लेखा परीक्षक प्रमाण पत्र आदि)) बोलीदाताओं को प्रदान किया गया है। ऐसे दस्तावेजों को अपलोड करने के लिए बोलीकर्ता उनके लिए उपलब्ध "मेरा स्पेस" क्षेत्र का उपयोग कर सकते हैं। बोली जमा करते समय ये दस्तावेज सीधे "मेरा स्पेस" क्षेत्र से जमा किए जा सकते हैं, और उन्हें बार-बार अपलोड करने की ज़रूरत नहीं है इससे बोली जमा प्रक्रिया के लिए आवश्यक समय में कमी आएगी।

SUBMISSION OF BIDS/ बोली (बिड) का जमा करना

- 1) Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

बोलीदाता को बोली प्रस्तुति के लिए अच्छी तरह से साइट पर लॉग इन करना चाहिए ताकि वह समय पर बोली अपलोड कर सके या फिर बोली प्रस्तुत करने के समय से पहले। अन्य मुद्दों के कारण किसी भी देरी के लिए बोलीदाता जिम्मेदार होगा।

- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

बोलीदाता को निविदा दस्तावेज में दर्शाए अनुसार एक-एक करके आवश्यक बोली दस्तावेजों को डिजिटल हस्ताक्षर और अपलोड करना होगा।

- 3) Bidder has to select the payment option as "on-line" to pay the tender fee / EMD as applicable and enter details of the instrument. Whenever, EMD / Tender fees is sought, bidders need to pay the tender fee and EMD separately on-line through RTGS (Refer to Schedule, Page No.2).

बोलीदाता को निविदा शुल्क / ईएमडी को भुगतान के लिए "ऑन लाइन" के रूप में भुगतान विकल्प चुनना होगा और उपकरण का विवरण दर्ज करना होगा। जब भी, ईएमडी / निविदा शुल्क की मांग की जाती है, बोलीदाताओं को टेंडर शुल्क और ईएमडी अलग-अलग आरटीजीएस के माध्यम से ऑन लाइन पर भुगतान करने की आवश्यकता होती है (अनुसूची, पेज नं .2 देखें)।

- 4) A standard BoQ format has been provided with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BoQ file, open it and complete the white colored (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.

एक मानक BoQ प्रारूप को सभी बोलीदाताओं द्वारा भरने के लिए निविदा दस्तावेज प्रदान किया गया है। बोलीदाताओं को इस बात का ध्यान रखना चाहिए कि उन्हें आवश्यक प्रारूप में अपनी वित्तीय बोली जमा करनी चाहिए और कोई अन्य प्रारूप स्वीकार्य नहीं है। बोलीकर्ताओं को BoQ फाइल को डाउनलोड करने, इसे खोलने और अपने संबंधित वित्तीय उद्धरण और अन्य विवरण (जैसे बोलीदाता का नाम) के साथ सफेद रंगीन (असुरक्षित) कोशिकाओं को पूरा करना आवश्यक है। कोई भी अन्य कक्ष नहीं बदला जाना चाहिए। एक बार विवरण पूरा हो जाने पर, बोलीदाता को इसे सहेजना होगा और इसे ऑनलाइन जमा करना होगा, बिना फ़ाइल नाम बदलना। यदि BOQ फ़ाइल को बोलीदाता द्वारा संशोधित किया गया है, तो बोली को खारिज कर दिया जाएगा।

- 5) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

सर्वर का समय (जो बोलीदाताओं के डैशबोर्ड पर प्रदर्शित होता है) बोलीदाताओं द्वारा बोलियों को खोलने के लिए समय सीमा को संदर्भित करने के लिए मानक समय के रूप में माना जाएगा। बोलीदाताओं को खोलना आदि। बोलीदाताओं को बोली प्रस्तुत करने के दौरान इस समय का पालन करना चाहिए।

- 6) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.

बोलीदाताओं द्वारा प्रस्तुत सभी दस्तावेज पीकेआई एन्क्रिप्शन तकनीकों का उपयोग करके एन्क्रिप्ट किया जाएगा जिससे डेटा की गोपनीयता सुनिश्चित हो सके। दर्ज किए गए डेटा को अनधिकृत व्यक्तियों द्वारा बोली खोलने के समय तक नहीं देखा जा सकता है। बोलियों की गोपनीयता को सुरक्षित सॉकेट लेयर 128 बिट एन्क्रिप्शन तकनीक का उपयोग कर रखा जाता है। संवेदनशील क्षेत्रों का डेटा संग्रहण एन्क्रिप्शन किया जाता है।

- 7) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

अपलोड किए गए निविदा दस्तावेज केवल अधिकृत बोलीदाता द्वारा निविदा खोलने के बाद ही पठनीय हो सकते हैं।

- 8) Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

बोलियों के सफल और समय पर जमा होने पर, पोर्टल एक सफल बोली प्रस्तुत करने का संदेश देगा और एक बोली सारांश बोली संख्या के साथ प्रदर्शित किया जाएगा। और अन्य सभी प्रासंगिक विवरणों के साथ बोली प्रस्तुत करने की तारीख और समय।

- 9) Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

कृपया अनुपालन पत्रक की एक पीडीएफ फाइल में सभी प्रासंगिक दस्तावेजों के स्कैन किए गए पीडीएफ को जोड़ दें।

ASSISTANCE TO BIDDERS / बोलीदाताओं को सहायता

- 1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

निविदा दस्तावेज से संबंधित कोई भी प्रश्न और इसमें निहित नियमों और शर्तों को निविदा आमंत्रण प्राधिकरण को निविदा के लिए या निविदा में वर्णित प्रासंगिक संपर्क व्यक्ति से संबोधित किया जाना चाहिए।

- 2) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 233 7315.

ऑनलाइन बोली प्रस्तुत करने या सामान्य में सीपीपी पोर्टल से संबंधित प्रश्नों की प्रक्रिया से संबंधित कोई भी प्रश्न 24x7 सीपीपी पोर्टल हेल्पडेस्क पर निर्देशित किया जा सकता है। हेल्पडेस्क के लिए संपर्क संख्या 1800 233 7315 है

General Instructions to the Bidders / बोलीदाताओं के लिए सामान्य निर्देश

- 1) The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app> . In the Technical Bids, the bidders are required to upload all the documents in .pdf format.

निविदाएं पोर्टल <http://eprocure.gov.in/eprocure/app> के माध्यम से ऑनलाइन प्राप्त होंगी तकनीकी बोलियों में, बोलीदाताओं को सभी दस्तावेजों को पीडीएफ प्रारूप में अपलोड करना होगा।

- 2) Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through <https://eprocure.gov.in/eprocure/app>. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <https://eprocure.gov.in/eprocure/app> under the link "Information about DSC".

कंपनी के नाम में स्मार्ट कार्ड / ई-टोकन के रूप में मान्य क्लास II / III डिजिटल हस्ताक्षर प्रमाण पत्र (डीएससी) के पंजीकरण के लिए एक शर्त है और <https://eprocure.gov.in/eprocure/> के माध्यम से बोली प्रस्तुत करने की गतिविधियों में भाग ले सकते हैं। डिजिटल हस्ताक्षर प्रमाण पत्र अधिकृत प्रमाणित एजेंसियों से प्राप्त की जा सकती है, जिनमें से जानकारी "डीएससी के बारे में सूचना" लिंक के तहत वेब साइट <https://eprocure.gov.in/eprocure/app> पर उपलब्ध है।

- 3) Tenderer are advised to follow the instructions provided in the 'Instructions to the Tenderer for the e-submission of the bids online through the Central Public Procurement Portal for e Procurement at <https://eprocure.gov.in/eprocure/app>.

निविदाकर्ता को सलाह दी जाती है कि वे निविदाकार को निर्देश दिए गए हों ताकि ई-प्रोक्योरमेंट के लिए सेंट्रल पब्लिक प्रोक्ॉर्ममेंट पोर्टल के जरिए <https://eprocure.gov.in/eprocure/app> पर ऑनलाइन निविदाएं जमा कर सकें।

Department of Chemical Engineering
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NOTICE INVITING QUOTATIONS

Subject: Purchase of High-Throughput Multiple Reactors System
Invitation for Tender Offers

Indian Institute of Technology Delhi invites online Bids (Technical bid and Commercial bid) from eligible and experienced OEM (Original Equipment Manufacturer) OR OEM Authorized Dealer for **supply, installation & integration of an high-throughput multiple reactors system** with (warranty period as stated at page #1 of this tender) on site comprehensive warranty from the date of receipt of the material as per terms & conditions specified in the tender document, which is available on CPP Portal <http://eprocure.gov.in/eprocure/app>

TECHNICAL SPECIFICATIONS

Note 1: There are 10 sections in technical specifications that enumerate the requirements and terms and conditions. These sections have been given points listed below that sum up to 100 points.

1. General Specifications	: 10 points
2. Gas/Vapor feed section	: 20 points
3. Reactor and Analysis Section	: 20 points
4. Control and Safety Section	: 20 points
5. Installation, Commissioning, and Training Section	: 5 points
6. Warranty and Software upgrades	: 10 points
7. Prior Experience	: 15 points
8. Additional information required in technical & price bids	: No points
9. Evaluation of the proposal	: No points
10. List of optional items	: No points

1. General Specifications:

Overall Requirements of the system:

10 points

Through this purchase, we are seeking to acquire high-throughput reactor system for faster screening of catalysts for desired application. System should be designed to meet the varied expectation of users to run different reactions. However, specifications have been enumerated to capture the minimum requirements, but evaluation will not be limited to that. Features that ensure more safety, wider usability, higher automation, and more flexibility with new add-ons will be key determinants. Broad requirements are mentioned below with key specifications:

- a) Reactor systems should be designed to handle gas/vapor-solid phase reactions. Solid phase represents catalyst in powder or pellet forms in addition to inert solid diluent. Reactants include permanent gases and vapors that need to be fed uniformly to the reactors. Tentatively, reactions of interest capture methanol-to-olefins/hydrocarbons, CO₂ Valorization, alkylation but not limited to this list.
- b) Set of reactions requires wide range of operating conditions in terms of pressure and temperature. It is to be noted that similar level of control and accuracy is required to run reactions in entire temperature range from 180 to 800 degC and operating pressure from atmospheric to 80 bar. Better control system and hardware tuning might be required to have better accuracy over the entire range of operations.
- c) System will be handling multiple feeds and two reactors. These two reactors should be able to run in parallel and series mode. It requires high degree of automation to avoid manual interventions. Ideally, all reactors are similar except different catalysts that are loaded in the system. Overall, it will require tight control on composition, flow, temperature, and pressure of reactants. Gas feed to both reactors should have uniform composition and flow. Subsequently, temperature and pressure across all reactors should be uniform. Along with capability of control, there should be system by which we can demonstrate the uniformity in real time.

A list of bulk system requirements is mentioned below from point 1 to 10.

Sl. No.	Item	Description
1.	Reactions	Gas/vapor phase catalytic reactions such as Methanol-To-Olefins (hydrocarbons), CO ₂ Valorization, Alkylation,
2.	Feed	a) Gas-He (carrier), H ₂ , CO, CO ₂ , CH ₄ , O ₂ (Synthetic air), 1 extra manifold b) Liquid: H ₂ O(l), CH ₃ OH(l), C ₂ H ₅ OH(l), CH ₃ OCH ₃ (l), C ₆ H ₆ (l)
3.	No. of Reactors	Two Reactors (should work in parallel (independently), and series)
4.	Type of Reactor	Tubular Packed bed Type (gas-solid phase reaction), Isothermal Reactor
5.	Assembly of reactors	Both reactors should be able to run in parallel as well as series mode (product of one reactor can be fed to another).
6.	Mode of operation	Downflow
7.	Catalytic bed	Isothermal conditions should be within ± 1 deg C through the catalyst bed (maximum catalyst bed length: 5 cm)
8.	Operating temperature and pressure	Up to 800 Deg C @ atmospheric pressure and, Reactions up to 650 deg C @ 80 bar and, Reactions up to 200-500 deg C @ 1 to 30 bar and, Reactions up to 180 deg C @ 80 bar. (All requirements should be achievable)
9.	MOC Reactors	Inconel (suitable grade such as 625 or better)
10.	MOC (other components)	Material of construction of all process lines, instruments, fittings, and valves should be made of SS -316L, Teflon or Kalrez with minimum dead volume. Specify typical dead volume.

2. Gas/Vapor Feed Section

20 points

Sectional 1 (general specifications) specifies that there are multiple reaction systems that need to be run using varied feed gas flow and compositions. These requirements posit challenges related to uniform distribution of gases /vapor to the 2 reactors. It should be noted that there are liquid feeds at ambient conditions that need to be vaporized before being fed to 2 reactors. Few suggested guidelines are as follows:

- There are 6 gases as feed including diluent (He). We have asked for one extra manifold (gas not planned). However, it is required that design should be such that two extra gas feed lines can be added later. Vendor should demonstrate the ability of adding gas line with minimum modifications in future.
- Gases from cylinders have to be uniformly mixed to create the desired composition. Subsequently, same feed will be distributed to 2 reactors. Composition and flow should be same for different catalysts in different reactors (in parallel mode). Owing to multiple feed, feed section should be designed robustly for better and faster screening of catalysts. Given the requirements, allowing too much of manual intervention will not be desirable. It will require complete automation in control. These features need to be demonstrated.
- Certain feeds are in liquid phase that need to be vaporized and mixed with diluent. It will require the proper pumping mechanism and heating system. It is expected that liquid should be pumped without instability in flow covering wide range of flow. Here we are seeking one high pressure pump and one syringe pump that should be able to cover entire range of flow given below with the capability of switch over. This pump will feed to 2 Coriolis mass flow controllers that will be attached to evaporators. Subsequently, vapour generated will be mixed with diluent/gases prior to feeding to reactors bypassing MFC installed for gas supply. Inline mixing valve might be required for uniform composition of feed. Diluent will come from gas supply system. To avoid condensation, line must be heat traced up to reactor feed. Again, control of composition and flow to all reactors are key determinant parameters. Liquid flow rate will be used as measurement for gas flow and not a separate MFC for the gas flow.
- There will be labyrinth of feed flow lines. It must be designed such that it is easy for access, uniformity and maintenance.

A list of bulk system requirements for the feed section are mentioned from point 11 to 13.

Sl. No.	Item	Description
11.	Gas Feed Section	a) 6 Gas supply lines
		b) O ₂ , H ₂ , CO, CO ₂ , CH ₄ , He (diluent/purge)
12.	Gas Feed Section	All gas distribution system should be provided with a pressure regulator, particulate filter, shut-off valve, a thermal mass flow controller (brooks, Bronkhorst) and check valve. Filters, Fittings, and instrumentations should be from Swagelok. Vent line should be provided for pressure regulator.
		Feed to the reactors will be mixture of gases. Suitable mixer/arrangements should be installed to ensure uniform composition of reactants mixture to both 2 reactors.
		Individual mass flow controller to each reactor should be provided to ensure uniform flow for gas stream. However, if vendors can provide different distribution mechanism for uniform feed flow that are verifiable, we can accept the design instead of individual MFC.
		c) User input to feed section
		c1) User should give inputs, subsequently, all tasks should be carried out automatically. The user input will be valid for all the reactors.
		a. Composition of the gas mixture to be fed to the reactors
		b. Flow rate to be fed to each reactor
		c. Operating temperature and pressure of the reactors
		c2) It should be possible to obtain the time-dependent conditions (including feed composition, flowrate, reactor temperature and pressure) and this information would be given through user inputs. Program should have the capability of taking the minimum of 20 steps within 1 program. There should be a possibility of designing at least 2 programs at a time.
		d) Gas flow rate: Range of flow: 15-300 sccm to each reactor. It should be noted that there are 2 reactors in parallel. Both reactors will be running at the same time. For example, if flow through one reactor is 50 sccm then total flow of reactant mixture should be 150 sccm. Controlled step change: 5 sccm
		Individual mass flow controller ranges for each gas should be specified and confirmed for each reactant line along with degree of control, precision, and accuracy. Provide details in technical bid document.
		Helium line should be heat traced with inline heater to reach a temperature of 100 degC which will be compatible with MFC attached prior to reactor. It is desired when diluent will be added to vapor. Alternate / separate provision of adding diluent to vapor without condensation is acceptable ensuring the composition of feed to reactors.
		Range mentioned below are typical flow ranges and composition for each reactor. There exists a possibility that reactor might run at separate composition as well but on conservative side of key reactants (less than below flow rate).
		GAS/VAPOUR FLOW RANGE TO EACH REACTORS
		1. Maximum flow rate 300 sccm (70% CO, 30% He) to each reactor
		2. Maximum flow rate 300 sccm (70% CO ₂ , 30% He) to each reactor
		3. Maximum flow rate 300 sccm (15% CO, 60% H ₂ , 25% He) to each reactor
		4. Maximum flow rate 300 sccm (15% CO ₂ , 60% H ₂ , 25% He) to each reactor
		5. Maximum flow rate 300 sccm (15% CO+CO ₂ , 60% H ₂ , 25% He) to each reactor
		6. Maximum flow rate 300 sccm (70% H ₂ , 30% He) to each reactor
		7. Maximum flow rate 300 sccm (70% O ₂ , 30% He) to each reactor
		8. Maximum flow rate 300 sccm (50% CH ₃ OH, 50% He) to each reactor
		9. Maximum flow rate 300 sccm (50% CH ₃ OCH ₃ , 50% He) to each reactor
		10. Maximum flow rate 300 sccm (Pure He) to each reactor
		11. Maximum flow rate 300 sccm (Synthetic Air O ₂) to each reactor
		12. Maximum flow rate 300 sccm (Pure CH ₄) to each reactor
		GAS FLOW RANGE FOR EACH REACTANTS
		1. Maximum flow rate 420 sccm (PURE CO) from cylinder
		2. Maximum flow rate 420 sccm (PURE CO ₂) from cylinder

		3. Maximum flow rate 360 sccm (PURE H ₂) from cylinder
		4. Maximum flow rate 600 sccm (PURE He) from cylinder
		5. Maximum flow rate 600 sccm (Synthetic air) from cylinder
		6. Maximum flow rate 600 sccm (PURE CH ₄) from cylinder
		7. Maximum flow rate 600 sccm (PURE H ₂ O vapor) from tank
		8. Maximum flow rate 300 sccm (PURE CH ₃ OH vapor) from tank
		9. Maximum flow rate 300 sccm (PURE C ₂ H ₅ OH vapor) from tank
		10. Maximum flow rate 300 sccm (PURE CH ₃ OCH ₃ vapor) from tank
		11. Maximum flow rate 300 sccm (PURE C ₆ H ₆ Vapor) from tank
		Specifications
		Accuracy: Better than +/- 1% of set point (20-100% full scale) and +/- 0.2% of full scale (2-20% full scale)
		Repeatability: +/- 0.2% of set point or better
		Max. Operating Pressure: >=80 bar
		Ambient temperature range: 5 to 65 °C or broader
		Control range 50:1 turndown for full scale
		Stability: Less than 0.5% per year
		Appropriate seals as per the gas used
		There should be parallel inert/purge feedline to all reactors along with main gas feedline with automated switching valve.
		There should be pressure regulation system, automated vent valve and a pressure safety valve to be placed at suitable places.
		Back Pressure Regulator (BPR) must be installed at suitable place for both 2 reactors.
		Bypass line should be provided across all reactors reaching to analysis unit.
12.	Liquid Feed Section	There should be 2 Liquid feed tanks with proper vent line, drain line, and level gauge. Volume of both the tanks should be 5 l or higher allowing the refills during long duration experiments with provision of cleaning. Feed can be provided from each tank. Both tanks can feed to one high pressure pump for which details are given below.
		Separately, there should be a provision of feeding through liquid syringe pump at ambient condition.
		After high pressure pump, individual 2 Coriolis mass flow controllers should be provided for independent flow control feeding to 2 reactors. Only liquid flow rate will be controlled, and vapor after heating will be fed to reactor bypassing MFC used for gases. Measured diluent (He) can be added to vapor prior to reactors or added to liquid prior to heating.
		Potential liquid to be used:
		Water, Methanol, Dimethyl ether, ethanol, propanol, benzene
		Reaction will be conducted in vapor phase not liquid phase. It necessitates the provision for heating the liquid to vapor phase that comes out of high-pressure pump or syringe pump.
		Controlled heating arrangement for liquid should be provided so that we can get vapor phase. Heating element should be able to ensure gas temperature control from room temperature up to 200 degC.
		Maximum 2 liquid phase reactants from the two liquid feed tanks will be used for reaction that will be vaporized before being fed to all the reactors. Mixed vapor will have He as diluent/carrier gas.
		Inline mixer or gas mixing valve should be provided for better mixing of vapor before being fed to reactors.
		To avoid condensation of vapor in the line, heat traced line should be provided ensuring the possibility of easy maintenance. One such arrangement can be putting the system in hotbox that might ensure uniform temperature profile and avoid cool points.
		MOC compatibility certificate of tank with above liquids should be provided.
		HPLC Pump: 1 Fully automated high-pressure liquid pump, liquid flow range: 0.05-15 sccm (or wider range capturing 0.05-15 sccm), Pressure: up to 80 bar for liquids.
		Damper should be provided for the liquid flow stabilization
		1 automated 2 rack liquid syringe pump, flow range: 1 µl/min-0.5 sccm (or wider range capturing 1 µl/min-0.5 sccm), Size of syringes should be suitable for 5 hrs of runtime (minimum) at maximum flow rate of 0.5 sccm. Example of syringe pump is HARVARD pump but not limited to this brand.

3. Reactor and Analysis Section

20 points

The gas feed section is connected to the reactor section. There are 2 reactors aligned in parallel and will be running in parallel as well as in series mode. Different reaction systems have been suggested above in section 1 (general specifications). Reactor should be designed such that it should be able to handle all reaction conditions. Uniformity of reaction conditions is necessary condition for high-throughput catalyst screening. At the same time, safety of operations for reactor should have utmost priority. Few suggested guidelines are as follows:

- There are 2 parallel reactors that need to be handled simultaneously. It will require design that provide easy access, handling, and operations. Reactors will be at high temperature and high pressure that need to be handled with utmost safety. Safety should be part of design and should be operating in fail safe mode conditions. Interlocks should ensure safe operations.
- Success of the reaction depends on the tighter control of operation parameters such as temperature and pressure. We should be able to measure, control, observe and log details of operating conditions to ensure accuracy of data and experiments. Given the wide range of operating temperature and pressure, tighter control system should be provided ensuring the accuracy and repeatability of operations. Typical operating range should not be taken as real range while that is absolute must.
- System should have sufficient redundancy in case of any failure in system. System should not stop running when one parallel system is not working.
- Products will be coming out of both reactors that need to be analyzed alternatively without any condensation in the lines. It should be automated process where product could be analyzed at regular time interval that were captured after same reaction time. Process should be automated to avoid any time lag and get the data simultaneously. GC-MS should be customized in such a way that it can detect and analyze permanent gases and refinery gas up to C12.
- It should have the capability of analyzing data and generating the desired report in format which is compatible with general software such as excel and word. All these raw data should have time stamp to track the history. Moreover, high-throughput system will require comparative analysis for both reactors. System should be designed in such a way that comparative report can be generated.

A list of bulk system requirements for the reactor and analysis section is given below in point 14 to 15.

Sl. No.	Item	Description
14.	Reaction Section	a) 2 individual identical fixed bed reactors
		b) Both reactors should be able to run in parallel and series mode as well. By series mode, we mean that product from one reactor can go to second reactor.
		Temperature should be programmable (time dependent temperature profile with desired ramp rate) with minimum of 20 steps in a single program.
		K or N-type thermocouple to measure catalyst bed temperature should be provided. The minimum provision of 3 thermocouples should be considered that could measure mid catalytic bed temperature, inlet temperature (not catalytic bed) and outlet temperature (not catalytic bed) across reactors.
		Maximum working temperature: up to 800 Deg C. It should be noted that all reactors should be able to attain 800 deg C at atmospheric pressure. Corresponding design temperature is open to vendor discretion for safe handling.
		Temp ramp rate: 1 deg C/min to 15 deg C /min for up to 500 deg C and 1-10 deg C/min for up to 800 deg C. Heating element should be able to attain the entire range of ramp rate as suggested.
		Typical working temperature: 150-500 deg C. This is specified only to suggest that system should have the capability of controlling temperature in this range with similar efficacy as that of at high temperature.
		Maximum working pressure: 80 bar
		Typical working pressure: 1-30 bar. This is specified only to suggest that for all possible range of working temperature, all possible range of working pressure should be attainable
		Catalyst volume: 5 ml (including diluent) / catalyst: 0.01-3.0 ml
		Reactor internal diameter should be suitable to handle above catalyst volume. Typical range of ID can be 9-12 mm.
		c) Reactor specifications:
		1. Flow path: down flow
		2. Material of construction: Inconel reactor (inert material for the reaction media)

		<p>d) Particulate in line filters (10 microns) should be installed at reactor inlet and outlet (to keep the system free of catalyst particles).</p> <p>e) Reactor's pressure should be controlled (from 1 bar up to 80 bar) by an individual control valve in each reactor, but <i>the pressure value must be equal in all the reactors</i>. Multi-stage pressure controllers' strategy can be adopted to achieve control over entire range 80 bar accuracy approx. 0.1bar → 10% error at 1bar control 1st controller 80 barg full scale 2nd controller 5 barg full scale</p> <p>f) A pneumatically actuated 4 way/2 position VICI valve for reactor bypass. Operating range will be limited to 80 bar and 100 degC. In case, there is no such VICI valve available at operating conditions, suitable arrangement for bypass must be provided.</p> <p>g) Heating furnace heating equipment: Both reactors should be able to attain same temperature to ensure similar reaction condition in all reactors. Skin thermocouple should be installed in the heating element of the furnace for heating control Temperature measurement inside each catalytic bed for inner temperature measurement. Accuracy: ± 1 °C Downstream of the reactors will be sent to the sampling section.</p>
15.	Gas Sampling System	<p>Gas-liquid separator should be provided to both reactors based on thermoelectric effect (5-60 degC) with less than 1 ml dead volume. Options of bypassing the separator should be there so that complete gas product can be analyzed.</p> <p>Gas product stream from each reactor should be directed to an automated sampling switching valve. The product of each reactor can be kept in a 10 ml loop to ensure sampling at regular time interval (GC-MS analysis time).</p> <p>A multi-position valve common to 2 reactors should be used for automated injection of the loop samples to analytical system.</p> <p>Line from multi-position valve to GC-MS should be heat traced from outlet to GC inlet. Maximum attainable temperature should be 300 degC to avoid condensation.</p> <p>Provision should be such that gas samples can be taken in the same reaction time for both 2 reactors.</p> <p>Analysis results should be processed by the main software of the unit, with summarized reports showing analysis data and process data, saving time to user.</p> <p>1 GC-MS that include TCD + TCD + FID for online gas samples analysis.</p> <p>The GC-MS configuration, which includes TCD/TCD/FID, should allow analyzing permanent gases (hydrogen, nitrogen, oxygen/argon, helium), carbon monoxide, carbon dioxide, methane, and hydrocarbons up to C12 (including paraffins, iso-paraffins, olefins, naphthenes, alcohols).</p> <p>Vendor should provide optimized design with faster hydrocarbons analysis and permanent gas analysis. Suppliers can be Agilent, Perkin, Shimadzu, or equivalent.</p>

4. Control and Safety Section

20 points

High-throughput reactor system is expected to represent the state-of-art facility. It should be noted that it is not just the combination of 2 reactor systems. It is expected that it should be laced with highest level of automation ensuring higher accuracy, repeatability, minimum manual intervention, and faster output. It is aimed at meeting the needs of multiple agencies for faster catalytic screening. These studies are expected to supplement the confidence for pilot plant studies for developing indigenous catalytic material. At the heart of all this, control, monitoring, and data management are key determinant. We are expecting a highly robust system by ensuring minimum manual and users' intervention. Few suggested guidelines are as follows:

- Graphical features should represent the real time status of complete system. Interface should be depicting all features that account for supervision, monitoring, controlling, and recording. These features should be interactive to better supervise and control system. Visualization should be real time.
- It will be controlling all sections of our systems that include feed section, reactor section and analysis section. There is need of seamless integration of feed section, reactor section and analysis unit. Logic implemented should be simple for user to avoid too much of intervention.
- Compatibility of data for analysis with commonly available software should be ensured such as excel, word, origin, MATLAB, etc.

- d) Interlocks should be designed in such a way that it offers less chances for users to make mistakes through graphical interface.
- e) Safety features are of high importance. Implementation of safety system will be scrutinized to avoid any unsafe situations. It should be highlighted vividly on screen to avoid any unsafe operations. Integration of all safety features to control unit is a must requirement.

A list of the bulk system requirements mentioned of control and safety section is given below in points 16 to 18.

Sl. No.	Item	Description
16.	Control, supervision, and data management	a) Comprehensive features should include online graphical supervision, control, monitoring and recording of all the process variables and control signals. Online monitoring (process and real time):
		1. Process visualization
		2. Gas feed flow
		3. All pressure and temperature control loops
		b) Programmable process recipes , including all the set point of the process variables, ramps and manual control of loop actuation should be available. Recipe editor should be provided for preparing experimental protocols . Experimental session could be designed with conditional change with process variables and temporal change.
		c) User results calculation configuration should be available according to reaction and procedure.
		d) Program should be able to provide summarized tables and graphs of reaction results.
		e) It should provide the ability to export all the data to Excel for further processing.
		f) GC's integration should be done with experiment programming.
		g) GC software integration and data analysis treatment , which includes:
Online programming gas sampling and analysis , with the possibility of modifying analysis intervals, and chromatography methods, using the same software as the reactor units/system		
Data management application, integrating chromatography results . Online calculation of conversion and selectivity data. Provision for calculation of mass balance per each reactor should be included.		
Automated collection and data processing of the analytical results (areas and compositions) should be provided.		
Online monitoring of system conditions should be available with at least 24 h history and Process should be compatible with programs such as Excel and Agilent EZ Chrome.		
17.	Safety System	a) The equipment should have several independent safety levels (individual element, unit alarm, full equipment shut-off). Admin should be able to change shutdown thresholds within the given hardware limits. Process design includes all the passive safety elements to ensure proper operation of the equipment, including:
		1. Pressure safety valves
		2. Check valves
		3. Filters, etc.
		b) A flammable gas detector for analyzing the atmosphere integrated in the unit safety system should be provided. CO and H ₂ detector should also be provided with the system. These safety detectors should be from Honeywell or equivalent.
		c) Visual and sound warning systems , with different type of signaling according to safety level, should be provided. Additionally, emergency shutdown button for unit turning off should be provided.
		d) Unit safety and alarm system should be structured:
		ALARM should depict that measured variable is out of alarm limits, so the corresponding alarm should be activated by control system. One or more manipulated elements, according to interlock table, should be shut down or actuated in order to restore the safety situation.
		ALARM should lead to stop the unit. Unit alarm should begin when an alarm situation persists for a certain time, despite of the element alarm was activated, and the corresponding elements were acted. Time is defined by user. Unit alarm should also be activated if control interface loses communication with unit electronics.
		UNIT SHUTDOWN should drive to unit stopping and turning off. This alarm should be activated by emergency shutdown button and external alarm (user definition).
18.	PC	Desktop dell/HP/equivalent PC with 16GB RAM, i5 11 th generation processor, 512 GB SSD.
		Software should be compatible with windows / windows based.

5. Installation, Commissioning, and Training Section

5 points

Pre-delivery and post-delivery checking of system is important ingredient for success of reaction system purchase. In order to ensure the smooth execution of installation and running thereafter, training is important

for long term association. All these activities should be documented properly and should be given to us accordingly. Key component in this section is supply of spare-parts and system specific consumables based on prior performance data.

A list of bulk system requirements for the installation, commissioning, and training section is given below in points 19 to point 24.

Sl. No.	Item	Description
19.	Factory Acceptance Test	The Factory Acceptance Test (FAT) should consist of:
		Check in detail the unit as-built with the P&ID and verify the equipment/instrument layout and operating limits of important sections
		Maximum and minimum limit of all the variables (temperature, pressure, flow, etc.) using inert feed.
		Test communication between instrumentation and control box
		Pressure leak with nitrogen / helium
		Test safety actions, shutdown of the unit
		Training and demonstration of the unit with inert feeds
20.	Installation, Commissioning, SAT And Training	a) Installation, commissioning, and training at customer installations site should consist of:
		The principals, directly or through their Indian distributors, will be responsible for complete installation and integration of various components of the system and to demonstrate the technical performance of the system as quoted in the technical bid. The principals and Indian representative are collectively responsible to ensure that all components/accessories are included in the quotation. It is the responsibility of the Principals and Indian representative to ensure that all the components/accessories are included in the technical/ price bids and if components/accessories are missing or any additional part(s) are required for complete installation and integration of system, the principals and Indian representative shall be collectively responsible for providing them without additional costs.
		Testing the instruments/equipment for their functionality
		SAT: Testing the complete unit with actual feedstock and commercial catalyst samples. Catalyst sample will be provided by the buyer. The site acceptance test shall be performed to demonstrate the good adjustment of parameters.
		Testing and verifying the reactor operation, start up, shutdown, emergency, safety, and normal operation of the unit.
		Testing the operating limits in terms of pressure, temperature, and flows.
		All the operating parameters that have been mentioned above such as temperature, pressure, flow and composition should be demonstrated after the complete installation of unit.
		Training in operation and maintenance of the unit and control system for up to 10 technicians. Training should be carried out during days of commissioning. No separate charges will be paid for the installation and training. The engineers/personnel responsible for installation/training should make their own arrangements of travel to and stay in New Delhi.
21.	Spare Parts	Vendors should provide the exhaustive list of spare parts.
		Vendors should provide the number of spare parts supplied to ensure the smooth functioning of equipment for approximately 3 years based on historical performance.
22.	Consumables	Vendors should provide the list of hardware consumables (such as filter, O-rings, nut, bolts, etc.) being supplied that will be necessary for smooth functioning of whole system approximately 3 years excluding consumables such as gas, reactants, etc
23.	Documentation	The following documentation should be provided along with the unit, softcopy in English language:
		a. User manual
		1. Unit description
		2. Technical specifications of main equipment
		3. Alarms and control system information (including control loops list and interlocks table)
		4. Software manual
		5. Directive's conformity
		b. Operating manual
		1. Technical instructions
		2. Operating procedures
3. Maintenance procedures (hardcopy to be provided)		

		c. Manufacturer documentation of main equipment
		d. P&ID
24.	Layout and infrastructure requirement	Vendors should provide the layout requirement ensuring the safe handling of reactor system.
		It should include length, breadth, and height of the installation hall. Placement of operating components.
		Vendors should provide the requirements in terms of infrastructure such as gas supply, water supply, power supply and ventilation requirements.

(6) Warranty and Software upgrades

(10 points)

- Supplier should guarantee the proper operation of the process control system and the plant and will exchange any defective part during SAT/commissioning.
- A comprehensive warranty for THREE years after site acceptance test (SAT) is mandatory on ALL SYSTEM COMPONENTS and ACCESSORIES e.g. gas/vapor feed section, reactor section, analysis unit, safety feature and unit, control unit and devices. The warranty should include on-sight repair costs, free replacement of components/spare parts. If some components cannot be repaired onsite, the principals and their Indian representative shall bear all costs related to shipping of the components/units from IIT Delhi and return, insurance costs and the repair charges. **The warranty should also include at least two visits per year for periodic maintenance and support in application customization.**
- A comprehensive warranty, with its scope as described above, for TWO additional years must be quoted separately.**
- In case of all THIRD PARTY PRODUCTS, principals and their Indian representative shall be responsible for executing aforementioned warranty agreements for THREE + TWO YEARS, as appropriate, with respective Original Equipment Manufacturers (OEMs) and submit copies of such extended warranty agreements as appendages to the technical proposal.
- In case the local representative of the OEM/Principal Company changes or withdraws a letter of commitment by the OEM, Principal Company is required stating that they will directly cover the warranty and service the equipment as and when required or their new representative will cover the above-mentioned services as per the terms and conditions mentioned in this document.
- All upgrades of the softwares provided with the system that will be released in FIVE YEARS should be provided FREE OF COST. In addition, if any new softwares are released for the systems mentioned in the present NIQ in FIVE YEARS, such new softwares, even if they are completely new, should be provided FREE OF COST.

(7) Prior Experience

(15 points)

- High-throughput reactor purchase order worth 2 crores (INR) or higher (INR) should have been installed in at least 1 domestic organization (within India) and 2 international institutes/organization in the last 7 years. Minimum 2 performance certificates of the same or similar model should be provided working satisfactorily for more than 1 year to check the performance of the system. Further it is stated that in the evaluation process, demonstrated success in prior installations elsewhere in India would be given weightage. The technical bid should contain copies of purchase orders for high throughput system supplied by the Principal to Indian academic institutes/universities/research organizations in last 7 years. Letters/testimonials from end users (with their contact details) should be enclosed. IIT Delhi reserves all rights to contact these academic or research institutions or corporates to seek feedback regarding their experience on supply and installation of the high throughput reactor systems.
- It is a highly customizable equipment that would require strong service support. In order to ensure the efficient working, we need exhaustive list of vendors with their details of direct office address and contact details.
- The supplier must be an authorized dealer/distributor of the principal/manufacture and should furnish the authorization certificate for the present tender from the principal/manufacture. Quotations without authorization certificate will be rejected.
- The authorized dealer/distributor should furnish a certificate issued by the OEM certifying that OEM has verified the technical specifications of the quoted products and price and agrees to it.
- A statement of compliance of quoted product with respect to the desired specifications mentioned above should be included as a part of the technical bid. The product specification data sheets/brochures must be enclosed in support of the compliance statement. Deviations in technical specifications, if any, should be clearly stated. The technical bids submitted without detailed technical specification/data sheets/brochures and compliance statement will be rejected.

(8) Additional information required in technical & price bids

In addition to the terms and conditions given below, following information must be provided in the technical and price bids.

- Technical bids:**

- 1.1 A carefully prepared detailed technical proposal providing detailed write ups on usage/application for each and every component/accessory of the system and their detailed technical specifications is mandatory. In addition, technical specification sheets of all the components/accessories/software should be provided as appendages. **Please note that the technical proposals that are mere a compilation of specification sheets will not be acceptable and may lead to complete disqualification of technical grounds or reduction in marks.** In addition, technical bid should contain following documents.
- 1.2 Letter/Certificate from foreign principals authorizing Indian representative. This letter should clearly mention the period of such authorization.
- 1.3 Agreement/undertaking from the foreign principals confirming that the foreign principals shall be liable to provide warranty (see section 6) through the Indian Representative that they have appointed. If in case, the agreement between the foreign principals and their Indian representative expires or terminates because of any reason, the foreign principals shall be responsible for providing the warranty (see sections 6) directly or through newly appointed Indian Representative without any additional costs. It will be the responsibility of the foreign principals to inform IIT Delhi if their contract with Indian Representative is renewed or terminated and appointment of new Indian Representative.
- 1.4 The warranty certificates/agreements from all the THIRD-PARTY OEMs of all systems components for the warranty period and terms and conditions mentioned in section 6 should be enclosed with the technical bid.

2. Price bid

- 2.1 **Price bid must provide cost of all system components, accessories separately and total amounts should be provided separately.**
 - 2.1.1 There should be 3 items in single sheet of BOQ: i) Gas feed with reactors , ii) Liquid Feed Section , and iii) Product analysis section
 - 2.1.2 Vendors are supposed to quote for all three items. In case of absence of price quote for any section as stated above, bid will be disqualified.
 - 2.1.3 L1 among the qualify vendors will be determined based on the total value of complete systems as desired by technical specifications mentioned above.
 - 2.1.4 Vendors are supposed to specify the weight and size of shipment of whole unit in the separate sheet of BOQ. This should be enumerated with and without optional items.
- 2.2 IIT Delhi is a premier education and research institute of international repute. All the price discounts eligible for educational institute/university, should be offered and mentioned clearly in the price bid.

(9) Evaluation of the proposal

1. Evaluation will be done by PFC committee members. Evaluation will include the assessment of “Submitted technical bid documents including supporting documents and annexures” .
2. The technical committee will do the evaluation of all technical proposals and will award marks out of 100 to all technically satisfactory proposals. Unsatisfactory technical proposals will be rejected, and the price bids of such proposals will not be evaluated. **The minimum qualifying marks in the technical evaluation will be 90 out of 100.**
3. It is expected that vendors should comply with all the listed technical requirements tabulated in all the above-mentioned sections from 1 to 8, however, evaluation will also account for the nature of technology, historic experience with technology and products, state-of-the art features in whole system, overall integration of complete unit, user friendliness with operations and maintenance but not limited to this.
4. Financial bid will be opened and evaluated for only qualifying vendors. Based on the quoted price, committee will rank the vendors in increasing order (lowest to highest). Vendor with the lowest financial quotation (L1) will be called for further negotiations.

10) List of optional items

Sl. No.	Item	Description
1.	Warranty	A two-year of additional comprehensive warranty certificate including technical and maintenance support from original equipment manufacturer (OEM).
2.	Gas Feed Supply	Gas booster pump for Helium, CO, CO ₂ , CH ₄ should be provided in order to boost the pressure in case of low pressure in cylinder.
3.	Reactor	1 Hastelloy and quartz lined reactors
4.	Gas Sampling System	Online 1 GC-MSD unit with auto gas samples analysis.
		The GC-MSD configuration, which includes TCD/TCD/FID, should allow analyzing hydrocarbons up to C18 and permanent gases.
		GC-MSD model and brand: Agilent, Perkin, Shimadzu or equivalent.

Specific terms and conditions

A statement of compliance of quoted product with respect to the desired specifications mentioned above should be included as a part of the technical bid. The product specification data sheets/brochures must be enclosed in support of the compliance statement. Deviations in technical specifications, if any, should be clearly stated. **In the technical compliance statement, you need to mention the actual specification of the material in addition to writing a Yes or a No.**

A complete set of tender documents* may be Download by prospective bidder free of cost from the website <http://eprocure.gov.in/eprocure/app>. Bidder has to make payment of requisite fees (i.e. Tender fees, if any online through RTGS/NEFT only).

Terms & Conditions Details

Sl. No.	Specification
1.	Due date: The tender has to be submitted on-line before the due date. The offers received after the due date and time will not be considered. No manual bids will be considered.
2.	Preparation of Bids: The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid in the given format i.e BoQ_XXXX. The Technical bid and the financial bid should be submitted Online. Note: -Comparison of prices will be done ONLY on the bids submitted for the Main Equipment and anything asked as 'Optional' in the specs is not to be included for overall comparison.
3.	EMD (if applicable): The tenderer should submit an EMD amount through RTGS/NEFT. The Technical Bid without EMD would be considered as UNRESPONSIVE and will not be accepted. The EMD will be refunded without any interest to the unsuccessful bidders after the award of contract. Refer to Schedule (at page 1 of this document) for its actual place of submission.
4.	Refund of EMD: The EMD will be returned to unsuccessful Tenderer only after the Tenders are finalized. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.
5.	Opening of the tender: The online bid will be opened by a committee duly constituted for this purpose. Online bids (complete in all respect) received along with EMD (if any) will be opened as mentioned at "Annexure: Schedule" in presence of bidders representative if available. Only one representative will be allowed to participate in the tender opening. Bid received without EMD (if present) will be rejected straight way. The technical bid will be opened online first and it will be examined by a technical committee (as per specification and requirement). The financial offer/bid will be opened only for the offer/bid which technically meets all requirements as per the specification, and will be opened in the presence of the vendor's representatives subsequently for further evaluation. The bidders if interested may participate on the tender opening Date and Time. The bidder should produce authorization letter from their company to participate in the tender opening.
6.	Acceptance/ Rejection of bids: The Committee reserves the right to reject any or all offers without assigning any reason.
7.	Pre-qualification criteria: (i) Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed. (ii) An undertaking from the OEM is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well. (Ref. Annexure-II) (iii) OEM should be internationally reputed Branded Company. (iv) Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between bidder specification and supporting documents etc. may lead to rejection of the bid. (v) In the tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. (vi) If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
8.	Performance Security: The supplier shall require to submit the performance security in the form of irrevocable bank guarantee issued by any Indian Nationalized Bank for an amount which is stated at page #1 of the tender document within 21 days from the date of receipt of the purchase order/LC and should be kept valid for a period of 60 days beyond the date of completion of warranty period.

9.	<p>Force Majeure: The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.</p> <ul style="list-style-type: none"> ● For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. ● If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
10.	<p>Risk Purchase Clause: In event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from the other source on the total risk of the supplier under risk purchase clause.</p>
11.	<p>Packing Instructions: Each package will be marked on three sides with proper paint/indelible ink, the following:</p> <ol style="list-style-type: none"> i.Item Nomenclature ii.Order/Contract No. iii.Country of Origin of Goods iv.Supplier's Name and Address v.Consignee details vi.Packing list reference number
12.	<p>Delivery and Documents: Delivery of the goods should be made within a maximum of 24 to 32 weeks (<i>for goods ready for shipment</i>) & Maximum (<i>To be filled by Purchaser</i>) weeks (<i>For special/ to be fabricated goods</i>) from the date of the opening of LC. Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by cable/telex/fax/e mail the full details of the shipment including contract number, railway receipt number/ AAP etc. and date, description of goods, quantity, name of the consignee, invoice etc. The supplier shall mail the following documents to the purchaser with a copy to the insurance company:</p> <ol style="list-style-type: none"> 1. 4 Copies of the Supplier invoice showing contract number, goods' description, quantity 2. unit price, total amount; 3. Insurance Certificate if applicable; 4. Manufacturer's/Supplier's warranty certificate; 5. Inspection Certificate issued by the nominated inspection agency, if any 6. Supplier's factory inspection report; and 7. Certificate of Origin (if possible by the beneficiary); 8. Two copies of the packing list identifying the contents of each package. 9. The above documents should be received by the Purchaser before arrival of the Goods (except where the Goods have been delivered directly to the Consignee with all documents) and, if not received, the Supplier will be responsible for any consequent expenses.
13.	<p>Delayed delivery: If the delivery is not made within the due date for any reason, the Committee will have the right to impose penalty 1% per week and the maximum deduction is 10% of the contract value / price.</p>
14.	<p>Prices: The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of taxes & duties shall be clearly indicated. The price should be quoted without custom duty and excise duty, since IIT Delhi is exempted from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand.</p>

	<p>In case of imports, the price should be quoted on FOB/FCA origin Airport Basis only. Under special circumstances (eg. perishable chemicals), when the item is imported on CIF/CIP, please indicate CIF/CIP charges separately upto IIT Delhi indicating the mode of shipment. IIT Delhi will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges. At any circumstances, it is the responsibility of the foreign supplier to handover the material to our forwarder at the origin airport after completing all the inland clearing.</p> <p>“In case of CIF/CIP shipments, kindly provide the shipment information at least 2 days in advance before landing the shipment along with the documents i.e. invoice, packing list, forwarder Name, address, contact No. in India to save penalty/demurrage charges (imposed by Indian Customs) . Otherwise these charges will be recovered from the supplier/Indian Agent.”</p> <p>Note: -Comparison of prices will be done ONLY on the bids submitted for the Main Equipment and anything asked as ‘Optional’ in the specs is not to be included for overall comparison.</p>
15.	<p>Evaluation of Price/Financial Bid:</p> <p>For the bids surviving the technical evaluation which have been found to be responsive the evaluation & comparison shall be made as under:</p> <p>1. <i>If the response to the tender consists only of Indigenous Offers</i></p> <p>(i) The final landing cost of purchase after all discounts, freight, forwarding, insurance, taxes etc. shall be the basis of evaluation.</p> <p>(ii) In the case of goods manufactured in India or goods of foreign origin already located in India, GST and excise duty (if applicable) and other similar taxes and duties, which will be contractually payable (to the tenderer) on the goods are to be added and will be considered in determination of evaluation criteria for L-1 in those cases where only Indian bidders are competing.</p> <p>2. <i>If the response to the tender consists only of Imported Offers</i></p> <p>(i) The FOB/FCA price shall be the basis of evaluation. Please make sure that your Price Bid mentions FOB/FCA prices clearly and not just CIF/CIP prices directly OTHERWISE for the purpose of comparison such CIF/CIP price will be taken into account.</p> <p>(ii) In cases where all the offers are from foreign suppliers, ranking will be assessed on FOB/FCA basis. In the case of goods of foreign origin offered from abroad, customs duty and other similar import duties/taxes, which will be contractually payable (to the tenderer) on the goods, are to be added;</p> <p>(iii) All the foreign quotes will be brought to a common denomination in Indian Rupees by adopting the Selling exchange rate of the RBI/State Bank of India on the date of the opening of Price/financial Bids.</p> <p>3. <i>If the response to the tender consists of Imported as well as Indigenous Offers</i></p> <p>(i) The comparison between the indigenous and the foreign offers shall be made on the final landing cost of purchase taking into account, freight, forwarding, insurance, taxes etc. as specified in clause 1(i) and (ii) and for bids in foreign currency as per clause 2 (i), (ii) & (iii)</p> <p>Further, adding advalorem/custom duty/countervailing duty (as applicable) at the rate of 9.34% on price quoted on FOB/FCA term including cost for safe Unloading and all other costs for all activities as per scope of work basis. IIT Delhi will submit Custom Duty Exemption Certificate under clause no.51/96.</p>
16.	<p>Notices: For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.</p> <p>Purchaser: Dr. Manjesh Kumar, Department of Chemical Engineering Indian Institute of Technology</p>

	<p style="text-align: center;">Hauz Khas, New Delhi - 110016.</p> <p>Supplier: (To be filled in by the supplier) (All supplier's should submit its supplies information as per Annexure-II).</p> <hr/> <hr/>
17.	<p>Progress of Supply: Wherever applicable, supplier shall regularly intimate progress of supply, in writing, to the Purchaser as under:</p> <ol style="list-style-type: none"> 1. Quantity offered for inspection and date; 2. Quantity accepted/rejected by inspecting agency and date; 3. Quantity dispatched/delivered to consignees and date; 4. Quantity where incidental services have been satisfactorily completed with date; 5. Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date; 6. Date of completion of entire Contract including incidental services, if any; and 7. Date of receipt of entire payments under the Contract (In case of stage-wise inspection, details required may also be specified).
18.	<p>Inspection and Tests: Inspection and tests prior to shipment of Goods and at final acceptance are as follows:</p> <ul style="list-style-type: none"> • After the goods are manufactured and assembled, inspection and testing of the goods shall be carried out at the supplier's plant by the supplier, prior to shipment to check whether the goods are in conformity with the technical specifications attached to the purchase order. Manufacturer's test certificate with data sheet shall be issued to this effect and submitted along with the delivery documents. The purchaser shall be present at the supplier's premises during such inspection and testing if need is felt. The location where the inspection is required to be conducted should be clearly indicated. The supplier shall inform the purchaser about the site preparation, if any, needed for installation of the goods at the purchaser's site at the time of submission of order acceptance. • The acceptance test will be conducted by the Purchaser, their consultant or other such person nominated by the Purchaser at its option after the equipment is installed at purchaser's site in the presence of supplier's representatives. The acceptance will involve trouble free operation and ascertaining conformity with the ordered specifications and quality. There shall not be any additional charges for carrying out acceptance test. No malfunction, partial or complete failure of any part of the equipment is expected to occur. The Supplier shall maintain necessary log in respect of the result of the test to establish to the entire satisfaction of the Purchaser, the successful completion of the test specified. • In the event of the ordered item failing to pass the acceptance test, a period not exceeding one weeks will be given to rectify the defects and clear the acceptance test, failing which the Purchaser reserve the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser. • Successful conduct and conclusion of the acceptance test for the installed goods and equipment shall also be the responsibility and at the cost of the Supplier.
19.	<p>Resolution of Disputes: The dispute resolution mechanism to be applied pursuant shall be as follows:</p> <ul style="list-style-type: none"> • In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director, Indian Institute of Technology (IIT) Delhi and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.

	<ul style="list-style-type: none"> • In the case of a dispute between the purchaser and a Foreign Supplier, the dispute shall be settled by arbitration in accordance with provision of sub-clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules. • The venue of the arbitration shall be the place from where the order is issued.
20.	Applicable Law: The place of jurisdiction would be New Delhi (Delhi) INDIA.
21.	<p>Right to Use Defective Goods</p> <p>If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.</p>
22.	<p>Supplier Integrity</p> <p>The Supplier is responsible for and obliged to conduct all contracted activities in accordance with the Contract using state of the art methods and economic principles and exercising all means available to achieve the performance specified in the contract.</p>
23.	<p>Training</p> <p>The Supplier is required to provide training to the designated Purchaser's technical and end user personnel to enable them to effectively operate the total equipment.</p>
24.	<p>Installation & Demonstration</p> <p>The supplier is required to done the installation and demonstration of the equipment within one month of the arrival of materials at the IITD site of installation, otherwise the penalty clause will be the same as per the supply of materials.</p> <p>In case of any mishappening/damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. IITD will not be liable to any type of losses in any form.</p>
25.	<p>Insurance: For delivery of goods at the purchaser's premises, the insurance shall be obtained by the supplier in an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes. The insurance shall be valid for a period of not less than 3 months after installation and commissioning. In case of orders placed on FOB/FCA basis, the purchaser shall arrange Insurance. If orders placed on CIF/CIP basis, the insurance should be up to IIT Delhi.</p>
26.	<p>Incidental services: The incidental services also include:</p> <ul style="list-style-type: none"> • Furnishing of 01 set of detailed operations & maintenance manual. • Arranging the shifting/moving of the item to their location of final installation within IITD premises at the cost of Supplier through their Indian representatives.
27.	<p>Warranty:</p> <p>(i) Warranty period shall be (as stated at page #2 of this tender) from date of installation of Goods at the IITD site of installation. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the contract. If for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the Supplier shall at its discretion make such changes, modifications, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own cost and expense and to carry out further performance tests. The warranty should be comprehensive on site.</p> <p>(ii) The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall immediately within in 02 days arrange to repair or replace the defective goods or parts thereof free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter. The period for</p>

	<p>correction of defects in the warranty period is 02 days. If the supplier having been notified fails to remedy the defects within 02 days, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses and without prejudice to any other rights, which the purchaser may have against the supplier under the contract.</p> <p>(iii) The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned. The comprehensive warranty will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components.</p> <p>(iv) After the warranty period is over, Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC) up to next two years should be started. The AMC/CMC charges will not be included in computing the total cost of the equipment.</p>
28.	<p>Governing Language The contract shall be written in English language. English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the same language.</p>
29.	<p>Applicable Law The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction.</p>
30.	<p>Notices</p> <ul style="list-style-type: none"> • Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by cable, telex, FAX or e mail and confirmed in writing to the other party's address. • A notice shall be effective when delivered or on the notice's effective date, whichever is later.
31.	<p>Taxes Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, GST etc, in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.</p>
32.	<p>Duties IIT Delhi is exempted from paying custom duty under notification No.51/96 (partially or full) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information and Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute, (no certificate will be issued to third party): The procured product should be used for teaching, scientific and research work only.</p> <p>a) Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists) b) Forwarder details i.e. Name, Contact No., etc.</p>
33.	<p>Agency Commission: Agency commission if any will be paid to the Indian agent in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in case of Nil commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent.</p>
34.	<p>Payment:</p> <p>(i) For imported items Payment will be made through irrevocable Letter of Credit (LC) Cash Against Documents (CAD)/Against delivery/after satisfactory installation by T.T. Letter of Credit (LC) will be established in favour of foreign Supplier after the submission of performance security. The letter of credit (LC) will be established on the exchange rates as applicable on the date of establishment. For Imports, LC will be opened for 100% FOB/CIF value. 80% of the LC amount shall be released on presentation of complete and clear shipping documents and 20% of the LC amount shall be released after the installation and demonstration of the equipment at the INST site of installation in faultless working condition for period of 60 days from the date of the satisfactory</p>

	<p>installation and subject to the production of unconditional performance bank guarantee as specified in Clause 8 of tender terms and conditions.</p> <p>(v) For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at IITD in good condition and to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in Clause 9 of tender terms and conditions.</p> <p>(vi) Indian Agency commission (IAC), if any shall be paid after satisfactory installation & commissioning of the goods at the destination at the exchange rate prevailing on the date of negotiation of LC documents, subject to DGS&D registration for restricted items.</p> <p>(vii) All the bank charges within India will be borne by the Institute and outside India will be borne by the Supplier.</p>
35.	<p>User list: Brochure detailing technical specifications and performance, list of industrial and educational establishments where the items enquired have been supplied must be provided. (Ref. Annexure-III)</p>
36.	<p>Manuals and Drawings</p> <p>(i) Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications.</p> <p>(ii) The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract.</p> <p>(iii) Unless and otherwise agreed, the goods equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawing have been supplied to the Purchaser.</p>
37.	<p>Application Specialist: The Tenderer should mention in the Techno-Commercial bid the availability and names of Application Specialist and Service Engineers in the nearest regional office. (Ref. to Annexure-III)</p>
38.	<p>Site Preparation: The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete details regarding space and all the other infrastructural requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter.</p> <p>The supplier shall visit the Institute and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.</p>
39.	<p>Spare Parts</p> <p>The Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:</p> <p>ii. Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and</p> <p>iii. In the event of termination of production of the spare parts:</p> <p>iv. Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and</p> <p>v. Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.</p> <p>Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods, such as gaskets, plugs, washers, belts etc. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.</p>
40.	<p>Defective Equipment: If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk</p>

	and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 45 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms & conditions, IIT Delhi may consider "Banning" the supplier.
41.	<p>Termination for Default The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:</p> <ol style="list-style-type: none"> i. If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the order, or within any extension thereof granted by the Purchaser; or ii If the Supplier fails to perform any other obligation(s) under the Contract. iii If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. <ul style="list-style-type: none"> ● For the purpose of this Clause: <ol style="list-style-type: none"> i. “Corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. ii. “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;” ● In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue the performance of the Contract to the extent not terminated.
42.	Shifting: After 1-2 years once our new Academic Block will be ready, the supplier has to shift and reinstall the instrument free of cost (if required).
43.	Downtime: During the warranty period not more than 5% downtime will be permissible. For every day exceeding permissible downtime, penalty of 1/365 of the 5% FOB value will be imposed. Downtime will be counted from the date and time of the filing of complaint with in the business hours.
44.	Training of Personnel: The supplier shall be required to undertake to provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation of the equipment for a minimum period of one week at the supplier’s cost.
45.	Disputes and Jurisdiction: Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within New Delhi.
46.	Compliance certificate: This certificate must be provided indicating conformity to the technical specifications. (Annexure-I)
47.	As per Ministry of Finance, Deptt. of Expenditure, Public Procurement Division Order (Public Procurement No.1) issued from file No.6/18/2019-PPD dated 23rd July, 2020 regarding Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs) 2017, it is directed that any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority i.e. the Deptt. for Promotion of Industry and Internal Trade (DPIIT). <i>The said order will not apply to bidders from those countries (even sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects (updated lists of the countries are given in the Ministry of External Affairs)</i>

“Bidder” (including the term ‘tenderer’, ‘consultant’ or ‘service provider’ in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participated in a procurement process.

“Bidders from a country which shares a land border with India” for the purpose of this Order means:

- i. An entity incorporated, established or registered in such a country; or
- ii. A subsidiary of an entity incorporated, established or registered in such a country; or
- iii. An entity substantially controlled through entities incorporated, established or registered in such a country; or
- iv. An entity whose *beneficial owner* is situated in such a country; or
- v. An Indian (or other) agent of such an entity; or
- vi. A natural person who is the citizen of such a country; or
- vii. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

The *beneficial owner* for the purpose of above will be as under: -

1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person (s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercise control through other means.

Explanation-

- a. “Controlling ownership interest” means ownership of or entitlement to more than twenty-five per cent of share or capital or profit of the company;
 - b. “Control” shall include the right to appoint majority of the directors or to control the management of policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
2. In case of a partnership firm, the beneficial owner is the natural person (s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person (s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

An agent is a person employed to do any act for another, or to represent another in dealings with the third person.

For Works contracts, including Turnkey contracts, the successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

<p>A certificate shall be submitted by bidders in the tender documents regarding their compliance with the said order. If the certificate submitted by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law. Annexure VI (For Goods/ Services contracts)/ <i>Annexure VII (For Works contracts, including Turnkey contracts)</i></p>
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COMPLIANCE SHEET

TECHNICAL SPECIFICATION:

Note 1: Compliance sheet is meant to establish confirmation to technical suitability of submitted bids for high throughput reactor system. We are seeking details against the requirements for which compliance is yes in terms of capability, system details, and corresponding verifiable reference documents and PI&Ds. If details are not present in technical documents, it will be assumed to be non-compliant.

1. General Specifications:**10 points**

Through this purchase, we are seeking to acquire high-throughput reactor system for faster screening of catalysts for desired application. System should be designed to meet the varied expectation of users to run different reactions. However, specifications have been enumerated to capture the minimum requirements, but evaluation will not be limited to that. Features that ensure more safety, wider usability, higher automation, and more flexibility with new add-ons will be key determinants. Broad requirements are mentioned below with key specifications:

- a) Reactor systems should be designed to handle gas/vapor-solid phase reactions. Solid phase represents catalyst in powder or pellet forms in addition to inert solid diluent. Reactants include permanent gases and vapors that need to be fed uniformly to the reactors. Tentatively, reactions of interest capture methanol-to-olefins/hydrocarbons, CO₂ Valorization, alkylation but not limited to this list.

Comment from vendor:

- b) Set of reactions requires wide range of operating conditions in terms of pressure and temperature. It is to be noted that similar level of control and accuracy is required to run reactions in entire temperature range from 180 to 800 degC and operating pressure from atmospheric to 80 bar. Better control system and hardware tuning might be required to have better accuracy over the entire range of operations.

Comment from vendor:

- c) System will be handling multiple feeds and two reactors. These two reactors should be able to run in parallel and series mode. It requires high degree of automation to avoid manual interventions. Ideally, all reactors are similar except different catalysts that are loaded in the system. Overall, it will require tight control on composition, flow, temperature, and pressure of reactants. Gas feed to both the reactors should have uniform composition and flow. Subsequently, temperature and pressure across all reactors should be uniform. Along with capability of control, there should be system by which we can demonstrate the uniformity in real time.

Comment from vendor:

A list of bulk system requirements is mentioned below from point 1 to 10.

Sl. No.	Item	Description	Technical details by vendors	Compliance (Y/N)
1.	Reactions	Gas/vapor catalytic phase reactions such as Methanol-To-Olefins (hydrocarbons), CO ₂ Valorization, Alkylation,		
2.	Feed	a) Gas-He (carrier), H ₂ , CO, CO ₂ , CH ₄ , O ₂ (Synthetic air), 1 extra manifold		
		b) Liquid: H ₂ O(l), CH ₃ OH(l), C ₂ H ₅ OH(l), CH ₃ OCH ₃ (l), C ₆ H ₆ (l)		
3.	No. of Reactors	Two Reactors (should work in parallel (independently), and series)		
4.	Type of Reactor	Tubular Packed bed Type (gas-solid phase reaction), Isothermal Reactor		

5.	Assembly of reactors	Both reactors should be able to run in parallel as well as series mode (product of one reactor can be fed to another).		
6.	Mode of operation	Downflow		
7.	Catalytic bed	Isothermal conditions should be within ± 1 deg C through the catalyst bed (maximum catalyst bed length: 5 cm)		
8.	Operating temperature and pressure	Up to 800 Deg C @ atmospheric pressure and, Reactions up to 650 deg C @ 80 bar and, Reactions up to 200-500 deg C @ 1 to 30 bar and, Reactions up to 180 deg C @ 80 bar. (All requirements should be achievable)		
9.	MOC Reactors	Inconel (suitable grade such as 625 or better)		
10.	MOC (other components)	Material of construction of all process lines, instruments, fittings, and valves should be made of SS-316L, Teflon or Kalrez with minimum dead volume. Specify typical dead volume.		

2. Gas/Vapor Feed Section

20 points

Sectional 1 (general specifications) specifies that there are multiple reaction systems that need to be run using varied feed gas flow and compositions. These requirements posit challenges related to uniform distribution of gases /vapor to the 2 reactors. It should be noted that there are liquid feeds at ambient conditions that need to be vaporized before being fed to 2 reactors. Few suggested guidelines are as follows:

- a) There are 6 gases as feed including diluent (He). We have asked for one extra manifold (gas not planned). However, it is required that design should be such that two extra gas feed lines can be added later. Vendor should demonstrate the ability of adding gas line with minimum modifications in future.

Comment from Vendor:

- b) Gases from cylinders have to be uniformly mixed to create the desired composition. Subsequently, same feed will be distributed to both reactors. Composition and flow should be same for different catalysts in different reactors (in parallel mode). Owing to multiple feed, feed section should be designed robustly for better and faster screening of catalysts. Given the requirements, allowing too much of manual intervention will not be desirable. It will require complete automation in control. These features need to be demonstrated.

Comment from Vendor:

- c) Certain feeds are in liquid phase that need to be vaporized and mixed with diluent. It will require the proper pumping mechanism and heating system. It is expected that liquid should be pumped without instability in flow covering wide range of flow. Here we are seeking one high pressure pump and one syringe pump that should be able to cover entire range of flow given below with the capability of switch over. This pump will feed to 2 Coriolis mass flow controllers that will be attached to evaporators. Subsequently, vapour generated will be mixed with diluent/gases prior to feeding to reactors bypassing MFC installed for gas supply. Inline mixing valve might be required for uniform composition of feed. Diluent will come from gas supply system. To avoid condensation, line must be heat traced up to reactor feed. Again, control of composition and flow to all reactors are key determinant parameters. Liquid flow rate will be used as measurement for gas flow and not a separate MFC for the gas flow.

Comment from vendor:

- d) There will be labyrinth of feed flow lines. It must be designed such that it is easy for access, uniformity and maintenance.

Comment from vendor:

A list of bulk system requirements for the feed section are mentioned from point 11 to 13.

Sl. No.	Item	Description	Technical details by vendors	Compliance (Y/N)
11. 12.	Gas Feed Section	a) 6 Gas supply lines		
		b) O ₂ , H ₂ , CO, CO ₂ , CH ₄ , He (diluent/purge)		
	Gas Feed Section	All gas distribution system should be provided with a pressure regulator, particulate filter, shut-off valve, a thermal mass flow controller (brooks, Bronkhorst) and check valve. Filters, Fittings, and instrumentations should be from Swagelok.		
		Vent line should be provided for pressure regulator.		
		Feed to the reactors will be mixture of gases. Suitable mixer/arrangements should be installed to ensure uniform composition of reactants mixture to both reactors.		
		Individual mass flow controller to each reactor should be provided to ensure uniform flow for gas stream. However, if vendors can provide different distribution mechanism for uniform feed flow that are verifiable, we can accept the design instead of individual MFC.		
		c) User input to feed section		
		c1) User should give inputs, subsequently, all tasks should be carried out automatically. The user input will be valid for all the reactors.		
		a. Composition of the gas mixture to		
		b. Flow rate to be fed to each reactor		
		c. Operating temperature and pressure of the reactors		
		c2) It should be possible to obtain the time-dependent conditions (including feed composition, flowrate, reactor temperature and pressure) and this information would be given through user inputs. Program should have the capability of taking the minimum of 20 steps within 1 program. There should be a possibility of designing at least 2 programs at a time		
		d) Gas flow rate:		
		Range of flow: 15-300 sccm to each reactor. It should be noted that there are 2 reactors in parallel. Both reactors will be running at the same time. For example, if flow through one reactor is 50 sccm then total flow of reactant mixture should be 150 sccm.		
		Controlled step change: 5 sccm		
		Individual mass flow controller ranges for each gas should be specified and confirmed for each reactant line along with <i>degree of control, precision, and accuracy. Provide details in technical bid document.</i>		
		Helium line should be heat traced with inline heater to reach a temperature of 100 degC which will be compatible with MFC attached prior to reactor. It is desired when diluent will be added		

	to vapor. Alternate / separate provision of adding diluent to vapor without condensation is acceptable ensuring the composition of feed to reactors.		
	Range mentioned below are typical flow ranges and composition for each reactor. There exists a possibility that reactor might run at separate composition as well but on conservative side of key reactants (less than below rate).		
	GAS/VAPOUR FLOW RANGE TO EACH REACTORS		
	1. Maximum flow rate 300 sccm (70% CO, 30% He) to each reactor		
	2. Maximum flow rate 300 sccm (70% CO ₂ , 30% He) to each reactor		
	3. Maximum flow rate 300 sccm (15% CO, 60% H ₂ , 25% He) to each reactor		
	4. Maximum flow rate 300 sccm (15% CO ₂ , 60% H ₂ , 25% He) to each reactor		
	5. Maximum flow rate 300 sccm (15% CO+CO ₂ , 60% H ₂ , 25% He) to each reactor		
	6. Maximum flow rate 300 sccm (70% H ₂ , 30% He) to each reactor		
	7. Maximum flow rate 300 sccm (70% O ₂ , 30% He) to each reactor		
	8. Maximum flow rate 300 sccm (50% CH ₃ OH, 50% He) to each reactor		
	9. Maximum flow rate 300 sccm (50% CH ₃ OCH ₃ , 50% He) to each reactor		
	10. Maximum flow rate 300 sccm (Pure He) to each reactor		
	11. Maximum flow rate 300 sccm (Synthetic Air O ₂) to each reactor		
	12. Maximum flow rate 300 sccm (Pure CH ₄) to each reactor		
	GAS FLOW RANGE FOR EACH REACTANTS		
	1. Maximum flow rate 420 sccm (Pure CO) from cylinder		
	2. Maximum flow rate 420 sccm (PURE CO ₂) from cylinder		
	3. Maximum flow rate 360 sccm (PURE H ₂) from cylinder		
	4. Maximum flow rate 600 sccm (PURE He) from cylinder		
	5. Maximum flow rate 600 sccm (Synthetic air) from cylinder		
	6. Maximum flow rate 600 sccm (PURE CH ₄) from cylinder		
	7. Maximum flow rate 600 sccm (PURE H ₂ O vapor) from tank		
	8. Maximum flow rate 300 sccm (PURE CH ₃ OH vapor) from tank		
	9. Maximum flow rate 300 sccm (PURE C ₂ H ₅ OH vapor) from tank		
	10. Maximum flow rate 300 sccm (PURE CH ₃ OCH ₃ vapor) from tank		
	11. Maximum flow rate 300 sccm (PURE C ₆ H ₆ Vapor) from tank		
	Specifications		

		Accuracy: Better than +/- 1% of set point (20-100% full scale) and +/- 0.2% of full scale (2-20% full scale)		
		Repeatability: +/- 0.2% of set point or better		
		Max. Operating Pressure: >=80 bar		
		Ambient temperature range: 5 to 65 °C or broader		
		Control range 50:1 turndown for full scale		
		Stability: Less than 0.5% per year		
		Appropriate seals as per the gas used		
		There should be parallel inert/purge feedline to all reactors along with main gas feedline with automated switching valve.		
		There should be pressure regulation system, automated vent valve and a pressure safety valve to be placed at suitable places.		
		Back Pressure Regulator (BPR) must be installed at suitable place for both 2 reactors.		
		Bypass line should be provided across all reactors reaching to analysis unit.		
12.	Liquid Feed Section	There should be 2 Liquid feed tanks with proper vent line, drain line, and level gauge. Volume of both the tanks should be 5 liter or higher allowing the refills during long duration experiments with provision of cleaning. Feed can be provided from each tank. Both tanks can feed to one high pressure pump for which details are given below.		
		Separately, there should be a provision of feeding through liquid syringe pump at ambient condition.		
		After high pressure pump, individual 2 Coriolis mass flow controllers should be provided for independent flow control feeding to 2 reactors. Only liquid flow rate will be controlled, and vapor after heating will be fed to reactor bypassing MFC used for gases. Measured diluent (He) can be added to vapor prior to reactors or added to liquid prior to heating.		
		Potential liquid to be used:		
		Water, Methanol, Dimethyl ether, ethanol, propanol, benzene		
		Reaction will be conducted in vapor phase not liquid phase. It necessitates the provision for heating the liquid to vapor phase that comes out of high-pressure pump or syringe pump.		
		Controlled heating arrangement for liquid should be provided so that we can get vapor phase. Heating element should be able to ensure gas temperature control from room temperature up to 200 degC.		
		Maximum 2 liquid phase reactants from the two liquid feed tanks will be used for reaction that will be vaporized before being fed to all the reactors. Mixed vapor will have He as diluent/carrier gas.		
		Inline mixer or gas mixing valve should be provided for better mixing of vapor before being fed to reactors.		
		To avoid condensation of vapor in the line, heat traced line should be provided ensuring the possibility of easy maintenance. One such arrangement can be putting the system in hotbox		

	that might ensure uniform temperature profile and avoid cool points.		
	MOC compatibility certificate of tank with above liquids should be provided.		
	HPLC Pump: 1 Fully automated high-pressure liquid pump, liquid flow range: 0.05-15 sccm (or wider range capturing 0.05-15 sccm), Pressure: up to 80 bar for liquids.		
	Damper should be provided for the liquid flow stabilization		
	1 automated 2 rack liquid syringe pump, flow range: 1 µl/min-0.5 sccm (or wider range capturing 1 µl/min-0.5 sccm), Size of syringes should be suitable for 5 hrs of runtime (minimum) at maximum flow rate of 0.5 sccm. Example of syringe pump is HARVARD pump but not limited to this brand.		

3. Reactor and Analysis Section

20 points

The gas feed section is connected to the reactor section. There are 2 reactors aligned in parallel and will be running in parallel as well as in series mode. Different reaction systems have been suggested above in section 1 (general specifications). Reactor should be designed such that it should be able to handle all reaction conditions. Uniformity of reaction conditions is necessary condition for high-throughput catalyst screening. At the same time, safety of operations for reactor should have utmost priority. Few suggested guidelines are as follows:

- a) There are 2 parallel reactors that need to be handled simultaneously. It will require design that provide easy access, handling, and operations. Reactors will be at high temperature and high pressure that need to be handled with utmost safety. Safety should be part of design and should be operating in fail safe mode conditions. Interlocks should ensure safe operations.

Comment from vendor:

- b) Success of the reaction depends on the tighter control of operation parameters such as temperature and pressure. We should be able to measure, control, observe and log details of operating conditions to ensure accuracy of data and experiments. Given the wide range of operating temperature and pressure, tighter control system should be provided ensuring the accuracy and repeatability of operations. Typical operating range should not be taken as real range while that is absolute must.

Comment from vendor:

- c) System should have sufficient redundancy in case of any failure in system. System should not stop running when one parallel system is not working.

Comment from vendor:

- d) Products will be coming out of both reactors that need to be analyzed alternatively without any condensation in the lines. It should be automated process where product could be analyzed at regular time interval that were captured after same reaction time. Process should be automated to avoid any time lag and get the data simultaneously. GC-MS should be customized in such a way that it can detect and analyze permanent gases and refinery gas up to C12.

Comment from vendor:

- e) It should have the capability of analyzing data and generating the desired report in format which is compatible with general software such as excel and word. All these raw data should have time stamp to track the history. Moreover, high-throughput system will require comparative analysis for both reactors. System should be designed in such a way that comparative report can be generated.

Comment from vendor:

A list of bulk system requirements for the reactor and analysis section is given below in point 14 to 15.

Sl. No.	Item	Description	Technical details by vendors	Compliance (Y/N)
14.	Reaction Section	a) 2 individual identical fixed bed reactors		
		b) Both reactors should be able to run in parallel and series mode as well. By series mode, we mean that product from one reactor can go to second reactor.		
		Temperature should be programmable (time dependent temperature profile with desired ramp rate) with minimum of 20 steps in a single program.		
		K or N-type thermocouple to measure catalyst bed temperature should be provided. The minimum provision of 3 thermocouples should be considered that could measure mid catalytic bed temperature, inlet temperature (not catalytic bed) and outlet temperature (not catalytic bed) across reactors.		
		Maximum working temperature: up to 800 Deg C. It should be noted that all reactors should be able to attain 800 degC at atmospheric pressure. Corresponding design temperature is open to vendor discretion for safe handling.		
		Temp ramp rate: 1 deg C/min to 15 deg C /min for up to 500 deg C and 1-10 deg C/min for up to 800 deg C. Heating element should be able to attain the entire range of ramp rate as suggested.		
		Typical working temperature: 150-500 deg C. This is specified only to suggest that system should have the capability of controlling temperature in this range with similar efficacy as that of at high temperature.		
		Maximum working pressure: 80 bar		
		Typical working pressure: 1-30 bar. This is specified only to suggest that for all possible range of working temperature, all possible range of working pressure should be attainable		
		Catalyst volume: 5 ml (including diluent) / catalyst: 0.01-3.0 ml		
		Reactor internal diameter should be suitable to handle above catalyst volume. Typical range of ID can be 9-12 mm.		
		c) Reactor specifications:		
		1. Flow path: down flow		
2. Material of construction: Inconel reactor (inert material for the reaction media)				

		<p>d) Particulate in line filters (10 microns) should be installed at reactor inlet and outlet (to keep the system free of catalyst particles).</p>		
		<p>e) Reactor's pressure should be controlled (from 1 bar up to 80 bar) by an individual control valve in each reactor, but <i>the pressure value must be equal in all the reactors</i>. Multi-stage pressure controllers' strategy can be adopted to achieve control over entire range. 80 bar accuracy approx. 0.1bar → 10% error at 1bar control 1st controller 80 barg full scale 2nd controller 5 barg full scale</p>		
		<p>f) A pneumatically actuated 4 way/2 position VICI valve for reactor bypass. Operating range will be limited to 80 bar and 100 degC. In case, there is no such VICI valve available at operating conditions, suitable arrangement for bypass must be provided.</p>		
		<p>g) Heating furnace heating equipment:</p>		
		<p>Both reactors should be able to attain same temperature to ensure similar reaction condition in all reactors.</p>		
		<p>Skin thermocouple should be installed in the heating element of the furnace for heating control</p>		
		<p>Temperature measurement inside each catalytic bed for inner temperature measurement. Accuracy: ± 1 °C</p>		
		<p>Downstream of the reactors will be sent to the sampling section.</p>		
15.	Gas Sampling System	<p>Gas-liquid separator should be provided to both reactors based on thermoelectric effect (5-60 degC) with less than 1 ml dead volume. Options of bypassing the separator should be there so that complete gas product can be analyzed.</p>		
		<p>Gas product stream from each reactor should be directed to an automated sampling switching valve. The product of each reactor can be kept in a 10 ml loop to ensure sampling at regular time interval (GC-MS analysis time).</p>		
		<p>A multi-position valve common to 2 reactors should be used for automated injection of the loop samples to analytical system.</p>		
		<p>Line from multi-position valve to GC-MS should be heat traced from outlet to GC-MS inlet. Maximum attainable temperature should be 300 degC to avoid condensation.</p>		
		<p>Provision should be such that gas samples can be taken in the same reaction time for both 2 reactors.</p>		
		<p>Analysis results should be processed by the main software of the unit, with summarized reports showing analysis data and process data, saving time to user.</p>		
		<p>1 GC-MS that include TCD + TCD + FID for online gas samples analysis.</p>		

		The GC-MS configuration, which includes TCD/TCD/FID, should allow analyzing permanent gases (hydrogen, nitrogen, oxygen/argon, helium), carbon monoxide, carbon dioxide, methane, and hydrocarbons up to C12 (including paraffins, iso-paraffins, olefins, naphthenes, alcohols).		
		Vendor should provide optimized design with faster hydrocarbons analysis and permanent gas analysis. Suppliers can be Agilent, Perkin, Shimadzu, or equivalent.		

4. Control and Safety Section

20 points

High-throughput reactor system is expected to represent the state-of-art facility. It should be noted that it is not just the combination of 2 reactor systems. It is expected that it should be laced with highest level of automation ensuring higher accuracy, repeatability, minimum manual intervention, and faster output. It is aimed at meeting the needs of multiple agencies for faster catalytic screening. These studies are expected to supplement the confidence for pilot plant studies for developing indigenous catalytic material. At the heart of all this, control, monitoring, and data management are key determinant. We are expecting a highly robust system by ensuring minimum manual and users' intervention. Few suggested guidelines are as follows:

- a) Graphical features should represent the real time status of complete system. Interface should be depicting all features that account for supervision, monitoring, controlling, and recording. These features should be interactive to better supervise and control system. Visualization should be real time.

Comment from vendor:

- b) It will be controlling all sections of our systems that include feed section, reactor section and analysis section. There is need of seamless integration of feed section, reactor section and analysis unit. Logic implemented should be simple for user to avoid too much of intervention.

Comment from vendor:

- c) Compatibility of data for analysis with commonly available software should be ensured such as excel, word, origin, MATLAB, etc.

Comment from vendor:

- d) Interlocks should be designed in such a way that it offers less chances for users to make mistakes through graphical interface.

Comment from vendor:

- e) Safety features are of high importance. Implementation of safety system will be scrutinized to avoid any unsafe situations. It should be highlighted vividly on screen to avoid any unsafe operations. Integration of all safety features to control unit is a must requirement.

Comment from vendor:

A list of the bulk system requirements mentioned of control and safety section is given below in points 16 to 18.

Sl. No.	Item	Description	Technical details by vendors	Compliance (Y/N)
16.	Control, supervision, and data management	a) Comprehensive features should include online graphical supervision, control, monitoring and recording of all the process variables and control signals. Online monitoring (process and real time):		
		1. Process visualization		
		2. Gas feed flow		
		3. All pressure and temperature control loops		
		b) Programmable process recipes , including all the set point of the process variables, ramps and manual control of loop actuation should be available. Recipe editor should be provided for preparing experimental protocols . Experimental session could be designed with conditional change with process variables and temporal change.		
		c) User results calculation configuration should be available according to reaction and procedure.		
		d) Program should be able to provide summarized tables and graphs of reaction results.		
		e) It should provide the ability to export all the data to Excel for further processing.		
		f) GC's integration should be done with		
		g) GC software integration and data analysis treatment , which includes:		
		Online programming gas sampling and analysis , with the possibility of modifying analysis intervals, and chromatography methods, using the same software as the reactor units/system		
		Data management application, integrating chromatography results . Online calculation of conversion and selectivity data. Provision for calculation of mass balance per each reactor should be included.		
Automated collection and data processing of the analytical results (areas and compositions) should be provided.				
Online monitoring of system conditions should be available with at least 24 h history and Process should be compatible with programs such as Excel and Agilent EZ Chrome.				
17.	Safety System	a) The equipment should have several independent safety levels (individual element, unit alarm, full equipment shut-off). Admin should be able to change shutdown thresholds within the given hardware limits. Process design includes all the passive safety elements to ensure proper operation of the equipment, including:		
		1. Pressure safety valves		
		2. Check valves		

		3. Filters, etc.		
		b) A flammable gas detector for analyzing the atmosphere integrated in the unit safety system should be provided. CO and H2 detector should also be provided with the system. These safety detectors should be from Honeywell or equivalent.		
		c) Visual and sound warning systems , with different type of signaling according to safety level, should be provided. Additionally, emergency shutdown button for unit turning off should be provided.		
		d) Unit safety and alarm system should be structured:		
		ALARM should depict that measured variable is out of alarm limits, so the corresponding alarm should be activated by control system. One or more manipulated elements, according to interlock table, should be shut down or actuated in order to restore the safety situation.		
		ALARM should lead to stop the unit. Unit alarm should begin when an alarm situation persists for a certain time, despite of the element alarm was activated, and the corresponding elements were acted. Time is defined by user. Unit alarm should also be activated if control interface loses communication with unit electronics.		
		UNIT SHUTDOWN should drive to unit stopping and turning off. This alarm should be activated by emergency shutdown button and external alarm (user definition).		
18.	PC	Desktop dell/HP/equivalent PC with 16GB RAM, i5 11 th generation processor, 512 GB SSD.		
		Software should be compatible with windows / windows based.		

5. Installation, Commissioning, and Training Section

5 points

Pre-delivery and post-delivery checking of system is important ingredient for success of reaction system purchase. In order to ensure the smooth execution of installation and running thereafter, training is important for long term association. All these activities should be documented properly and should be given to us accordingly. Key component in this section is supply of spare-parts and system specific consumables based on prior performance data.

A list of bulk system requirements for the installation, commissioning, and training section is given below in points 19 to point 24.

Sl. No.	Item	Description	Technical details by vendors	Compliance (Y/N)
19.	Factory Acceptance Test	The Factory Acceptance Test (FAT) should consist of:		
		Check in detail the unit as-built with the P&ID and verify the equipment/instrument layout and operating limits of important sections		

		Maximum and minimum limit of all the variables (temperature, pressure, flow, etc.) using inert feed.		
		Test communication between instrumentation and control box		
		Pressure leak with nitrogen / helium		
		Test safety actions, shutdown of the unit		
		Training and demonstration of the unit with inert feeds		
20.	Installation, Commissioning, SAT And Training	a) Installation, commissioning, and training at customer installations site should consist of:		
		The principals, directly or through their Indian distributors, will be responsible for complete installation and integration of various components of the system and to demonstrate the technical performance of the system as quoted in the technical bid. The principals and Indian representative are collectively responsible to ensure that all components/accessories are included in the quotation. It is the responsibility of the Principals and Indian representative to ensure that all the components/accessories are included in the technical/ price bids and if components/accessories are missing or any additional part(s) are required for complete installation and integration of system, the principals and Indian representative shall be collectively responsible for providing them without additional costs.		
		Testing the instruments/equipment for their functionality		
		SAT: Testing the complete unit with actual feedstock and commercial catalyst samples. Catalyst sample will be provided by the buyer. The site acceptance test shall be performed to demonstrate the good adjustment of parameters.		
		Testing and verifying the reactor operation, start up, shutdown, emergency, safety, and normal operation of the unit.		
		Testing the operating limits in terms of pressure, temperature, and flows.		
		All the operating parameters that have been mentioned above such as temperature, pressure, flow and composition should be demonstrated after the complete installation of unit.		
		Training in operation and maintenance of the unit and control system for up to 10 technicians. Training should be carried out during days of commissioning. No separate charges will be paid for the installation and training. The engineers/personnel responsible for installation/training should make their own arrangements of travel to and stay in New Delhi.		
		Vendors should provide the exhaustive list of spare parts.		

21.	Spare Parts	Vendors should provide the number of spare parts supplied to ensure the smooth functioning of equipment for approximately 3 years based on historical performance.		
22.	Consumables	Vendors should provide the list of hardware consumables (such as filter, O-rings, nut, bolts, etc.) being supplied that will be necessary for smooth functioning of whole system approximately 3 years excluding consumables such as gas, reactants, etc		
23.	Documentation	The following documentation should be provided along with the unit, softcopy in English language:		
		a. User manual		
		1. Unit description		
		2. Technical specifications of main		
		3. Alarms and control system information (including control loops list and interlocks table)		
		4. Software manual		
		5. Directive's conformity		
		b. Operating manual		
		1. Technical instructions		
		2. Operating procedures		
		3. Maintenance procedures (hardcopy to be provided)		
		c. Manufacturer documentation of main equipment		
		d. P&ID		
24.	Layout and infrastructure requirement	Vendors should provide the layout requirement ensuring the safe handling of reactor system.		
		It should include length, breadth, and height of the installation hall. Placement of operating components.		
		Vendors should provide the requirements in terms of infrastructure such gas supply, water supply, power supply and ventilation requirements.		

(6) Warranty and Software upgrades

(10 points)

Sl. No.	Item	Description	Technical details by vendors	Compliance (Y/N)
25.	Warranty and Software upgrades	Supplier should guarantee the proper operation of the process control system and the plant and will exchange any defective part during SAT/commissioning		
		A comprehensive warranty for <u>THREE</u> years after site acceptance test (SAT) is mandatory on ALL SYSTEM COMPONENTS and ACCESSORIES e.g. gas/vapor feed section, reactor section, analysis unit, safety feature and unit, control unit and devices. The warranty should include on-sight repair costs, free replacement of components/spare parts. If some components cannot be repaired onsite, the principals and their Indian		

	representative shall bear all costs related to shipping of the components/units from IIT Delhi and return, insurance costs and the repair charges. The warranty should also include at least two visits per year for periodic maintenance and support in application customization.		
	A comprehensive warranty, with its scope as described above, for <u>TWO additional years</u> must be quoted separately.		
	In case of all THIRD PARTY PRODUCTS, principals and their Indian representative shall be responsible for executing aforementioned warranty agreements for THREE + TWO YEARS, as appropriate, with respective Original Equipment Manufacturers (OEMs) and submit copies of such extended warranty agreements as appendages to the technical proposal.		
	All upgrades of the softwares provided with the system that will be released in FIVE YEARS should be provided FREE OF COST. In addition, if any new softwares are released for the systems mentioned in the present NIQ in FIVE YEARS, such new softwares, even if they are completely new, should be provided FREE OF COST.		

(7) Prior Experience

(15 points)

6.

Sl. No.	Item	Description	Technical details by vendors	Compliance (Y/N)
26.	Prior Experience	High-throughput reactor purchase order worth 2 crores (INR) or higher (INR) should have been installed in at least 1 domestic organization (within India) and 2 international institutes/organization in the last 7 years. Minimum 2 performance certificates of the same or similar model should be provided working satisfactorily for more than 1 year to check the performance of the system. Further it is stated that in the evaluation process, demonstrated success in prior installations elsewhere in India would be given weightage. The technical bid should contain copies of purchase orders for high throughput system supplied by the Principal to Indian academic institutes/universities/research organizations in last 7 years. Letters/testimonials from end users (with their contact details) should be enclosed. IIT Delhi reserves all rights to contact these academic or research institutions or corporates to seek feedback regarding their experience on supply and installation of the high throughput reactor systems.		
		It is a highly customizable equipment that would require strong service support. In order to ensure the efficient working, we need exhaustive list of vendors with their details of direct office address, and contact details		

		<p>The supplier must be an authorized dealer/distributor of the principal/manufacture and should furnish the authorization certificate for the present tender from the principal/manufacture. Quotations without authorization certificate will be rejected.</p>		
		<p>The authorized dealer/distributor should furnish a certificate issued by the OEM certifying that OEM has verified the technical specifications of the quoted products and price and agrees to it.</p>		
		<p>A statement of compliance of quoted product with respect to the desired specifications mentioned above should be included as a part of the technical bid. The product specification data sheets/brochures must be enclosed in support of the compliance statement. Deviations in technical specifications, if any, should be clearly stated. The technical bids submitted without detailed technical specification/data sheets/brochures and compliance statement will be rejected.</p>		

List of optional items

Sl. No.	Item	Description	Technical Details by Vendor	Compliance (Yes/No)
1.	Warranty	A two-year of additional comprehensive warranty certificate including technical and maintenance support from original equipment manufacturer (OEM).		
2.	Gas Feed Supply	Gas booster pump for Helium should be provided in order to boost the pressure in case of low pressure in cylinder.		
3.	Reactor	1 Hastelloy and quartz lined reactors		
4.	Gas Sampling System	1 online GC-MSD unit with auto gas sample analysis.		
		The GC-MSD configuration, which includes TCD/TCD/FID, should allow analyzing hydrocarbons up to C12 and permanent gases.		
		GC-MSD model and brand: Agilent, Perkin, Shimadzu or equivalent.		

I have also enclosed all relevant documents in support of my claims, (as above) in the following pages.

Signature of Bidder

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

**<< Organization Letter Head >>
DECLARATION SHEET**

We, _____ hereby certify that all the information and data furnished by our organization with regard to this tender specification are true and complete to the best of our knowledge. I have gone through the specification, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

This is certified that our organization has been authorized (Copy attached) by the OEM to participate in Tender. We further certified that our organization meets all the conditions of eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

The prices quoted in the financial bids are subsidized due to academic discount given to IIT Delhi.

We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.	NAME & ADDRESS OF THE Vendor/ Manufacturer / Agent
1 Phone	
2 Fax	
3 E-mail	
4 Contact Person Name	
5 Mobile Number	
6 GST Number	
7 PAN Number	
(In case of on-line payment of Tender Fees)	
8 UTR No. (For Tender Fee)	
(In case of on-line payment of EMD)	
9 UTR No. (For EMD)	
10 Kindly provide bank details of the bidder in the following format: a) Name of the Bank	
b) Account Number	
c) Kindly attach scanned copy of one Cheque book page to enable us to return the EMD to unsuccessful bidder	

(Signature of the Tenderer)

Name:

Seal of the Company

PREVIOUS SUPPLY ORDER DETAILS

(ANNEXURE – IV)

Name of the Firm _____

Order placed by (Full address of Purchaser)	Order No. and Date	Description and quantity of order equipment	Value of order	Date of Completion of delivery as per contract	Has the equipment been installed satisfactorily (Attach a Certificate from the Purchaser/ Consignee)	Contact person along with Telephone No., Fax No. and email address)

Signature and Seal of the Manufacturer/ Bidder

Place: _____

Date: _____

(ANNEXURE-V)

ORIGINAL EQUIPMENT MANUFACTURER (OEM)
Manufacturing authorisation form (MAF)
(On Letter Head of Manufacturer)

Tender No. :-

Date:-

To
The Director,
Indian Institute of Technology Delhi,
New Delhi- 110016

Dear Sir,

We manufactures of original equipment at (.....address of factory.....) do hereby authorize M/s (Name and address of Agent) to submit a bid, negotiate and receive the order format against your tender enquiry.

M/s. is authorized to bid and conclude the contract in regard to this business.

We hereby extend our full guarantee and warranty as per clause of the terms and conditions NIQ for the goods and services offered by the above firm.

Yours Faithfully,

(Name)

(Name & Seal of Manufactures)

Note: -

1. **Items of indigenous nature or quoted in INR**, more than 1 authorized representative may participate in the same tender and submit their bids on behalf of their OEM/Principal/Manufacturer if the OEM permits more than one authorized bidder in such case as per their policy.
2. **In cases of agents quoting in offshore procurements**, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. **One manufacturer can also authorize only one agent/dealer**
3. The letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer. The same should be included by the bidder in its techno-commercial unpriced bid.

<On Organization Letter Head>

(ANNEXURE-VI)

(For Goods/ Services Contracts)

No. _____

Dated: _____

CERTIFICATE

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that this bidder is not from such a country.

OR (whichever is applicable)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that this bidder is from _____ (*Name of Country*) and has been registered with the Competent Authority. I also certify that this bidder fulfills all the requirements in this regard and is eligible to be considered.

(Copy/ evidence of valid registration by the Competent Authority is to be attached)

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

<On Organization Letter Head>

(ANNEXURE-VII)

(For Works Contracts, including Turnkey contracts)

No. _____

Dated: _____

CERTIFICATE

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries and hereby certify that this bidder is not from such a country and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority.

OR (whichever is applicable)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries and hereby certify that this bidder is from _____ (*Name of Country*) and has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I also certify that this bidder fulfills all the requirements in this regard and is eligible to be considered.

(Copy/ evidence of valid registration by the Competent Authority is to be attached)

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

BID SECURITY UNDERTAKING

(To be issued by the bidder on company's letterhead in lieu of EMD)

To,

The Registrar,
I.I.T. Delhi, Hauz Khas,
Delhi – 110016.

We, M/s _____ (Name of the Firm), with ref. to Tender

No. _____ dated _____ hereby undertake that:

1. We accept all terms and conditions of the tender document.
2. We accept that, we will not modify our bid during the bid validity period and will honour the contract after the award of contract.
3. In the event of any modification to our bid by us or failure on our part to honour the contract after final award, our firm may be debarred from participation in any tender/ contract notified by IIT Delhi for a period of one year.

Yours faithfully,

(signature)

Name:

Date:

Office Seal:

BID SUBMISSION

Online Bid Submission:

The Online bids (complete in all respect) must be uploaded online in **two** Envelops as explained below: -

Envelope – 1 (Following documents to be provided as single PDF file)			
Sl. No.	Document	Content	File Types
1.	Technical Bid	Compliance Sheet (Annexure - I)	.PDF
2.		Organization Declaration (Annexure - II)	.PDF
3.		List of organizations/ clients where the same products have been supplied (in last two years) along with their contact number(s). (Annexure-III)	.PDF
4.		Technical supporting documents in support of all claims made at Annexure-I	.PDF
5.		Previous Supply Order (Annexure - IV)	.PDF
6.		Original Equipment Manufacturing Manufacturing Authorization Form (MAF) (Annexure - V)	.PDF
7.		<i>(For Goods/ Services Contracts)</i> Certificate - Bidder Not from/ from Country sharing Land border with India & Registration of Bidder with Competent Authority (Annexure-VI)	.PDF
8.		<i>(For Works Contracts, including Turnkey Contracts)</i> Certificate – Bidder Not from/ from Country sharing Land border with India, Registration of Bidder with Competent Authority & not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority (Annexure-VII)	.PDF
9.		Bid Security Undertaking in lieu of EMD (Annexure-VIII)	.PDF
Envelope – 2			
Sl. No.	Document	Content	File Types
1.	Financial Bid	Price bid should be submitted in given BOQ_XXXX.xls format. <i>(Note: -Comparison of prices will be done ONLY on the bids submitted for the Main Equipment and anything asked as ‘Optional’ in the specs is not to be included for overall comparison.)</i> Bids for optional items are to be submitted in ‘sheet2_Quote for optional items’	.XLS