

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

**SPS-602**

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

Dated/ दिनांक : 08/04/2026

**Open Tender Notice No. / खुला प्रस्ताव निविदा सूचना नंबर: IITD/BMCH (SP-5280)/2026**

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।

<b>Details of the item</b> आइटम का विवरण	<b>Procurement and installation of community-scale cooking, Apricot drying and space heating setup for Leh Ladakh.</b>
<b>Earnest Money Deposit to be submitted</b> बयाना जमा करने के लिए जमा राशि	<b>NIL.</b> However, bidders are required to submit 'Bid Security Undertaking' in lieu of EMD (Annexure-IX)
<b>Warranty</b> वारंटी अवधि	<b>3 Years/3 साल</b>
<b>Performance security</b> निष्पादन सुरक्षा	<b>10% of item value</b>
<b>Delivery Schedule</b>	<b>8 weeks Pl. refer Terms &amp; Conditions No.12</b>
<b>Mandatory Minimum Local Content</b>	<b>1) 50% for Class I Supplier 2) 20% for Class II Supplier</b>
<b>Margin of Purchase Preference for Local Content</b>	<b>20% (Pl. refer to the DPIIT Order mentioned at T&amp;C No.45)</b>

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)	Open
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)	Mechanical and electrical
Source of Fund (Institute/Project)	Budget Code _ / Project Code RP04165G
Currency	<b>Indian Rupee (INR)</b>
Date of Issue/Publishing	08/04/26 (15:00 Hrs)
Document Download/Sale Start Date	08/04/26 (15:00 Hrs)
Document Download/Sale End Date	06/05/26 (15:00 Hrs)
Date for Pre-Bid Conference	NA
Venue of Pre-Bid Conference	---
Last Date and Time for Uploading of Bids	06/05/26 (15:00 Hrs)
Date and Time of Opening of Technical Bids	07/05/26 (15:00 Hrs)
Tender Fee (If any)	Rs. _____/- (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)	60 days (From last date of opening of tender)
Address for Communication	Prof. B. Premachandran, Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi-110016.
Contact No.	9953935560
Fax No.	+91-11-2658 2053
Email Address	prem@mech.iitd.ac.in

**Chairman Purchase Committee  
(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 "Click here to Enroll". 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 नि: शुल्क 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 सिफी / 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 ज़िम्मेदार 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 as applicable and enter details of the instrument. Whenever, Tender fees is sought, bidders need to pay the tender fee 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 फ़ाइल 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 सॉफ्ट 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 Mechanical Engineering**  
**Indian Institute of Technology**  
**Hauz Khas, New Delhi-110 016**

**NOTICE INVITING QUOTATIONS**

**Subject:** Inviting bids for Integrated solar thermal and photovoltaic system with energy storage for cooking, drying and space heating

**Invitation for Tender Offers**

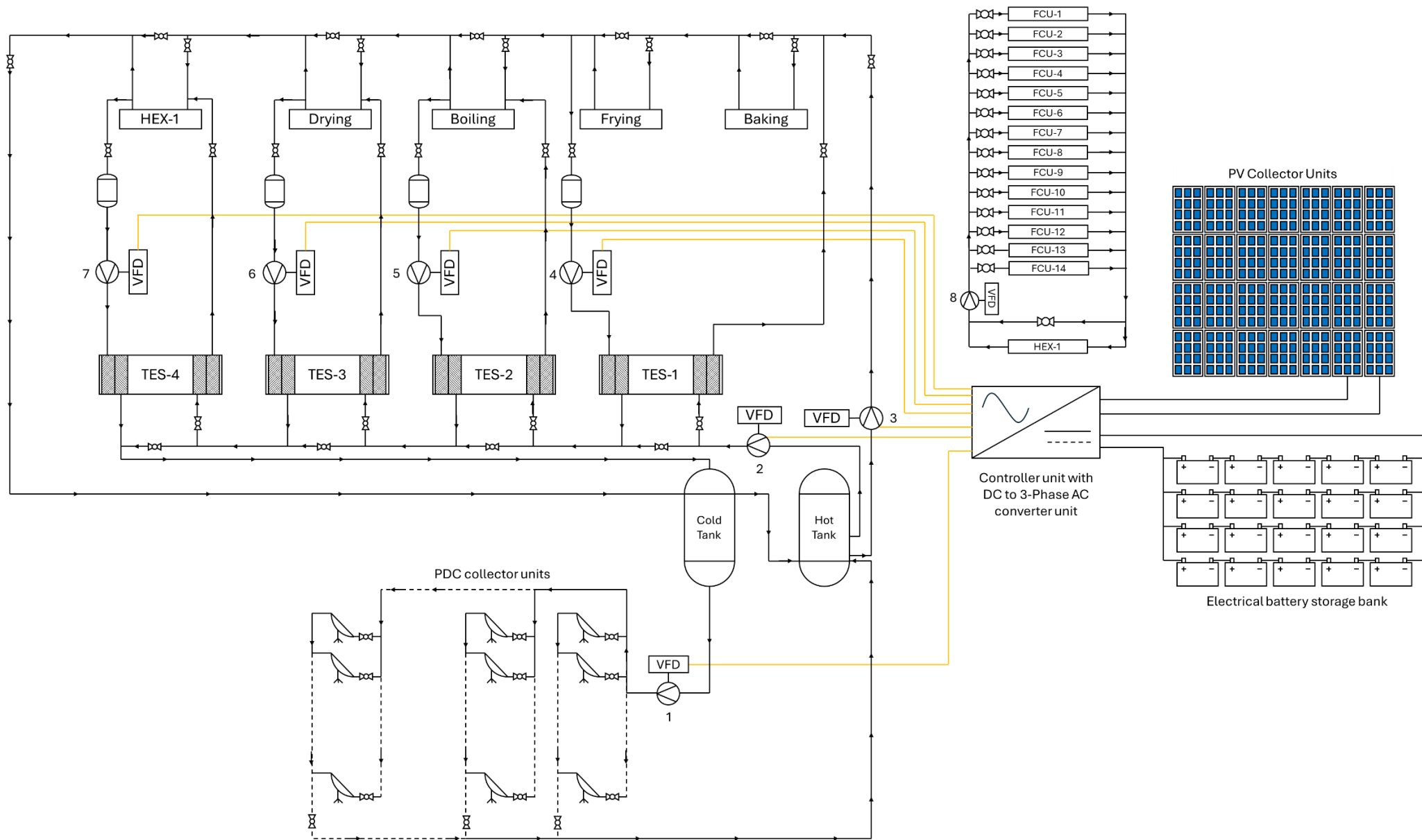
Indian Institute of Technology Delhi invites online Bids (Technical bid and Commercial bid) from eligible and experienced OEM (Original Equipment Manufacturer) OR OEM Authorized Dealer for Integrated solar thermal and photovoltaic system with energy storage for cooking, drying and space heating with (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>

**Important points:**

- All civil-related works shall be included within the scope of the respective system construction and installation, as required for proper installation and commissioning of the equipment.
- The performance of each component of the system shall be demonstrated during the installation and commissioning phase.
- The complete system shall be demonstrated and operated continuously for a minimum period of one month by the vendor to the satisfaction of the client.
- All items specified in the tender shall be covered under a three-year comprehensive warranty.
- During the warranty period, any system failure or defect shall be rectified by the vendor within two weeks from the date of notification.
- All the numbers and components are indicative; the vendor can modify and include any components as per installation and operation requirements.
- Bidders should also submit technical and financial bids for 25% and 50% capacities of the system specified in this tender document.

**1. Overall Layout:**

The system layout, depicted in Fig. 1.1, illustrates the interconnected units for various applications, including cooking plate, frying pan, cooking vessel, apricot dryer, and space heating, arranged in descending order of required application temperature. The thermal energy storage is integrated in parallel with these application units, enabling it to be charged during periods of excess solar energy without disrupting system operation. Concentrating solar dish collectors harness solar energy, which is then transferred using heat transfer oil. In the absence of solar energy, thermal energy stored in the thermal energy storage is utilized by individually circulating the heat transfer fluid (HTF) for each application. Additionally, each piece of equipment is equipped with inlet and outlet oil temperature measurement thermocouples, and pressure sensors are installed between units for pressure monitoring. PV panels are used to harness electrical energy from solar irradiation along with electrical battery bank for electrical energy storage. Flow meters are essential for each unit to monitor flow rate, while buffer oil tanks and expansion tanks are included to compensate for oil thermal expansion and serve as safety measures. To support continuous operation in the case of low solar radiation, a diesel fired oil heater has to be integrated with the system. This is not shown in the layout given in Fig.1.1. The vendor should give a complete layout of the system/P&ID with a bill of materials. The layout is given for representative purpose. If any components required for the smooth operation, the bidder should include them in their layout drawings.



**Fig. 1.1 Schematic of the overall system.**

**Table 1.1 List of items**

S. no.	Items	Details	Quantity
1	Installation Location	Mahabodhi Residential School, Leh, Ladakh	
2	Parabolic Dish collector with Receiver	Dual-axis tracking-based parabolic dish collector	600 m <sup>2</sup>
3	Cooking plate	Baking plate Dia. : 0.6m, Plate Thickness: 10mm No.of turns: 9, Pitch: 28 mm, Area: 0.286 m <sup>2</sup> , Material: SS 316.	1
4	Frying pan	Frying pan Dia: 0.5 m, Thickness: 5mm, No. of turns: 10, Pitch: 28 mm, Volume: 65 L, Material: SS 316	1
5	Cooking vessel	Boiling vessel Dia: 0.5014 m, Vessel Height: 0.3545m, Wall thickness: 5 mm, No. of turns: 18 (side+bottom), Pitch: 28mm + 26.28 mm, Volume: 70 L, Material: SS 316	1
6	Drying Unit	For drying	3
7	FCU	For space heating	14
8	Thermal Energy Storage Units	Shell-and-tube type PCM-based latent heat energy storage for storing thermal energy.	4
9	Heat exchanger	For heat exchange between oil and water ethylene mixture of capacity 80kW.	1
10	PVT collector	For auxiliary power consumption.	200 m <sup>2</sup>
11	Electrical Batteries	For electrical power storage	120 kWh
12	PCMs	Sodium nitrite + Solar Salt +Hitech Salt+ Paraffin wax	1056 + 855+ 1880 + 11913 (kg)
13	Expansion Tank	For storing heat transfer oil and to deal with oil expansion at high temperature.	2 (100 lt) + 4 (30 lt)
14	Pumps	Centrifugal pump for operating temperature range (-40 to 350 °C)	3 (5 hp) + 5 (2 hp)
15	Water ethylene mixture tank	For storing and dealing with the expansion of the water-ethylene mixture.	1 (100 lt)
16	Ethylene Glycol	Anti-freezing agent for water	1000 liters
17	Heat transfer oil	It should withstand the operating temperature of 350°C. It should have good heat transfer properties. It should not freeze in Leh condition when not operated.	4500 liters
18	VFD	To control the flow rate of Centrifugal pumps. 0 to 50 Hz	8
19	Valves	Globe valve + Ball valve + NRV (Material: Carbon Steel.)	60+20+10
20	Piping	Line size 2-inch, Material: Carbon Steel.	2000 m (approximate)
21	Thermocouples	Sheath-type K-thermocouple with thermowell. (up to 600 °C)	100
22	Flow meters	Orifice plate type (flow measurement up to 2000 kg/hr) + Turbine flow meter (flow measurement up to 12000 kg/hr)	10+2
23	Pressure gauge	Diaphragm pressure gauge (up to 10 bar)	26
24	Anemometer	Range:0-30 m/s, Resolution: 0.1 m/s	1
25	Thermal Hygrometer	Temperature Range: -40 to 90°C,	1

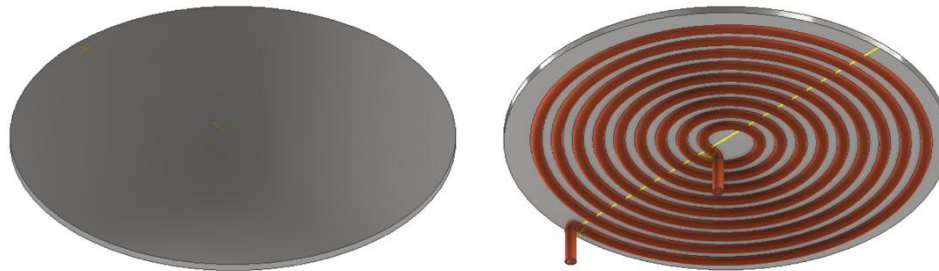
		RH: 0-95% Resolution: 0.1% for RH, 0.1°C for Temperature	
26	Insulation	The insulation layer of rockwool, with aluminium cladding covering all pinning and heat-losing surfaces.	4-inch thickness
27	Diesel-fired oil heater	For auxiliary heating	1

Note: The unit price and total price of each item, where applicable, should be provided for cost comparison.

## 2. Specifications of Cooking Units

### *Cooking Plate:*

A cooking plate is designed for baking-related cooking operations such as baking chapati, dosa, etc. The cooking plate is designed to maintain a uniform temperature of up to 250°C. The cooking plate consists of a top circular plate with a spiral semi-cylindrical coil attached at the bottom. The entire cooking plate is made of stainless steel (SS 316). The heat transfer fluid (Dowtherm RP thermal oil) passes through the coil, transferring thermal energy to the top portion of the plate, where baking can be performed. The diameter and the thickness of the cooking plate are 600 mm and 10 mm, respectively. There are nine spiral coils (Inner diameter: 12.7 mm and inner diameter: 9.7 mm) provided at the bottom of the cooking plate to carry heat transfer fluid. The developed cooking unit can cook six chapatis at a time. The area of the cooking plate is 0.2826 m<sup>2</sup>.

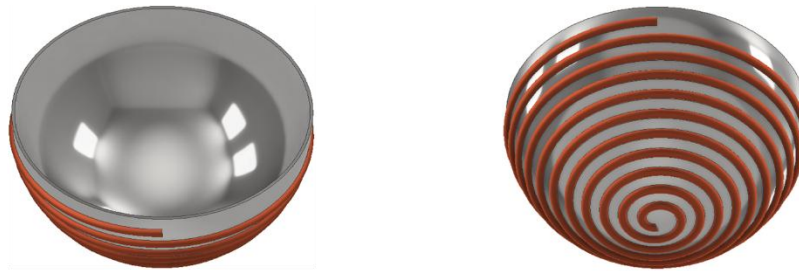


Tawa diameter	: 600mm
Number of turns on surface	: 9 (28 mm pitch)
Tawa thickness	: 10mm
Inner diameter of pipe	: 12.7mm
Thickness of pipe	: 1.5mm

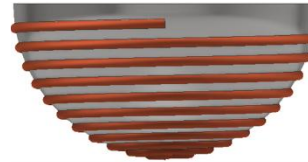
**Figure 2.1: Cooking Plate**

### *Frying Pan:*

The frying pan is designed for frying-related cooking applications, in which the food items can be fried by immersing them in hot cooking oil. The frying pan is a hemispherical cavity over which a semi-circular cross-section stainless steel (SS 316) coil is wrapped, allowing heat transfer fluid (HTF) to flow. The inner portion of the hemispherical cavity can be used for cooking applications related to frying. The unit is designed to achieve a temperature of up to 200°C. The outer and inner diameters of the frying pan are 500 mm and 490 mm, respectively. The total capacity of the pan is 65 litres. The outer and inner diameters of the tube carrying the heat transfer fluid are 12.7 mm and 9.7 mm, respectively.



Frying pan outer diameter	: 500mm
Number of turns on surface	: 10 (28mm Pitch)
Frying pan thickness	: 5mm
Frying pan volume	: 65 litres
Inner diameter of pipe	: 12.7mm
Thickness of pipe	: 1.5mm



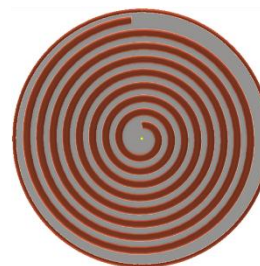
**Figure 2.2: Frying Pan**

***Cooking Vessel:***

A cooking vessel is designed for boiling-related cooking operations, such as boiling eggs and grains. The cooking vessel is designed to maintain a uniform temperature of up to 120°C. It comprises a cylindrical vessel wrapped in a semi-cylindrical coil (HTF flow passage) as shown in Fig. 3. The vessel is made of stainless steel (SS 316). The vessel's inner cavity can be used to boil rice, cereals, and other foods. To get a better heat transfer, the top of the vessel can be covered with a lid. The outer and the inner diameters of the cylindrical cooking vessel are 501.39 mm and 491.39mm, respectively. The outer and inner diameters of the tube carrying heat transfer fluid are 12.7 mm and 9.7 mm, respectively. The capacity of the cooking vessel is 70 litres.



Vessel outer diameter	: 501.39mm
Vessel height	: 354.54mm
Number of turns on lateral surface	: 10 (28 mm pitch)
Number of turns on bottom surface	: 8 (26.28mm pitch)
Vessel thickness	: 5mm
Vessel volume	: 70 litres
Inner diameter of pipe	: 12.7mm
Thickness of pipe	: 1.5mm



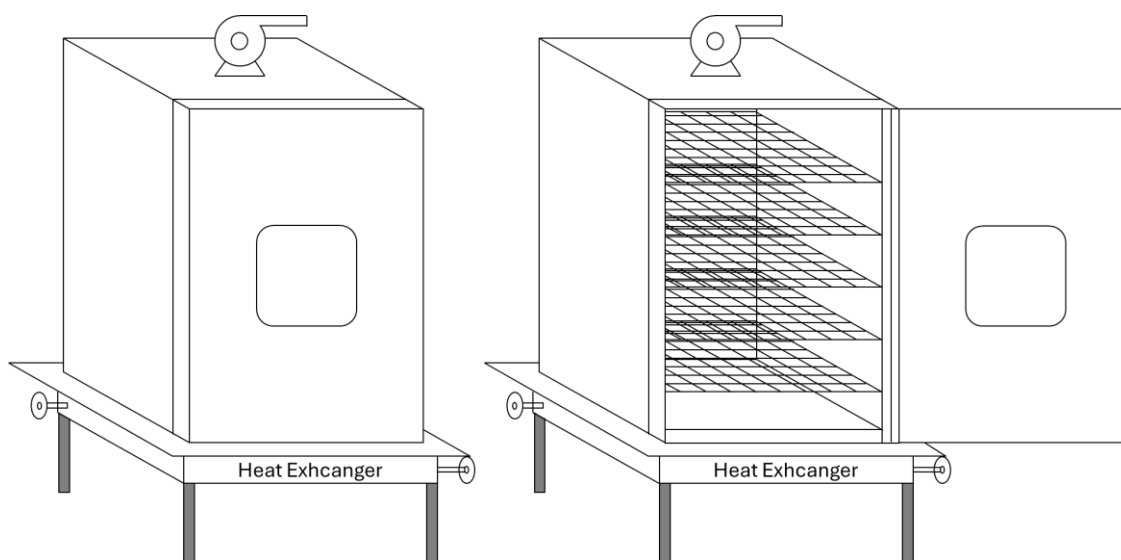
**Figure 2.3: Cooking Vessel**

**Table 2.1 Dimensions of the proposed Cooking Unit for the community-scale cooking system (100 People)**

Cooking Unit	Inner Diameter (mm)	Outer Diameter (mm)	Height (mm)	Capacity	No. of Units	Operating Temperature (°C)
Cooking Vessel	501.39	491.39	354.54	70 Liters	1	100-120
Frying Pan	500	490	-	65 Liters	1	180-200
Cooking Plate	600		-	0.2826 m <sup>2</sup>	1	220-250

### 3. Specifications of Drying Units

This unit follows the sequence of operation as suction of air from ambient using centrifugal blower. The rotational speed of the motor of the blower can be varied by variable flow drive. The variation of the speed of the motor is controlled through a control panel. The variable flow controller is required to vary the flow depends on the drying load and the energy transfer by the Heat Transfer oil and then it passes through the finned tube heat exchanger, where hot oil will come from energy storage 3 or the oil heater with and without the cascading other application systems, and then hot oil will flow inside finned tube heat exchanger (which is connected to the drying chamber at the bottom) and return back to the energy storage 3, during this process air will extract heat from hot oil and then hot air will enter into the drying chamber, The drying chamber is of rectangular shape with metallic body. To avoid heat loss from the hot air flowing through the air dryer, it is well insulated using insulating material between the two metallic walls of the drying chamber. For placing the apricot for drying, grills are placed horizontally in equal interval in vertical distance. For the air which carries the moisture of the fruits, an outlet is provided on the top of each chamber.



**Fig. 3.1 Schematic of Apricot Dryer**

**Table 3.1 Specification of Apricot Dryer.**

S. no.	Specification	Value
1	Number of Dryer units.	3
2	Apricot keeping in each unit	70 kg/unit
3	Heat transfer rate for oil to air heat exchanger	5 kW
4	Number of trays of apricots in each unit	6
5	Required flow rate of each centrifugal blower	250 cfm
6	Number of operation hours each day	15 hours

Note: The per-unit cost and total cost should be provided.

#### 4. Technical Specifications for Space Heating:

<p><b>1.5 TR Fan Coil Unit</b>          In this system, the water and ethylene glycol mixture considered for the operation should have the following properties:          Maximum temperature: 90°C          Minimum Temperature: -30°C          Working fluid: Water and ethylene glycol mixture</p>
<p><b>Water and ethylene glycol mixture Pump (with variable frequency drive)</b>          Maximum operating water Temperature: 90°C          Flow rate: up to 11200 kg/hr</p>
<p><b>Energy storage system with Paraffin wax PCM (Heat Exchanger 1)</b>          Capacity: 80 kW          Type: Shell and tube          Phase change material: Paraffin wax.</p>
<p><b>Buffer tank</b>          Temperature (K type) sensors at the inlet, outlet, and various levels in the buffer tank, pressure gauge, and pressure relief valve. Indian/European Standards for electrical and fire safety should be strictly followed while designing and fabricating. For cleaning and other maintenance-related work, an appropriate lid should be provided.</p>
<p><b>Pipelines</b>          Material to be used - SS304.          Pipeline length - 2500 to 3000 feet.          Nominal size: 1-2 inches          Proper insulation with cladding (preferably aluminum) must be provided.</p>

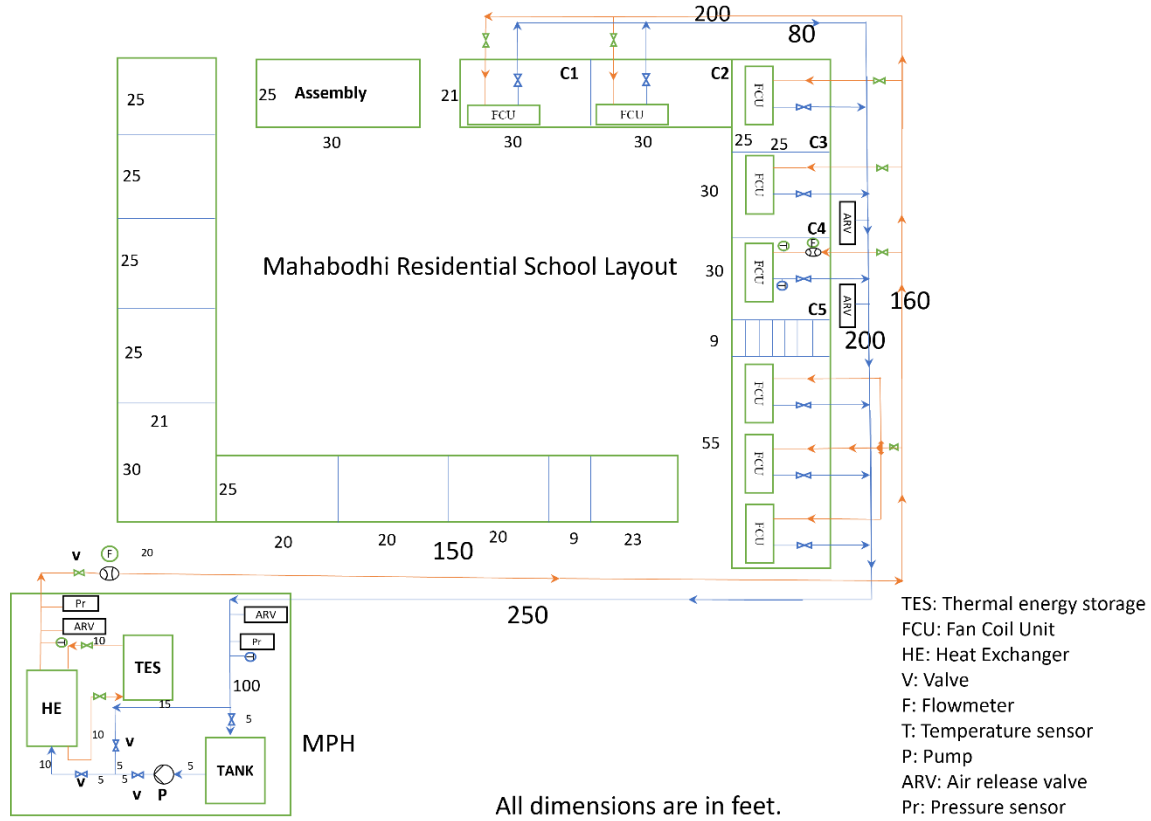
All the sensors should provide output in 4-20 mA/mV which can be connected to the data logging system. A calibration certificate should be provided for all the sensors. All the sensors should have an IP66 rating. All the sensors should have the display (three digits after the decimal) at the respective location. Several other equipment and their specifications required for controlling and monitoring space heating analysis have been listed in Table 4.1.

**Table 4.1: List items and their specifications for space heating at Leh.**

Items	Model no. and specifications	Quantity
1. Fan Coil Unit	1.5 Tr fan coil unit	14
2. Pump	5 HP three-phase pump	1
3. VFD	4HP Variable frequency devices (VFD) Frequency Variation: +5 to -5	1
4. Flow meter	Digital flowmeter Flow Rate: up to 200 LPM	1
	Digital flowmeter Flow Rate: up to 35 LPM	1
5. K-type thermocouple with compression fitting	k-type thermocouple. Sheath length: 6 inches. Working temperature range: - 40°C to 120°C	4
6. Anemometer	Range: 0 to 30 m/s    Resolution: 0.1 m/s	1
7. Thermal Hygrometer	Temp range: -40°C to 90°C Humidity range: 0 to 95 % RH Resolution: 0.1% RH and 0.1°C	1
8. Pressure gauge	Pressure range: 0 to 200 psi Least count: 1 psi	2
9. Water + ethylene storage tank	Tank Capacity: 100 liters Ethylene glycol concentration: 40-45 % by volume	1

### 4.1 Detailed Pipeline drawing and dimension

“Space heating units” must be installed in the 10 classrooms, 1 office room, and 1 staffroom of the school; to provide comfort to the students with shown pipelines, sensors, and other items associated with these systems. The details about the room dimensions needed for building space heating installation are:



**Fig. 4.1 Detailed Pipeline dimension and Space heating drawing.**

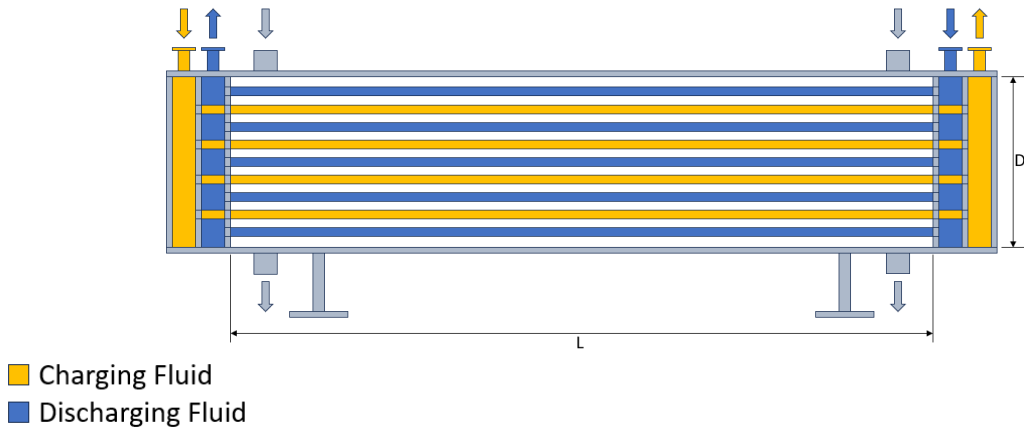
### 5. Thermal energy storage specification

The thermal energy storage (TES) system for the SUNSHINE LADAKH project utilizes an LHTES (Latent Heat Thermal Energy Storage) configuration with four shell and multitube storage units, designated as TES-1 to TES-4, each equipped with distinct phase change materials (PCM) to cater to specific energy needs. TES-1 utilizes sodium nitrite ( $\text{NaNO}_2$ ) as the PCM, TES-2 employs solar salt (60%  $\text{NaNO}_3$  + 40%  $\text{KNO}_3$ ), TES-3 utilizes high-tech salt (7%  $\text{NaNO}_3$  + 53%  $\text{KNO}_3$  + 40%  $\text{NaNO}_2$ ), and TES-4 also utilizes high-tech salt (7%  $\text{NaNO}_3$  + 53%  $\text{KNO}_3$  + 40%  $\text{NaNO}_2$ ). These PCM selections are optimized to efficiently store and release thermal energy at different temperature ranges, ensuring effective utilization of solar energy for various applications including space heating, apricot drying, and cooking. Additionally, the TES system employs oil as the heat transfer fluid, with a maximum mass flow rate of 7000-8000 kg/hour, to facilitate efficient energy transfer throughout the system. These specifications enable the TES system to effectively meet the diverse energy requirements of the SUNSHINE LADAKH project, contributing to sustainable and reliable energy solutions for the community in Leh, Ladakh.

**Table 5.1 Specification of thermal energy storage**

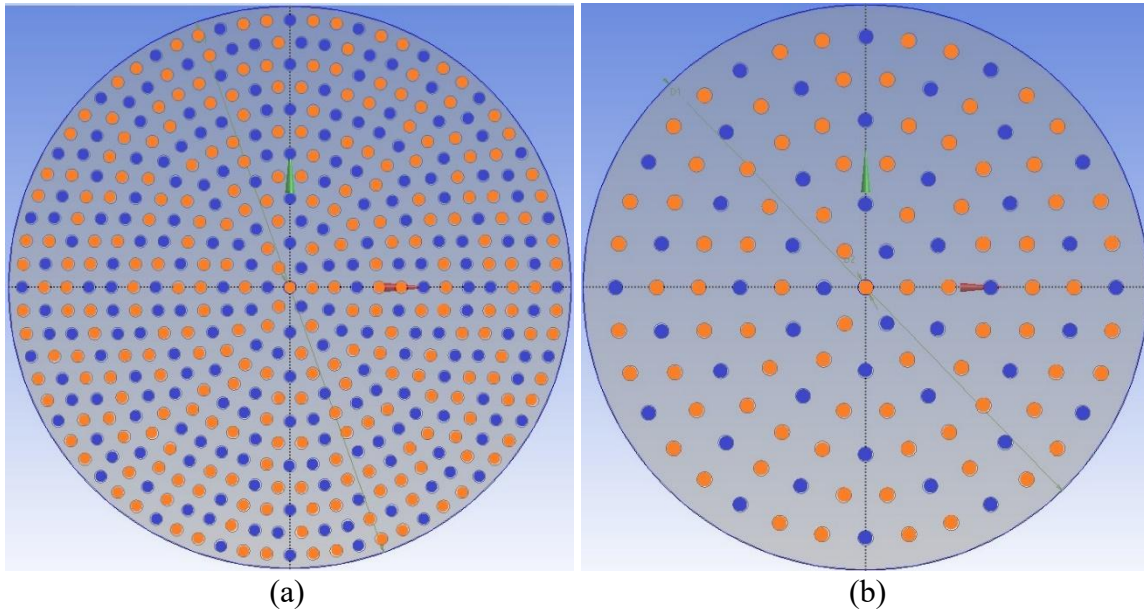
S.no.	Parameters	TES-1	TES-2	TES-3	TES-4
1	Storage power (kW)	14.5	7.25	12.16	77
2	Storage capacity (kWh)	43.5	21.75	36.48	231
3	Shell Inner diameter (mm)	569	478	713	1314
4	Shell thickness (mm)	6	6	6	10
5	Tube outer diameter (mm)	12.7	12.7	12.7	25.4
6	Tube thickness (mm)	1.6	1.6	1.6	2

7	Length (m)	3	3	3	6
8	No. charging tubes	256	82	66	135
9	No. of discharging tubes	213	445	205	262
10	The mass flow rate through the charging passage (kg/hr)	500	500	500	1500
11	The mass flow rate through the discharging passage (kg/hr)	1000	500	500	6000
12	Radial Pitch (mm)	22.5	35	36.5	56
13	PCM material	NaNO <sub>2</sub>	0.6(NaNO <sub>3</sub> )+ 0.4(KNO <sub>3</sub> )	0.07(NaNO <sub>3</sub> )+ 0.53(KNO <sub>3</sub> )+ 0.4(NaNO <sub>2</sub> )	0.07(NaNO <sub>3</sub> )+ 0.53(KNO <sub>3</sub> )+ 0.4(NaNO <sub>2</sub> )
14	Quantity of PCM material (kg)	1056	855	1880	11913



**Fig. 5.1 Schematic of the TES systems.**

■ Charging Fluid  
■ Discharging Fluid



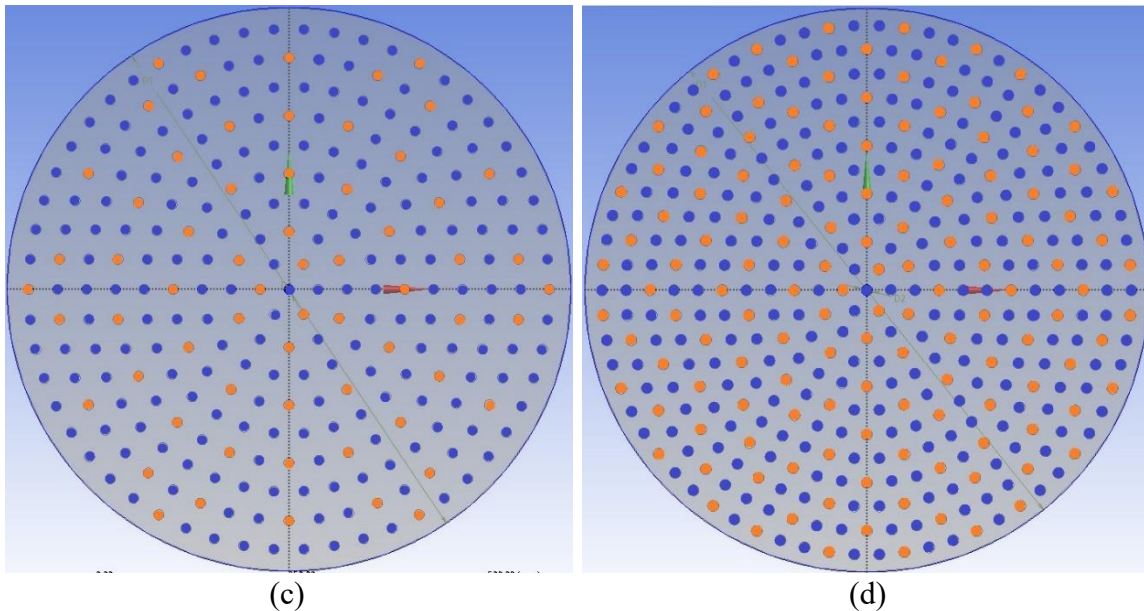


Fig. 5.2 Tube distribution configuration for TES-1 (a), TES-2 (b), TES-3 (c), and TES-4 (d).

## 6. Technical Specification of Parabolic Dish collectors

Sl. No.	Technical Specifications
1	<p><b>Parabolic Dish Collector</b>  <b>The system should include</b></p> <ul style="list-style-type: none"> <li>• Solar grade reflective mirrors as reflectors,</li> <li>• Cavity receiver</li> <li>• Storage Tank</li> <li>• Fluid Distribution Pipe</li> <li>• Fully automated GPS based dual axis tracking system</li> <li>• Sensors (Flow, pressure, and temperature), Limit switches, high quality flexible hoses</li> <li>• SCADA based user interface for control</li> <li>• Flow circulation pump with working temperature of 300°C or above</li> <li>• Flow meter- 1 no.</li> <li>• Pressure transducer- 2 nos.</li> </ul> <p><b>Capacity:</b> 150 kW<sub>th</sub> for Leh, Ladakh Location</p>
2	<p><b>Performance criteria:</b></p> <ul style="list-style-type: none"> <li>• The dish should be capable enough to deliver minimum temperature of 300°C.</li> <li>• The optical efficiency of the parabolic dish collector should be greater or equal than 75%.</li> <li>• The desirable first order loss of the system should be less than 0.50 W/m<sup>2</sup>K</li> <li>• The desirable second order loss of the system should be less than 0.001 W/m<sup>2</sup>K</li> <li>• The dish should be tested at any one reputed National/International laboratory. The test certificate shall be submitted along with the bid documents.</li> </ul>
3	<p><b>Installation Criteria</b>  <b>Location of Installation:</b> Ground level  <b>Preferred type of installation:</b></p> <ul style="list-style-type: none"> <li>• Distributed Load (smaller and multiple dishes are preferred than single pole systems)</li> <li>• Dish should be installed with a proper RCC foundation Minimum wind load for operation = 45 kmph</li> <li>• All the civil work is in the scope of the vendor.</li> </ul>

### 6.1 Specification for Parabolic Dish Collector with Accessories

- *Two specifications of solar collector sizes have been provided. The bidder shall specify the unit price of each collector offered. Selection will be based on the quotation.*
- *The total price and unit price per unit surface area of the collector shall be provided for comparison.*
- *The bidder shall also specify the number of collectors required as per the total aperture area required.*

**Table 6.1: Specification of solar parabolic dish concentrator for**

S. No	Parameter	Specification-1	Specification-2
1	Aperture area	90 m <sup>2</sup>	120 m <sup>2</sup>
2	Diameter of the dish aperture	10.70 m	12.36 m
3	Focal length	6.458 m	7.4599 m
4	Rim angle	45 <sup>0</sup>	45 <sup>0</sup>
5	Depth of dish	1.108 m	1.2799 m
6	Focal length and diameter ratio	0.6035	0.6035
7	Solar image width	0.0827 m	0.1102 m
8	Geometrical Concentration ratio	169	169
9	Receiver aperture area	0.532 m <sup>2</sup>	0.71 m <sup>2</sup>
10	Reflectivity	0.94	0.94
11	Intercept factor	0.98	0.98
12	Receiver absorptivity	0.95	0.95
13	Efficiency of the Receiver	0.956	0.956
14	Thickness of glass	3 mm	3 mm

**Table 6.2: Appropriate Cavity Type Receiver Configuration.**

S. No	Parameter	Value (90 m <sup>2</sup> )	Value (120 m <sup>2</sup> )
1	Geometrical Concentration ratio	169	169
2	Receiver aperture diameter ( <i>D</i> )	823 mm	951 mm
3	Hemispherical Cavity inner diameter ( <i>d</i> )	475 mm	549 mm
5	Cavity tube outer diameter in hemispherical shape	30 mm	30 mm
6	Cavity tube inner diameter in hemispherical shape	21 mm	21 mm
7	Cavity tube outer diameter in truncated shape	18.75 mm	18.75 mm
8	Cavity tube inner diameter in truncated shape	17.5 mm	17.5 mm
9	Truncated shape height	420 mm	485 mm
10	Truncated angle	22.5 <sup>0</sup>	22.5 <sup>0</sup>
11	Receiver surface emissivity (Copper)	0.83	0.83
12	Number of cavity coils in hemispherical shape	18	21
13	Number of cavity coils in (truncated shape)	24	28
14	Total coil length (Hemispherical shape)	23 m	36 m
15	Total coil length (truncated shape)	33 m	45 m

**Table 6.3: Mirror and Supporter specifications**

Support structure	
<b>Design</b>	Circular / Square space frame structure with arrangement to fix mirrors
<b>Material</b>	Standard mild steel
<b>Shape</b>	Parabolic contour
<b>Protection from corrosion</b>	Galvanization of all components of the structure as per relevant code for coastal saline environment/other environment conditions. Use of protective paints with right type of surface preparations like sand blasting

<b>Strength and durability</b>	Designed as per ISI 800 & IS 875 considering a life of 25 years Survival Wind Speed – 200km/hr
<b>Fixing of mirrors on supporting structure</b>	On the base structure with the help of industrial adhesive and fasteners

**Table 6.4: Receiver and Receiver support specifications**

<b>Receiver</b>	
<b>Parameter</b>	<b>Specification</b>
<b>Design</b>	Coil Type cavity receiver <ul style="list-style-type: none"> <li>Seamless pipes in the form of a helical coil in cavity receiver</li> </ul>
<b>Material</b>	Coil Type cavity receiver <ul style="list-style-type: none"> <li>Standard Mild steel with stainless steel (Grade 304) jacketing on outer sides</li> </ul>
<b>Size &amp; Thickness</b>	<ul style="list-style-type: none"> <li>Coil tube Diameter is based on the thermic fluid and flow rate required as per the process.</li> <li>Coil tube Thickness is based on the pressure required in the system.</li> <li>Thickness and size based on design pressure</li> </ul>
<b>Strength</b>	Subjected to heat resistant test and hydro-test as per the applicable pressure rating of the system

<b>Receiver support structure</b>	
<b>Parameter</b>	<b>Specification</b>
<b>Design</b>	Space frame structure/Rod type structure consisting of angles and sections
<b>Material</b>	Standard mild steel
<b>Protection from corrosion</b>	Galvanization of all components of the structure as per relevant code for coastal saline environment/other environment conditions Use of protective paints with right type of surface preparations like sand blasting
<b>Strength and Durability</b>	Designed as per IS 800 & IS 875 considering a life of 25 years Survival Wind Speed – 200km/hr

**Table 6.5: Specifications of Tracking System**

<b>Tracking system</b>	
<b>Parameter</b>	<b>Specification</b>
<b>Mechanism</b>	Dual axis sun tracking mechanism
<b>Control logic</b>	Programmed logic/Sensor based tracking
<b>Safety features</b>	Safety position by anemometer; Alarm indicators; Limits for angular movement
<b>Accuracy of Tracking</b>	+/- 0.2-0.4°
<b>Weather Protection</b>	Cable channel for electric cables, Aluminium sheet cover on gears and motors, Box casing for microprocessor-based electronics
<b>Subcomponents</b>	
<b>Sensors</b>	Solar radiation sensor, Pyranometer, Wind speed sensor, accelerometer / angle measuring meters
<b>Motor</b>	Two motors – one for elevation and other for azimuth/ Servo motors with / without encoders
<b>Gear box</b>	Planetary gear box/Reduction gear box / worm and worm wheel Mechanical and Electrical systems

**Table 6.6: Specifications of Foundation:**

<b>Civil Foundation</b>	
<b>Parameter</b>	<b>Specification</b>
<b>Design</b>	Designed to rest on soil of sufficient strength
<b>Material</b>	Material Standard Cement and Concrete
<b>Coating Protection</b>	Coating Protection Coating of paint on an exterior surface
<b>Strength &amp; Durability</b>	Designed as per IS 456 and allied/ applied codes considering a life span of 25 years

<b>Structural Steel Foundation</b>	
<b>Design</b>	Structural column as per structural design standard
<b>Material</b>	Standard mild steel Mild steel angles / channels / pipe structure of suitable thickness as per the load of dish and tracking arrangement
<b>Coating Protection</b>	Galvanization of all components of the structure as per relevant code for coastal saline environment/other environment conditions Use of protective paints with right type of surface preparations like sand blasting
<b>Strength &amp; Durability</b>	Designed as per IS 800 & IS 875 considering a life of 25 years. Survival Wind Speed – 200km/hr.

**Table 6.7: Bill of Materials of Parabolic dish collector:**

Solar Parabolic Concentrator with dual axis Tracking System	5 Nos	Size: 120 m <sup>2</sup> Material: Mild Steel Reflective Material: 3mm High Reflective Mirror Glass Solar Grade fixing on Aluminum channel Tracking System: Dual Axis, Type-Automatic for E-W, Power Source-12 Volt and Reduction Gear Box.
Receiver	5 Nos	Type- Trumpet Modified cavity receiver Material-Boiler Grade (Receiver Paint: Black, High Temperature 650 degree Celsius) Size- 750mm Diameter Design Pressure-22.5kg/Sq.cm, Insulation Material: mineral wool with 4-inch Insulation and aluminum cladding (Minimum 20 SWG)
Storage Tank	2 Nos	a. 200 Litre: 2 Nos Made with MS plate of thickness not less than 5 mm with 4-inch Rockwool insulation with Aluminum/SS cladding, having 2 inlets and 2 outlet valves. Dimension: Thickness: not less than 5mm Height: 0.9 m Diameter: 0.7 m Volume: 0.346m <sup>3</sup> Valve Size: 5/4 inch Inlet valve Location: 50 mm above the base Outlet valve location: 60 mm below the top APPROX WEIGHT-170 Kg
	1 No.	b. 200 Litre with Heat Coil Heat Exchanger: 1No Made with MS plate of thickness not less than 5 mm with 4-inch Rockwool insulation with Aluminium/SS cladding, having 2 inlets and 2 outlet valves. Single inlet and outlet with coil heat exchanger (Coil material: Copper tube 10mm, coil height:0.7 m) Dimension:

		Thickness: not less than 3mm Height: 0.9 m Diameter: 0.4 m Inlet valve Location: 40 mm above the base Outlet valve location: 50 mm below the top APPROX WEIGHT-90 Kg
Fluid Distribution Pipe	500m	Seamless Pipe 1.25 inch Material-MS C class (Connecting Receivers to Storage System) 3 inches insulation and aluminium cladding for pipeline with necessary valves, control and temperature Sensor. Working Temperature above 250°C,  (approx. Dowtherm RP oil required 250 litres) for Solar parabolic collectors.
Thermic Fluid Pump	2 Nos	For Hot Oil Pump Model, No: 32/160 HP: 5,2900 RPM SUC/DIS: 50*32 MM Air-Cooled Base Frame Couple VFD for driving the pump
Digital Flow Meter	1 No.	Working Principle: Oval Gear Positive displacement, Line Size- 1 BSP Thread. Temp: - (-20 To 250 Deg.), Max. Pressure: - 16 Bar Power Voltage: - 24 V DC Output: - Pulse (NPN Proxy Sensor) Flow Range: - 5 to 20 Lpm Accuracy: - 0.5% TO 1 % FSD
Temperature Gauge	10 Nos	J Type Thermocouple, with indicator Temperature Range: 0° to 750° C Accuracy: - 0.5%
Pressure	6 Nos	Mechanical Type Pressure Range: 10 kgf/Cm <sup>2</sup>

#### 7. Electrical items details:

- The electricity requirement for the overall system shall be met through Solar Photovoltaic (PV) panels.
- The approximate connected load of the system shall be 25 kW at steady operating condition.
- A suitable electrical energy storage system (battery bank) shall be provided to enable the plant to operate for a minimum of five hours under full load conditions without solar input.
- The scope shall include the design, supply, installation, testing, and commissioning of:
  - Solar PV panels
  - Battery energy storage system (Operating temperature range -40 to 40 °C)
  - DC to three-phase AC converter (inverter) of adequate capacity
  - Power control panels, protection systems, and all associated electrical accessories
- All control panels, cabling, protection devices, earthing, and safety systems required for reliable and uninterrupted operation of the plant shall be included in the vendor's scope of supply.
- The electric power system shall be fully integrated with the overall system and demonstrated during installation, commissioning, and trial operation.
- The battery storage capacity and other electrical requirement should be considered for during the starting of pumps and blowers etc. The quotation should provide all the details in the technical bid.
- The electrical system should be connected with the power grid for continuous operation. The required electrical supply specification should be provided in the technical bid.

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.	<b>Due date:</b> 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.	<b>Preparation of Bids:</b> 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. <b>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.</b>
3.	<b>EMD (if applicable):</b> 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.	<b>Refund of EMD:</b> 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.	<b>Opening of the tender:</b> 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.	<b>Acceptance/ Rejection of bids:</b> The Committee reserves the right to reject any or all offers without assigning any reason.
7.	<b>Pre-qualification criteria:</b> (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.	<b>Performance Security:</b> Performance Security may be furnished in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt from a Commercial bank, Bank Guarantee (including e-Bank Guarantee) from a Commercial bank or online payment in an acceptable form safeguarding the purchaser's interest in all respects within 21

	days from the date of receipt of the purchase order and should be kept valid for a period of 60 days beyond the date of completion of warranty period.
9.	<p><b>Force Majeure:</b> 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> <p>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.</p> <p>When 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.</p>
10.	<b>Risk Purchase Clause:</b> 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.
11.	<p><b>Packing Instructions:</b> Each package will be marked on three sides with proper paint/indelible ink, the following:</p> <ol style="list-style-type: none"> <li>i. Item Nomenclature</li> <li>ii. Order/Contract No.</li> <li>iii. Supplier's Name and Address</li> <li>iv. Consignee details</li> <li>v. Packing list reference number</li> </ol>
12.	<p><b>Delivery and Documents:</b></p> <p>Delivery of the goods should be made within a maximum of 12 to 16 weeks (<i>for goods ready for shipment</i>) &amp; Maximum (<i>To be filled by Purchaser</i>) weeks (<i>For special/ to be fabricated goods</i>) from the date of the Purchase Order. Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by email 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> <ul style="list-style-type: none"> <li>4 Copies of the Supplier invoice showing contract number, goods' description, quantity unit price, total amount;</li> <li>Insurance Certificate if applicable;</li> <li>Manufacturer's/Supplier's warranty certificate;</li> <li>Inspection Certificate issued by the nominated inspection agency, if any</li> <li>Supplier's factory inspection report; and</li> <li>Certificate of Origin (if possible by the beneficiary);</li> <li>Two copies of the packing list identifying the contents of each package.</li> </ul> <p>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.</p>
13.	<b>Delayed delivery:</b> 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.
14.	<p><b>Prices:</b> The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges.</p> <p>Price quoted should be in Indian Rupees, free delivery at IIT Delhi Campus at site (DDP/FOR).</p>

	<p>Further, depending on the nature of the goods, there may be cost elements towards installation and commissioning, operator’s training, and so on. Normally, it may be included in the equipment cost but if it is quoted separately, the same will be added in the item price for the determination of ranking of the bidders.</p> <p>The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However, the percentage of taxes &amp; duties shall be clearly indicated.  <b>Necessary certificate will be issued on demand.</b></p> <p>The Buyer/PFC will have the right to award contracts to different Bidders for being lowest in particular items.</p> <p>For ranking of offers, price of complete scope of supply as detailed in technical specifications, the procuring authority/Purchaser may decide as follows for comparison of price bid -  All items of the bid which are mandatorily required to meet the tendered specifications of the item/system  If a bidder has put certain items/modules which are required to meet the tendered specifications in the ‘optional’ part of the bid, then such optional items shall also be included for the purpose of price comparison  On the other hand, if a bidder has inadvertently included any item/module in its main price bid which is not required as per tender specifications, then the price of such item/module shall be excluded from the price comparison provided that the price for the said item/module is clearly reflected separately in the bid  Anything asked as ‘optional’ in our specs is not to be included for overall comparison</p> <p><b>Non-conformities between Figures and words:</b>  Sometimes, non-conformities/errors are also observed in responsive tenders between the quoted prices in figures and in words. This situation normally does not arise in case of e-Procurement. This should be taken care of in the manner indicated below:  If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected.  If there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and the total shall be corrected;  )If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.</p>
15.	<p><b>Notices:</b> For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.</p> <p><b>Purchaser:</b> &lt; _____ &gt;,  &lt;Deptt./Section/Centre&gt;  Indian Institute of Technology  Hauz Khas, New Delhi - 110016.</p> <p><b>Supplier:</b> (To be filled in by the supplier)  <b>submit its supplies information as per Annexure-II).</b></p> <hr/>

16.	<p><b>Progress of Supply:</b> Wherever applicable, supplier shall regularly intimate progress of supply, in writing, to the Purchaser as under:  Quantity offered for inspection and date;  Quantity accepted/rejected by inspecting agency and date;  Quantity dispatched/delivered to consignees and date;  Quantity where incidental services have been satisfactorily completed with date;  Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date;  Date of completion of entire Contract including incidental services, if any; and  Date of receipt of entire payments under the Contract (In case of stage-wise inspection, details required may also be specified).</p>
17.	<p><b>Inspection and Tests:</b> Inspection and tests prior to shipment of Goods and at final acceptance are as follows:  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 week 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.</p>
18.	<p><b>Resolution of Disputes:</b> The dispute resolution mechanism to be applied pursuant shall be as follows:  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 &amp; 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 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.</p>
19.	<p><b>Applicable Law:</b> The place of jurisdiction would be New Delhi (Delhi) INDIA.</p>
20.	<p><b>Right to Use Defective Goods:</b>  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>

21.	<p><b>Supplier Integrity:</b> 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>
22.	<p><b>Training:</b> 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>
23.	<p><b>Installation &amp; Demonstration:</b> 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>
24.	<p><b>Insurance:</b> 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.</p>
25.	<p><b>Incidental services:</b> The incidental services also include: Furnishing of 01 set of detailed operations &amp; 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.</p>
26.	<p><b>Warranty:</b> 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>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 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>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>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>
27.	<p><b>Governing Language:</b></p>

	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.
28.	<b>Applicable Law:</b> 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.
29.	<b>Notices:</b> 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 email 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.
30.	<b>Taxes:</b> 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.
31.	<b>Duties:</b> 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. a) Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists) b) Forwarder details i.e. Name, Contact No., etc.
32.	<b>Payment:</b> 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 8 of tender terms and conditions.
33.	<b>User list:</b> 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)
34.	<b>Manuals and Drawings:</b> 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. The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract. 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.
35.	<b>Application Specialist:</b> 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)
36.	<b>Site Preparation:</b> 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. 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.

37.	<p><b>Spare Parts</b>  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:  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  In the event of termination of production of the spare parts:  Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and  Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.  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>
38.	<p><b>Defective Equipment:</b> 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 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 &amp; conditions, IIT Delhi may consider "Banning" the supplier.</p>
39.	<p><b>Termination for Default:</b>  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:  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.  If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.</p> <p>se of this Clause:  <b>rupt practice</b>” 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.  <b>ndulent practice</b>” 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;”</p> <p>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.</p>
40.	<p><b>Downtime:</b> 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% item value will be imposed. Downtime will be counted from the date and time of the filing of complaint with in the business hours.</p>
41.	<p><b>Training of Personnel:</b> 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.</p>

42.	<b>Disputes and Jurisdiction:</b> 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.
43.	<b>Compliance certificate:</b> This certificate must be provided indicating conformity to the technical specifications. (Annexure-I)
44.	<p><b>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 23<sup>rd</sup> July, 2020</b> 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></p> <p>“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.</p> <p>“Bidders from a country which shares a land border with India” for the purpose of this Order means:</p> <ul style="list-style-type: none"> <li>An entity incorporated, established or registered in such a country; or</li> <li>A subsidiary of an entity incorporated, established or registered in such a country; or</li> <li>An entity substantially controlled through entities incorporated, established or registered in such a country; or</li> <li>An entity whose <i>beneficial owner</i> is situated in such a country; or</li> <li>An Indian (or other) agent of such an entity; or</li> <li>A natural person who is the citizen of such a country; or</li> <li>A consortium or joint venture where any member of the consortium or joint venture falls under any of the above</li> </ul> <p>The <i>beneficial owner</i> for the purpose of above will be as under: -  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.</p> <p>Explanation-</p> <p>“Controlling ownership interest” means ownership of or entitlement to more than twenty-five per cent of share or capital or profit of the company;</p> <p>“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;</p> <p>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;</p> <p>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</p>

	<p>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;  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;  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.</p> <p>An agent is a person employed to do any act for another, or to represent another in dealings with the third person.</p> <p>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> <p><b>A certificate shall be submitted by bidders in the tender documents regarding their compliance with the said order.</b> 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>
45	<p><b><u>It is mandatory for bidders to quote items having local content minimum 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017, No. P-45021/2/2017-PP (B.E-II) dated 16.09.2020 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (Submit duly filled Annexure VIII for the same). <i>The Annexure VIII once submitted in the Technical Bid will be final. Submission of Revised Annexure VIII will NOT be accepted.</i></u></b></p> <p><i>As per O.M. of DPIIT, Ministry of Commerce and Industry, Govt. of India No.P-45021/102/2019-BE-II- Part (1) (E-50310) Dated 04.03.2021, Bidders offering Imported products will fall under the category of Non_Local Suppliers. They cannot claim themselves as Class-I or Class -II Local Suppliers by claiming the services such as Transportation, Insurance, Installation, Commissioning, Training and After Sale Service Support like AMC/ CMC etc. as Local Value Addition.</i></p>
46	<p>The bidder should submit the earlier purchase order of similar thermal systems with high operating temperature of the working fluid (above 300°C) applications.</p>

## COMPLIANCE SHEET

## TECHNICAL SPECIFICATION

Sl. No.	Items	Technical Specifications	Compliance Y/N
1	Thermocouples	Sheath-type K-thermocouple with thermowell. (up to 600 °C)	
2	Flow meters	Orifice plate type (flow measurement up to 2000 kg/hr) + Turbine flow meter (flow measurement up to 12000 kg/hr)	
3	Pressure gauge	Diaphragm pressure gauge ( up to 10 bar)	
4	Anemometer	Range:0-30 m/s, Resolution: 0.1 m/s	
5	Thermal Hygrometer	Temperature Range: -40 to 90°C, RH: 0-95% Resolution: 0.1% for RH, 0.1°C for Temperature	
6	Pumps	Centrifugal pump for operating temperature range (-40 to 350 °C)	
7	VFD	To control the flow rate of Centrifugal pumps. 0 to 50 Hz	
8	Valves	Globe valve + Ball valve + NRV	
9	Reducer	To connect the components with the main pipeline.	
10	Piping	Line size 2 inch	
11	Cooking plate	Baking plate Dia. : 0.6m, Plate Thickness: 10mm No.of turns: 9, Pitch: 28 mm, Area: 0.286 m <sup>2</sup> , Material: SS 316.	
12	Frying pan	Frying pan Dia: 0.5 m, Thickness: 5mm, No. of turns: 10, Pitch: 28 mm, Volume: 65 L, Material: SS 316	
13	Cooking vessel	Boiling vessel Dia: 0.5014 m, Vessel Height: 0.3545m, Wall thickness: 5 mm, No. of turns: 18 (side+bottom), Pitch: 28mm + 26.28 mm, Volume: 70 L, Material: SS 316	
14	Drying Unit	For drying	
15	FCU	For space heating	
16	Storage Unit	For storing thermal energy (Shell and tube type)	
17	Expansion Tank	For storing thermal oil and to deal with oil expansion at high temperature.	
18	Water ethylene mixture tank	For storing and to deal with expansion of water ethylene mixture.	
19	Parabolic Dish collector	Dual axis tracking based parabolic dish collector	
20	PVT collector	For auxiliary power consumption	
21	Electrical Batteries	For auxiliary power consumption	
22	PCMs	Sodium nitrite + Solar Salt +Hitech Salt+ Paraffin wax	
23	Heat exchanger	For heat exchange between oil and water ethylene mixture.	
24	Heat transfer oil	It should withstand the operating temperature of 350°C	
25	Insulation	The insulation layer of rockwool, with aluminium cladding covering all pinning and heat-losing surfaces.	
26	Diesel-fired boiler	Diesel fire boiler for auxiliary heating during installation and the unavailability of solar power.	

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)	
9. Kindly provide bank details of the bidder in the following format: a) Name of the Bank	
b) Account Number	

**(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: \_\_\_\_\_

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

ANNEXURE-V (Revised)

Tender No. :- .....

Date:-

.....

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

Dear Sir,

We manufacture 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.

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. :** \_\_\_\_\_

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. :** \_\_\_\_\_

DECLARATION OF LOCAL CONTENT

(To be given on Company Letter Head – For tender value below Rs.10 Crores)

(To be given by Statutory Auditor/ Cost Auditor/ Cost Accountant/ CA for tender value above Rs.10 Crores)

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

Subject: - Declaration of Local Content

Tender Reference No: \_\_\_\_\_

Name of Tender/ Work: \_\_\_\_\_

1. Country of Origin of Goods being offered: \_\_\_\_\_
2. We hereby declare that items offered has \_\_\_\_\_% local content
3. Details of the Location at which the Local Value Addition is made \_\_\_\_\_
4. Details of Local Content \_\_\_\_\_

“*Local Content*” means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

***Bidders offering Imported products will fall under the category of Non Local Suppliers. They cannot claim themselves as Class-I or Class –II Local Suppliers by claiming the services such as Transportation, Insurance, Installation, Commissioning, Training and After Sale Service Support like AMC/ CMC etc. as Local Value Addition.***

“\*False declaration will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.”

Yours faithfully,

(Signature of the bidder, with Official Seal)

Note: It is mandatory for bidders to quote items having local content minimum 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017, No. P-45021/2/2017-PP (B.E-II) dated 16.09.2020 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (Submit duly filled Annexure VIII for the same). *The Annexure VIII once submitted in the Technical Bid will be final. Submission of Revised Annexure VIII will NOT be accepted.*

**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: -

<b>Envelope – 1</b>			
(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.		Declaration of Local Content (Annexure-VIII)	.PDF
10.		Bid Security Undertaking in lieu of EMD (Annexure-IX)	.PDF
<b>Envelope – 2</b>			
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